Prepared for
Commander, U.S. Pacific Fleet, Executive Agent

In accordance with
The National Environmental Policy Act and
Executive Order 12114

MARIANA ISLANDS RANGE COMPLEX

ENVIRONMENTAL IMPACT STATEMENT/

OVERSEAS ENVIRONMENTAL IMPACT STATEMENT

Volume 3 of 3

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Final

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Acronyms and Abbreviations

µg/L	micrograms per liter
µm	micrometers
µg/m^3	micrograms per cubic meter
µPa^2-s	squared micropascal-second
µPa	micropascal
A-	Alert Area
A-A	Air-to-Air
A-G	Air-to-Ground
A-S	Air-to-Surface
AFB	Air Force Base
AAFB	Andersen Air Force Base
AAMEX	Air-to-Air Missile Exercise
AAV	Amphibious Assault Vehicle
AAW	Anti-Air Warfare
ABR	Auditory Brainstem Response
ACHP	Advisory Council on Historic Preservation
ACM	Air Combat Maneuvers
ADAR	Air Deployed Active Receiver
ADC	Acoustic Device Countermeasure
ADV	SEAL Delivery Vehicle
AEER	Advanced Extended Echo Ranging
AEP	Auditory Evoked Potentials
AESA	Airborne Electronically Scanned Array
AFAST	Atlantic Fleet Active Sonar Training
AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
AFI	Air Force Instruction
AGE	Aerospace Ground Equipment
AGL	Above Ground Level
AICUZ	Air Installations Compatible Use Zones
AIM	Air Intercept Missile
AK	Alaska
AMRAAM	Advanced Medium-Range Air-to-Air Missile
AMSP	Advanced Multi-Static Processing Program
AMW	Amphibious Warfare
ANNUALEX	Annual Exercise
AOR	area of responsibility
APCD	Air Pollution Control District
APZ	Accident Potential Zones
AQCR	Air Quality Control Region
AR	Army Reserves
AR-Marianas	Army Reserves Marianas
Army	U.S. Army
ARPA	Archaeological Resources Protection Act
ARS	Advance Ranging Source
ARTCC	Air Route Traffic Control Center
AS	Assault Support
ASDS	Advanced SEAL Delivery System
ASL	Above Sea Level
ASTA	Andersen South Training Area
ASTM	American Society for Testing and Materials
ASUW	Anti-Surface Warfare
ASW	Anti-Submarine Warfare
AT	Anti-Terrorism
AT/FP	Anti-Terrorism/Force Protection
ATC	Air Traffic Control
ATCAA	Air Traffic Control Assigned Airspace
atm	atmosphere (pressure)
ATOC	Acoustic Thermometry of Ocean Climate
ATSDR	Agency for Toxic Substances and Disease Registry
AUPM	Above & Underground Storage Tanks and Pesticide Management
AUTEC	Atlantic Undersea Test and Evaluation Center
AV-8B	Vertical/Short Takeoff and Landing Strike Aircraft
AW	Air Warfare
B-1	Strategic Bomber
B-2	Stealth Bomber
B-52	Strategic Bomber
BA	Biological Assessment
BAMS	Broad Area Maritime Surveillance
BASH	Bird Aircraft Strike Hazard
BDA	Battle-Damage Assessment
BDU	Bomb Dummy Unit
BH	Breacher House
BMDTF	Ballistic Missile Defense Task Force
BMP	Best Management Practices
BO	Biological Opinion
BOMBEX	Bombing Exercise
BQM	Aerial Target Drone Designation
BRAC	Base Realignment and Closure
BSP	Bureau of Statistics and Plans
BSS	Beaufort Sea State
BZO	Battle Sight Zero
°C	degrees Centigrade
C2	Command and Control
C-4	Composition 4
C-130	Military Transport Aircraft
CA	California
CAA	Clean Air Act
CAL	Confined Area Landing
CAN	Center for Naval Analysis
CAS	Close Air Support
CASS	Comprehensive Acoustic System Simulation
CASS-GRAB	Comprehensive Acoustic System Simulation Gaussian Ray Bundle
CATM	Combat Arms and Training Maintenance
CATMEX	Captive Air Training Missile Exercise
cc	cubic centimeter(s)
CCD	Carbonate Compensation Depth
CCF	Combined Control Facility
CDF	Cumulative Distribution Function
CDS	Container Delivery System
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CG	Cruiser
CHAFFEX/FLAREX	Chaff/Flare Exercise
CHESS	Chase Encirclement Stress Studies
CI	Confidence Interval
CIP	Capital Improvements Program
CITES	Convention on International Trade In Endangered Species
CIWS	Close-in Weapons System
cm	centimeters
CMC	Northern Mariana Islands Commonwealth Code

CMP	Coastal Management Plan
CNEL	Community Noise Equivalent Level
CNO	Chief of Naval Operations
CNRM	Commander, Navy Region Marianas
CNMI	Commonwealth of the Northern Mariana Islands
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COMNAVREG	Commander, Navy Region Marianas
COMNAVMAR	Commander, United States Naval Forces Marianas
COMPACFLT	Commander, Pacific Fleet
COMPTUEX	Composite Training Unit Exercise
COMSUBPAC	Commander, Submarine Forces Pacific
CONEX	Container Express (Shipping Container)
CONUS	Continental United States
CPF	Commander, U.S. Pacific Fleet
CPRW	Commander, Patrol and Reconnaissance Wing
CPX	Command Post Exercise
CQC	Close Quarters Combat
CR	Control Regulation
CRE FMP	Coral Reef Ecosystem Fishery Management Plan
CRG	Contingency Response Group
CRM	Coastal Resources Management
CRRC	Combat Rubber Raiding Craft
CRU	Cruiser
CSAR	Combat Search and Rescue
CSG	Carrier Strike Group
CSS	Commander, Submarine Squadron
CT	Computerized Tomography
CTF	Cable Termination Facility
CUC	Commonwealth Utilities Corporation
CV	Coefficients of Variation
CVN	Aircraft Carrier, Nuclear
CW	Continuous Wave
CWA	Clean Water Act
CY	Calendar Year
CZ	Clear Zones
CZMA	Coastal Zone Management Act
DARPA	Defense Advanced Research Programs Agency
DAWR	Division of Aquatic and Wildlife Resources
dB	Decibel
dBA	A-Weighted Sound Level
DBDBV	Digital Bathymetry Data Base Variable
DDG	Guided Missile Destroyer
DDT	Dichlorodiphenyltrichloroethane
DES	Destroyer
DESRON	Destroyer Squadron
DEQ	Department of Environmental Quality
DFW	CNMI Division of Fish and Wildlife
DICASS	Directional Command Activated Sonobuoy System
DLCD	Department of Land Conservation and Development
DNL	Day-Night Average A-Weighted Sound Level
DNT	Dinitrotoluene
DoD	Department of Defense
DoD REP	DoD Representative Guam, Commonwealth of Northern Mariana Islands, Federated States of Micronesia and Republic of Palau
DoN	Department of Navy
DPW	Department of Public Works
DTR	Demolition Training Range
DZ	Drop Zone
EA-6	Electronic Attack Aircraft
EA-18	Electronic Warfare Aircraft
EA	Electronic Attack
EA	Environmental Assessment
EAC	Early Action Compact
EC	Electronic Combat
EC OPS	Chaff and Electronic Combat
ECSWTR	East Coast Shallow-Water Training Range
EDS	Emergency Detonation Site
EER	Extended Echo Ranging
EEZ	Exclusive Economic Zone
EFD	Energy Flux Density
EFH	Essential Fish Habitat
EFSEC	Energy Facility Site Evaluation Council
EGTTR	Eglin Gulf Test and Training Range
EIS	Environmental Impact Statement
EL	Sound Energy Flux Density Level
EMATT	Expendable Mobile ASW Training Target
EMR	Electromagnetic Radiation
EMUA	Exclusive Military Use Area
ENP	Eastern North Pacific
ENSO	El Niño/Southern Oscillation
EO	Executive Order
EOD	Explosive Ordnance Disposal
EODMU	Explosive Ordnance Disposal Mobile Unit
EPA	Environmental Protection Agency
EPAct	Energy Policy Act
EPCRA	Emergency Planning and Community Right to Know Act
ER	Extended Range
ES	Electronic Support
ESA	Endangered Species Act
ESG	Expeditionary Strike Group
ESGEX	Expeditionary Strike Group Exercise
ESQD	Explosive Safety Quantity Distance
ET	Electronically Timed
ETP	Eastern Tropical Pacific
EW	Electronic Warfare
EX	Exercise
EXTORP	Exercise Torpedo
°F	degrees Fahrenheit
FA-18	Flight/Attack Strike Fighter
FAA	Federal Aviation Administration
FAC	Forward Air Control
FACSFAC	Fleet Area Control and Surveillance Facility
FAD	Fish Aggregating Devices
FARP	Fuel and Armament Replenishment Point
FAST	Floating At-Sea Target
FAST	Fleet Anti-Terrorism Security Team
FCLP	Field Carrier Landing Practice
FDM	Farallon de Medinilla
FDNF	Forward Deployed Naval Forces
FEA	Final Environmental Assessment
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FFG	Frigate
FHA	Federal Housing Administration
FICUN	Federal Interagency Committee On Urban Noise
FIP	Federal Implementation Plan
FIREX	Fire Support
FIRP	Flood Insurance Rate Map
FISC	Fleet and Industrial Supply Center
FHA	Federal Housing Administration
FL	Flight Level
FM	Frequency Modulated

FMC	Fishery Management Council
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impact
FP	Force Protection
FP	fibropapillomatosis
FR	Federal Register
FRP	Facility Response Plan
FRTP	Fleet Response Training Plan
FSAR	Finegayan Small Arms Ranges
FSM	Federated States of Micronesia
ft	feet
ft^2	square feet
FTX	Field Training Exercise
FUTR	Fixed Underwater Tracking Range
FY	Fiscal Year
FY04 NDAA	National Defense Authorization Act For Fiscal Year 2004
g	gram
GBU	Guided Bomb Unit
GCA	Guam Code Annotated
GCA	Ground Controlled Approach
GCE	Ground Combat Element
GCMP	Guam Coastal Management Plan
GDEM	Generalized Digital Environmental Model
GDP	Gross Domestic Product
GEPA	Guam Environmental Protection Agency
GHG	greenhouse gas
GIAA	Guam International Airport Authority
GIAT	Guam International Air Terminal
GJMMP	Guam Joint Military Master Plan
GLUP	Guam Land Use Plan
GNWR	Guam National Wildlife Refuge
GovGuam	Government of Guam
GRAB	Gaussian Ray Bundle
GUANG	Guam Air National Guard
GUARNG	Guam Army National Guard
GUNEX	Gunnery Exercise
GVB	Guam Visitors Bureau
HABS	Historic American Building Survey
HADR	Humanitarian and Disaster Relief
HAER	Historic American Engineering Record
HAPC	Habitat Areas of Particular Concern
HARM	High Speed Anti-radiation Missile
HC	Helicopter Coordinator
HC(A)	Helicopter Coordinator (Airborne)
HCN	Hydrogen Cyanide
HE	High Explosive
HELO	Helicopter
HFA	High-Frequency Active
HFBL	High-Frequency Bottom Loss
HFM3	High Frequency Marine Mammal Monitoring Sonar System
HH	Helicopter Designation (Typically Search/Rescue/Medical Evacuation))
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HMX	High Melting Explosive
HPA	Hypothalamic-pituitary-adrenal
HPO	Historic Preservation Officer
hr	hour
HRST	Helicopter Rope Suspension Training
HSC	Helicopter Sea Combat
HSWA	Hazardous and Solid Waste Act
HUD	Department of Housing and Urban Development
Hz	hertz
IAH	Inner Apra Harbor
IBB	International Broadcasting Bureau
ICAP	Improved Capability
ICMP	Integrated Comprehensive Monitoring Program
ICRMP	Integrated Cultural Resource Management Plan
ICWC	International Whaling Commission
IED	Improvised Explosive Device
IEER	Improved Extended Echo Ranging
IFR	Instrument Flight Rules
IHA	Incidental Harassment Authorization
III MEF	Third Marine Expeditionary Force
in.	inch
in^3	cubic inch
INRMP	Integrated Natural Resource Management Plan
IOC	Initial Operating Capability
IP	Implementation Plan
IR	infrared
ISR	Intelligence, Surveillance, and Reconnaissance
ISR/Strike	Intelligence, Surveillance, and Reconnaissance/Strike
IUCN	The World Conservation Union
IWC	International Whaling Commission
JDAM	Joint Direct Attack Munition
JFCOM	Joint Forces Command
JGPO	Joint Guam Program Office
JLOTS	Joint Logistics over the shore
JNTC	Joint National Training Capability
JSOW	Joint Stand-Off Weapon
JTFEX	Joint Task Force Exercise
JUCAS	Joint Unmanned Combat Air System
KD	Known Distance
KE	Kinetic Energy
kg	kilogram
kHz	kilohertz
km	kilometer
km^2	square kilometer
kts	knots
LAV	Light Armored Vehicle
lb	pound
LBA	Lease Back Area
LCAC	Landing Craft Air Cushion
LCE	Logistics Combat Element
LCS	Littoral Combat Ship
LCU	Landing Craft Utility
LFA	Low-Frequency Active
LFBL	Low-Frequency Bottom Loss
L_{eq}	Equivalent Sound Level
LHA	Amphibious Assault Ship
LHD	Amphibious Assault Ship
L_{max}	Maximum Sound Level
LGB	Laser Guided Bomb
LGTR	Laser Guided Training Round
LMRS	Long-Term Mine Reconnaissance System
ln	natural log
LOA	Letter of Agreement
LOA	Letter of Authorization
LPD	Amphibious Transport Dock
LSD	Amphibious Assault Ship
LT	Limited Training
LZ	Landing Zone
m	meters
m^2	square meters
m^3	cubic meters
M-4	Assault Rifle
M-16	Assault Rifle

M-203	40 mm Grenade Launcher
M-240G	Medium Machine Gun
M-249 SAW	Light Machine Gun, Squad Automatic Weapon
MAGTF	Marine Air Ground Task Force
MARPOL 73/78	Marine Pollution Convention '73, modified in '78
MAW	Marine Air Wing
MBTA	Migratory Bird Treaty Act
MCM	Mine Countermeasure
MCMEX	Mine Exercise
MEDEVAC	Medical Evacuation
MEF	Marine Expeditionary Force
MEMC	Military Expended Material Constituent
METOC	Meteorological and Oceanographic Operations
MEU	Marine Expeditionary Unit
MFA	Mid-Frequency Active
MFAS	Medium-Frequency Active Sonar
MG	Machine Gun
mgd	million gallons per day
mg/L	milligrams per liter
MH	Helicopter Designation (Typically Multi-mission)
MHWM	Mean High Water Mark
mi.	miles
mi^2	square miles
MI	Maritime Interdiction
MILCON	Military Construction
min	minutes
MINEX	Mine Laying Exercise
MIO	Maritime Interception Operation
MIRC	Mariana Islands Range Complex
MISSILEX	Missile Exercise
MISTCS	The Mariana Islands Sea Turtle and Cetacean Survey
MIW	Mine Warfare
MLA	Military Lease Area
mm	millimeters
MMA	Multi-mission Maritime Aircraft
MMHSRA	Marine Mammal Health and Stranding Response Act
MMHSRP	Marine Mammal Health and Stranding Response Program
MMPA	Marine Mammal Protection Act
MMR	Military Munitions Rule
MOA	Military Operations Area
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MOUT	Military Operations in Urban Terrain
MPA	Maritime Patrol Aircraft
MPRSA	Marine Protection, Research, and Sanctuaries Act
MRA	Marine Resources Assessment
MRUUV	Mission Reconfigurable Unmanned Undersea Vehicle
MSA	Munitions Storage Area
MSE	Multiple Successive Explosions
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSL	Mean Sea Level
MSS	Mobile Security Squadron
MTH	Marianas Training Handbook
MVA	Marianas Visitors Authority
MWR	Morale, Welfare, and Recreation
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NAS	Naval Air Station
NAS	National Academies of Science
NATO	North Atlantic Treaty Organization
NAVBASE	Naval Base
NAVFAC PAC	Naval Facilities Engineering Command Pacific
NAVMAG	Naval Magazine
NAVSTA	Naval Station
NAWQC	National Ambient Water Quality Criteria
NCA	National Command Authority
NCRD	No Cultural Resource Damage
NCTAMS	Naval Communications Area Master Station
NCTS	Naval Computers and Telecommunications Station
NDAA	National Defense Authorization Act
NDE	National Defense Exemption
NEC	North Equatorial Current
NECC	Navy Expeditionary Combat Command
NEO	Noncombatant Evacuation Operations
NEPA	National Environmental Policy Act
NEW	Net Explosive Weight
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NITTRSS	Navy Integrated Training and Test Range Strategic Study
NLNA	Northern Land Navigation Area
nm	nautical mile
nm^2	square nautical mile
NMFS	National Marine Fisheries Service
NMMTB	National Marine Mammal Tissue Bank
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOTAM	Notice to Airmen
NOTMAR	Notice to Mariners
NPAL	North Pacific Acoustic Laboratory
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRC	National Research Council
NRFCC	National Recreational Fisheries Coordination Council
NRHP	National Register of Historic Places
NRIS	National Register Information System
NRL	Naval Research Laboratory
NS	Naval Station
NSCT	Naval Special Clearance Team
NSFS	Naval Surface Fire Support
NSR	New Source Review
NSW	Naval Special Warfare
NSWG	Naval Special Warfare Group
NSWU	Naval Special Warfare Unit
NT	No Training
NUWC	Naval Undersea Warfare Center
NVG	Night Vision Goggle
NWD	No Wildlife Disturbance
NWF	Northwest Field
NWR	National Wildlife Refuge

NZ	Noise Zones
O_3	Ozone
OAH	Outer Apra Harbor
OAMCM	Organic Airborne Mine Countermeasure
OCE	Officer-In-Charge of the Exercise
OEA	Overseas Environmental Assessment
OEIS	Overseas Environmental Impact Statement
OLF	Outlying Landing Field
OP	Orote Point
OPA	Oil Pollution Act
OPAREA	Operating Area
OPCQC	Orote Point Close Quarters Combat
OPFOR	Opposition Forces
OPKDR	Orote Point Known Distance Range
OPNAV	Office of the Chief of Naval Operations
OPNAVINST	Chief of Naval Operations Instruction
OPS	Operations
OR	Oregon
ORMA	Ocean Resources Management Act
OSS	Operations Support Squadron
OTB	Over-the-Beach
OTH	Over the Horizon
Pa	Pascal
PA	Programmatic Agreement
Pa•s	Pascal•seconds
PACAF	Pacific Air Forces
PACFIRE	Pre-action Calibration Firing
PACOM	U.S. Pacific Command
PAG	Port Authority of Guam
PAH	Polycyclic Aromatic Hydrocarbons
Pb	Lead
PCB	Polychlorinated Biphenyl
PETN	Pentaerythritol Tetranitrate
pH	Hydrogen Ion Concentration
PIFSC	Pacific Islands Fisheries Science Center
PIRO	Pacific Islands Regional Office
PL	Public Law
$PM_{2.5}$	Particulate Matter 2.5 Microns in Diameter
PM_{10}	Particulate Matter 10 Microns in Diameter
PMAR	Primary Mission Area
POL	Petroleum, Oils, and Lubricants
POW	Prisoner of War
PPA	Pollution Prevention Act
ppb	parts per billion
PPF	Polaris Point Field
ppm	parts per million
PRI	Primary Training Area
psf	pounds per square foot
psi	pounds per square inch
psi-ms	pounds per square inch - milliseconds
PTP	Pre-deployment Training Phase
PTS	Permanent Threshold Shift
PUTR	Portable Underwater Tracking Range
PWC	Public Works Center
PWSS	Public Water Supply Systems
QDR	Quadrennial Defense Review
R-	Restricted Area
R&S	Reconnaissance and Surveillance
RAICUZ	Range Air Installations Compatible Use Zones
RCA	Range Condition Assessment
RCB	Reserve Craft Beach
RCD	Required Capabilities Document
RCMP	Range Complex Management Plan
RCRA	Resource Conservation and Recovery Act
RDT&E	Research, Development, Test, and Evaluation
RDX	Royal Demolition Explosive
re 1 µPa-m	referenced to 1 micropascal at 1 meter
RED HORSE	Rapid Engineer Deployable Heavy Operational Repair Squadron Engineer
REXTORP	Recoverable Exercise Torpedo
RFRCP	Recreational Fisheries Resources Conservation Plan
RHA	Rivers and Harbors Act
RHIB	Rigid Hull Inflatable Boat
RICRMP	Regional Integrated Cultural Resources Management Plan
RIMPAC	Rim of the Pacific
RL	Received Level
rms	root mean square
RNM	Rotorcraft Noise Model
ROD	Record of Decision
ROWPU	Reverse Osmosis Water Purification Unit
RSIP	Regional Shore Infrastructure Plan
RSO	Range Safety Officer
S-A	Surface-to-Air
S-S	Surface-to-Surface
S&R	Surveillance and Reconnaissance
SACEX	Supporting Arms Coordination Exercise
SAM	Surface-to-Air Missile
SAMEX	Surface-to Air Missile Exercise
SAR	Search and Rescue
SARS	Severe Acute Respiratory Syndrome
SAW	Squad Automatic Weapon
SBU	Special Boat Unit
SCD	Silicate Compensation Depth
SCUBA	Self-Contained Underwater Breathing Apparatus
SD	Standard Deviation
SDV	SEAL Delivery Vehicle
SDWA	Safe Drinking Water Act
SDZ	Surface Danger Zone
SEAD	Suppression of Enemy Air Defense
SEAL	Sea, Air, and Land Forces
sec	second
SEC	Secondary Training Areas
§	Section
SEIS	Supplemental Environmental Impact Statement
SEL	Sound Exposure Level
SEPA	State Environmental Policy Act
SFCP	Shore Fire Control Parties
SFS	Security Forces Squadron
SH	Helicopter Designation (Typically Anti-Submarine)
SHAREM	Ship ASW Readiness and Evaluation Measuring
SHPO	State Historic Preservation Officer
SINKEX	Sinking Exercise
SIP	State Implementation Plan
SLAM-ER	Stand-off Land Attack Missile - Extended Range
SLC	Submarine Learning Center
SLNA	Southern Land Navigation Area
SM	Standard Missile
SMA	Shoreline Management Act
SNS	Sympathetic Nervous System
SO_2	Sulfur Dioxide
SOCAL	Southern California
SOC	Special Operations Capable
SOCEX	Special Operations Capable Exercise

SOF	Special Operations Forces
SONAR	Sound Navigation and Ranging
SOP	Standard Operating Procedure
SPCC	Spill Prevention, Control, and Countermeasure
SPIE	Special Purpose Insertion and Extraction
SPL	Sound Pressure Level
SPMAGTF	Special Purpose Marine Air Ground Task Force
SPORTS	Sonar Positional Reporting System
sqrt	Square Root
SRBOC	Super Rapid Bloom Off-board Chaff
SRF	Ship Repair Facility
SRP	Scientific Research Program
SSBN	Ship, Submersible, Ballistic, Nuclear (Submarine)
SSC	SPAWAR Systems Center
SSG	Surface Strike Group
SSGN	Guided Missile Submarine
SSN	Fast Attack Submarine
SSN	Nuclear Submarine
STD	Standard
STOM	Ship to Objective Maneuver
STW	Strike Warfare
SUA	Special Use Airspace
SURC	Small Unit River Craft
SURTASS	Surveillance Towed-Array Sensor System
SUS	Signal Underwater Sound
SUW	Surface Warfare
SVP	Sound Velocity Profile
SWFSC	Southwest Fisheries Science Center
SWPPP	Storm Water Pollution Prevention Plans
T&E	Threatened and Endangered Species
TACP	Tactical Air Control Party
TALD	Tactical Air-Launched Decoy
TAP	Tactical Training Theater Assessment And Planning
TDU	Target Drone Unit
TGEX	Task Group Exercise
TM	Tympanic Membrane
TMDL	Total Maximum Daily Loads
TNT	Trinitrotoluene
TORPEX	Torpedo Exercise
TP	Training Projectile
TRACKEX	Tracking Exercise
TRUEX	Training in Urban Environment Exercise
TS	Threshold Shift
TSCA	Toxic Substances Control Act
TSPI	Time, Space, Position, Information
TSV	Training Support Vessel
TTS	Temporary Threshold Shift
UAS	Unmanned Aerial System
UAV	Unmanned Aerial Vehicle
UCRMP	Updated Cultural Resources Management Plan
UDP	Unit Deployment Program
UJTL	Universal Joint Task List
ULT	Unit-level Training
UME	Unusual Mortality Event
UN	United Nations
UNDET	Underwater Detonations
U.S.	United States
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USC	United States Code
USCG	United States Coast Guard
USCINCPAC REP	Commander In Chief, U.S. Pacific Command Representative
USCINCPAC REP GUAM/CNMI	Commander In Chief, U.S. Pacific Command Representative Guam and the Commonwealth of the Northern Mariana Islands
USDA	United States Department of Agriculture
USDA WS	United States Department of Agriculture Wildlife Services
USEPA	United States Environmental Protection Agency
USFF	United States Fleet Forces
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USGS – BRD	United States Geological Survey Biological Resources Division
USMC	United States Marine Corps
USNS	U.S.Naval Ship
USPACOM	United States Pacific Command
USWEX	Undersea Warfare Exercise
USWTR	Undersea Warfare Training Range
UTR	Underwater Tracking Range
UUV	Unmanned Underwater Vehicle
UXO	Unexploded Ordnance
V&VE	coastal flood hazard zones
VAST-IMPASS	Virtual At-Sea Training Integrated Maritime Portable Acoustic Scoring and Simulator
VBSS	Visit, Board, Search, and Seizure
VFR	Visual Flight Rules
VoA-IBB	Voice of America - International Broadcasting Bureau
VOC	Volatile Organic Compounds
VTNF	Variable Timed, Non-Fragmentation
VTOL	Vertical Takeoff and Landing
VTUAV	Vertical Take-off and Land UAV
W-	Warning Area
WestPac	Western Pacific
WISS	Weapons Impact Scoring System
WPRFMC	Western Pacific Regional Fisheries Management Council
WS	Wildlife Service
WWII	World War Two
ZOI	Zone of Influence

Volume III

ACRONYMS AND ABBREVIATIONS

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APPENDIX A

COOPERATING AGENCY REQUESTS

AND

ACCEPTANCE LETTERS

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COOPERATING AGENCY REQUESTS

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   National Oceanic and Atmospheric
   Administration (NOAA) Fisheries
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2. Mr. Dirk Kempthorne
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3. Mr. Mike Johanns
   Secretary of Agriculture
   U.S. Department of Agriculture
   Animal and Plant Health Inspection Services
   Wildlife Services
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4. Marion C. Blakey
   Administrator, Federal Aviation
   Administration
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5. Commander, 196th Infantry Brigade
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6. Commander, Marine Corps Bases Pacific
   Marine Corps Bases Hawaii
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7. Mr. Kevin Billings
   Deputy Assistant Secretary
   (Environment, Safety and Occupational
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8. Commander, U.S. Coast Guard Sector Guam
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9. Commanding General
   U.S. Army Reserve
   9th Regional Readiness Command
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10. Adjutant General
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11. Mr. Paul C. Hubbell
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    Installations and Logistics (Facilities)
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    2 Navy Annex
    Washington, DC 20380-1775

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DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, DC 20350-2000

IN REPLY REFER TO

5090
Ser N456E/7U158221
9 Aug 2007

Dr. William T. Hogarth
Assistant Administrator
National Oceanic and Atmospheric
Administration (NOAA) Fisheries
1315 East West Highway
Silver Spring, MD 20910

Dear Dr. Hogarth:

In accordance with the National Environmental Policy Act (NEPA) and Executive Order 12114, the Department of the Navy (Navy), as executive agent for the Department of Defense (DoD), is preparing an Environmental Impact Statement/ Overseas Environmental Impact Statement (EIS/OEIS) to evaluate potential environmental effects of using the Mariana Islands Range Complex (MIRC) to achieve and maintain military readiness and to support and conduct current, emerging, and future training activities and research, development, test, and evaluation (RDT&E) events.

In order to adequately evaluate the potential environmental effects of the Proposed Action, Navy and the National Marine Fisheries Service would need to work together on acoustic effects to marine species protected under the Marine Mammal Protection Act (MMPA) and the Endangered Species Act. To assist in this effort and in accordance with 40 CFR Part 1501 and the Council on Environmental Quality Cooperating Agency guidance issued on January 30, 2002, Navy requests NMFS serve as a cooperating agency for the development of the MIRC EIS/OEIS.

The MIRC consists of multiple ranges and training areas of land, sea space (nearshore and offshore), undersea space, and air space under different controlling authorities in the Territory of Guam, the Commonwealth of the Northern Mariana Islands, and surrounding waters. The Proposed Action for the MIRC EIS/OEIS is to:

- Maintain baseline operations at current levels;

- Increase training operations from current levels as necessary to support Military Service training requirements;

- Implement new and enhanced range complex capabilities;

- Increase and accommodate planned RDT&E events.

The Proposed Action will further our statutory obligations under Title 10 of the United States Code to provide combat capable forces ready to deploy worldwide.

The No Action Alternative is the continuation of training activities and major range events in the MIRC at current levels. Two action alternatives are proposed to accomplish the Proposed Action. Alternative 1 consists of an increase in the number of training activities, from levels described in the No Action Alternative, along with upgrades to ranges and training areas. Alternative 2 consists of all elements of Alternative 1 with an additional increase in the number and types of training operations and implementation of range enhancements including a fixed underwater training range.

The EIS/OEIS will address measurably foreseeable activities in the particular geographical areas affected by the No Action Alternative and action alternatives. This EIS/OEIS will analyze the effects of sound in the water on marine mammals in the areas where MIRC activities occur. In addition, other environmental resource areas that will be addressed as applicable in the EIS/OEIS include: air quality; airspace; biological resources, including threatened and endangered species; cultural resources; hazardous materials and waste; health and safety; land use; noise; socioeconomics; transportation; and water resources.

As executive agent for the lead agency, DoD, the Navy will be responsible for overseeing preparation of the EIS/OEIS that includes but is not limited to the following:

- Gathering all necessary background information and preparing the EIS/OEIS and all necessary permit applications associated with acoustic issues on the underwater ranges.

- Working with NMFS personnel to determine the method of estimating potential effects to protected marine species, including threatened and endangered species.

- Determining the scope of the EIS/OEIS, including the alternatives evaluated.

- Circulating the appropriate NEPA documentation to the general public and any other interested parties.

- Scheduling and supervising meetings held in support of the NEPA process, and compiling any comments received.

- Maintaining an administrative record and responding to any Freedom of Information Act requests relating to the EIS/OEIS.

As a cooperating agency, the Navy requests NMFS support the Navy in the following manner:

- Provide timely comments after the Agency Information Meeting (which will be held at the onset of the EIS/OEIS process) and on working drafts of the EIS/OEIS documents. The Navy requests that comments on draft EIS/OEIS documents be provided within 21 calendar days.

- Respond to Navy requests for information. Timely NMFS input will be critical to ensure a successful NEPA process.

- Coordinate, to the maximum extent practicable, any public comment periods that is necessary in the MMPA permitting process with the Navy's NEPA public comment periods.

- Participate, as necessary, in meetings hosted by the Navy for discussion of EIS/OEIS related issues.

- Adhere to the overall project schedule as agreed upon by the Navy and NMFS.

- Provide a formal, written response to this request.

The Navy views this agreement as important to the successful completion of the NEPA process for the Mariana Island Range Complex EIS/OEIS. It is Navy's goal to complete the analysis as expeditiously as possible, while using the best scientific information available. NMFS assistance will be invaluable in this endeavor.

My point of contact for this action is Ms. Karen M. Foskey, (703) 602-2859, email:Karen.Foskey@navy.mil.

Sincerely,

WILLIAM G. MATTHEIS
Acting Director, Environmental
Readiness Division (OPNAV N45)

Copy to:
DASN (Environment)
OAGC (I&E)
PACOM (J44)
US Naval Forces Marianas
CPF (N01CE, N7)
COMNAVFACENGCOM, Marianas

DEPARTMENT OF THE NAVY
U.S. DEFENSE REPRESENTATIVE GUAM/ COMMONWEALTH OF THE
NORTHERN MARIANA ISLANDS/
FEDERATED STATES OF MICRONESIA/ REPUBLIC OF PALAU
PSC 455 BOX 152
FPO AP 96540-1000

IN REPLY REFER TO:

3500
Ser N00/ 0260
September 6, 2007

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Mr. Dirk Kempthorne
Secretary of the Interior
Department of the Interior
1849 C Street, NW
Washington, DC 20240

Dear Mr. Dirk Kempthorne:

SUBJECT: MARIANA ISLANDS RANGE COMPLEX ENVIRONMENTAL IMPACT STATEMENT – COOPERATING AGENCY

The U.S. Department of Defense (DoD) has initiated an Environmental Impact Statement (EIS) to address the potential environmental impacts of proposed military training, research and development, and testing within the Mariana Islands Range Complex (MIRC). As an update to the 1999 EIS for Military Training in the Marianas, the MIRC EIS will analyze military training activities throughout Guam and the Commonwealth of Northern Mariana Islands (CNMI). The Commander, U.S. Pacific Fleet (COMPACFLT), on behalf of the Department of the Navy, will act as Executive Agent for DoD in completing this EIS. DoD requests your participation in this EIS as a cooperating agency pursuant to the National Environmental Policy Act and associated regulations.

DoD will study the environmental effects of increasing usage and enhancing the capability of the MIRC to achieve and maintain military readiness across all Service components, and to conduct current, emerging, and future training and research, development, testing, and evaluation (RDT&E) operations. The No-Action Alternative is the continuation of the current volume and types of training, RDT&E activities, and base operations that was approved in the 1999 EIS for Military Training in the Marianas. This includes all multi-Service training activities and operations on military ranges and training areas including: Andersen Air Force Base (Main Base, Northwest Field, Andersen South, and Tarague Beach); Commander, U.S. Naval Forces Marianas and its off-shore areas; Farallon de Medinilla; Tinian; Saipan; Rota; and Air Traffic Control Assigned Airspace.

Two action alternatives are proposed. Alternative 1 includes the activities described in the No-Action Alternative with the addition of an increase in current training operations on existing ranges and training areas to support military units located either permanently or temporarily in DoD Area of Responsibility (AOR). Alternative 2 would include all the operations described in Alternative 1 with the addition of new types of operations on existing ranges and training areas

and adjacent air and ocean areas. A complete description of the alternatives will be provided in the Description of Proposed Action and Alternatives, which is currently being completed.

In order to adequately evaluate the potential environmental effects of this proposed action, DoD and the Department of the Interior need to work together in assessing potential impacts to training activities and operations within the joint MIRC study area. It is DoD's desire to formalize this relationship as outlined in CEQ guidelines (40 CFR Part 1501.6).

As defined in 40 CFR 1501.6, DoD is the lead agency for the MIRC EIS. The MIRC EIS is funded through the Navy's Tactical Training Theater Assessment and Planning (TAP) program. COMPACFLT will process the MIRC EIS in accordance with other TAP documents to ensure consistency. The Chief of Navy Operations and the Assistant Secretary of the Navy (Installations and Environment) will provide concurrence prior to public release of the draft and final documents. DoD is requesting that the Department of the Interior be a cooperating agency as defined in 40 CFR 1501.6.

Per 40 CFR 1501.6 DoD as the lead agency shall:

1. Request the participation of each cooperating agency in the NEPA process at the earliest possible time.
2. Use the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency.
3. Meet with a cooperating agency at the latter's request.

Each cooperating agency shall:

1. Participate in the NEPA process at the earliest possible time.
2. Participate in the scoping process.
3. Assume, on request of the lead agency, responsibility for developing information and preparing environmental analyses, including portions of the environmental impact statement for which the cooperating agency has special expertise.
4. Make available staff support at the lead agency's request to enhance the latter's interdisciplinary capability.
5. Use their own funds.

DoD views this agreement as important to the successful completion of the NEPA process for the MIRC EIS. DoD's goal is to complete the analysis as expeditiously as possible, while using the best scientific information available. The Draft EIS is scheduled for public review in February 2009 with the Final EIS released in October 2009, and the Record of Decision for this EIS published in December 2009. Your assistance will be invaluable in that endeavor.

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Ser N00/ 0260
September 6, 2007

We appreciate your consideration of our request and look forward to your response. Should you have any questions or need additional information, please contact Mr. Neil Sheehan, COMPACFLT N01CE13, at (808) 474-7836, or by email at neil.a.sheehan.ctr@navy.mil.

Sincerely,

W. D. FRENCH
Rear Admiral, U.S. Navy

Copy to:
Assistant Secretary of the Navy (Installations & Environment)
Deputy Assistant Secretary of the Navy (Installations & Environment)
Office of Assistant General Council (Installations & Environment)
Commander, Navy Installations Command
Commander, Pacific Fleet N01CE
Commander, Pacific Fleet N7 (Mr. Long)
Naval Facilities Engineering Command, Pacific (Environmental)
Naval Facilities Engineering Command, Marianas (Environmental)

DEPARTMENT OF THE NAVY
U.S. DEFENSE REPRESENTATIVE GUAM/ COMMONWEALTH OF THE
NORTHERN MARIANA ISLANDS/
FEDERATED STATES OF MICRONESIA/ REPUBLIC OF PALAU
PSC 455 BOX 152
FPO AP 96540-1000

IN REPLY REFER TO:

3500
Ser N00/ 0254
September 6, 2007

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Mr. Mike Johanns
Secretary of Agriculture
U.S. Department of Agriculture
Animal and Plant Health Inspection Services
Wildlife Services
1400 Independence Avenue, S.W.
Washington, DC 20250

Dear Mr. Mike Johanns:

SUBJECT: MARIANA ISLANDS RANGE COMPLEX ENVIRONMENTAL IMPACT STATEMENT – COOPERATING AGENCY

The U.S. Department of Defense (DoD) has initiated an Environmental Impact Statement (EIS) to address the potential environmental impacts of proposed military training, research and development, and testing within the Mariana Islands Range Complex (MIRC). As an update to the 1999 EIS for Military Training in the Marianas, the MIRC EIS will analyze military training activities throughout Guam and the Commonwealth of Northern Mariana Islands (CNMI). The Commander, U.S. Pacific Fleet (COMPACFLT), on behalf of the Department of the Navy, will act as Executive Agent for DoD in completing this EIS. DoD requests your participation in this EIS as a cooperating agency pursuant to the National Environmental Policy Act and associated regulations.

DoD will study the environmental effects of increasing usage and enhancing the capability of the MIRC to achieve and maintain military readiness across all Service components, and to conduct current, emerging, and future training and research, development, testing, and evaluation (RDT&E) operations. The No-Action Alternative is the continuation of the current volume and types of training, RDT&E activities, and base operations that was approved in the 1999 EIS for Military Training in the Marianas. This includes all multi-Service training activities and operations on military ranges and training areas including: Andersen Air Force Base (Main Base, Northwest Field, Andersen South, and Tarague Beach); Commander, U.S. Naval Forces Marianas, and its off-shore areas; Farallon de Medinilla; Tinian; Saipan; Rota; and Air Traffic Control Assigned Airspace.

Two action alternatives are proposed. Alternative 1 includes the activities described in the No-Action Alternative with the addition of an increase in current training operations on existing ranges and training areas to support military units located either permanently or temporarily in

DoD Area of Responsibility (AOR). Alternative 2 would include all the operations described in alternative 1 with the addition of new types of operations on existing ranges and training areas and adjacent air and ocean areas. A complete description of the alternatives will be provided in the Description of Proposed Action and Alternatives, which is currently being completed.

In order to adequately evaluate the potential environmental effects of this proposed action, DoD and the U.S. Department of Agriculture need to work together in assessing potential impacts to training activities and operations within the joint MIRC study area. It is DoD's desire to formalize this relationship as outlined in CEQ guidelines (40 CFR Part 1501.6).

As defined in 40 CFR 1501.6, DoD is the lead agency for the MIRC EIS. The MIRC EIS is funded through the Navy's Tactical Training Theater Assessment and Planning (TAP) program. COMPACFLT will process the MIRC EIS in accordance with other TAP documents to ensure consistency. The Chief of Navy Operations and the Assistant Secretary of the Navy (Installations and Environment) will provide concurrence prior to public release of the draft and final documents. DoD is requesting that the U.S. Department of Agriculture be a cooperating agency as defined in 40 CFR 1501.6.

Per 40 CFR 1501.6 DoD as the lead agency shall:

1. Request the participation of each cooperating agency in the NEPA process at the earliest possible time.
2. Use the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency.
3. Meet with a cooperating agency at the latter's request.

Each cooperating agency shall:

1. Participate in the NEPA process at the earliest possible time.
2. Participate in the scoping process.
3. Assume, on request of the lead agency, responsibility for developing information and preparing environmental analyses, including portions of the environmental impact statement for which the cooperating agency has special expertise.
4. Make available staff support at the lead agency's request to enhance the latter's interdisciplinary capability.
5. Use their own funds.

DoD views this agreement as important to the successful completion of the NEPA process for the MIRC EIS. DoD's goal is to complete the analysis as expeditiously as possible, while using the best scientific information available. The Draft EIS is scheduled for public review in

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Ser N00/ 0254
September 6, 2007

February 2009 with the Final EIS released in October 2009, and the Record of Decision for this EIS published in December 2009. Your assistance will be invaluable in that endeavor.

We appreciate your consideration of our request and look forward to your response. Should you have any questions or need additional information, please contact Mr. Neil Sheehan, COMPACFLT N01CE13, at (808) 474-7836, or by email at neil.a.sheehan.ctr@navy.mil.

Sincerely,

W. D. FRENCH
Rear Admiral, U.S. Navy

Copy to:
Assistant Secretary of the Navy (Installations & Environment)
Deputy Assistant Secretary of the Navy (Installations & Environment)
Office of Assistant General Council (Installations & Environment)
Commander, Navy Installations Command
Commander, Pacific Fleet N01CE
Commander, Pacific Fleet N7 (Mr. Long)
Naval Facilities Engineering Command, Pacific (Environmental)
Naval Facilities Engineering Command, Marianas (Environmental)

DEPARTMENT OF THE NAVY
U.S. DEFENSE REPRESENTATIVE GUAM/ COMMONWEALTH OF THE
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PSC 455 BOX 152
FPO AP 96540-1000

IN REPLY REFER TO:

3500
Ser N00/ 0257
September 6, 2007

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Marion C. Blakey
Administrator, Federal Aviation Administration
800 Independence Ave., SW
Washington, DC 20591

Dear Marion C. Blakey:

SUBJECT: MARIANA ISLANDS RANGE COMPLEX ENVIRONMENTAL IMPACT STATEMENT – COOPERATING AGENCY

The U.S. Department of Defense (DoD) has initiated an Environmental Impact Statement (EIS) to address the potential environmental impacts of proposed military training, research and development, and testing within the Mariana Islands Range Complex (MIRC). As an update to the 1999 EIS for Military Training in the Marianas, the MIRC EIS will analyze military training activities throughout Guam and the Commonwealth of Northern Mariana Islands (CNMI). The Commander, U.S. Pacific Fleet (COMPACFLT), on behalf of the Department of the Navy, will act as Executive Agent for DoD in completing this EIS. DoD requests your participation in this EIS as a cooperating agency pursuant to the National Environmental Policy Act and associated regulations.

DoD will study the environmental effects of increasing usage and enhancing the capability of the MIRC to achieve and maintain military readiness across all Service components, and to conduct current, emerging, and future training and research, development, testing, and evaluation (RDT&E) operations. The No-Action Alternative is the continuation of the current volume and types of training, RDT&E activities, and base operations that was approved in the 1999 EIS for Military Training in the Marianas. This includes all multi-Service training activities and operations on military ranges and training areas including: Andersen Air Force Base (Main Base, Northwest Field, Andersen South, and Tarague Beach); Commander, U.S. Naval Forces Marianas, and its off-shore areas; Farallon de Medinilla; Tinian; Saipan; Rota; and Air Traffic Control Assigned Airspace.

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In order to adequately evaluate the potential environmental effects of this proposed action, DoD and the Federal Aviation Administration need to work together in assessing potential impacts to training activities and operations within the joint MIRC study area. It is DoD's desire to formalize this relationship as outlined in CEQ guidelines (40 CFR Part 1501.6).

As defined in 40 CFR 1501.6, DoD is the lead agency for the MIRC EIS. The MIRC EIS is funded through the Navy's Tactical Training Theater Assessment and Planning (TAP) program. COMPACFLT will process the MIRC EIS in accordance with other TAP documents to ensure consistency. The Chief of Navy Operations and the Assistant Secretary of the Navy (Installations and Environment) will provide concurrence prior to public release of the draft and final documents. DoD is requesting that the Federal Aviation Administration be a cooperating agency as defined in 40 CFR 1501.6.

Per 40 CFR 1501.6 DoD as the lead agency shall:

1. Request the participation of each cooperating agency in the NEPA process at the earliest possible time.
2. Use the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency.
3. Meet with a cooperating agency at the latter's request.

Each cooperating agency shall:

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DoD views this agreement as important to the successful completion of the NEPA process for the MIRC EIS. DoD's goal is to complete the analysis as expeditiously as possible, while using the best scientific information available. The Draft EIS is scheduled for public review in February 2009 with the Final EIS released in October 2009, and the Record of Decision for this EIS published in December 2009. Your assistance will be invaluable in that endeavor.

3500
Ser N00/ 0257
September 6, 2007

We appreciate your consideration of our request and look forward to your response. Should you have any questions or need additional information, please contact Mr. Neil Sheehan, COMPACFLT N01CE13, at (808) 474-7836, or by e-mail at neil.a.sheehan.ctr@navy.mil.

Sincerely,

W. D. FRENCH
Rear Admiral, U.S. Navy

Copy to:
Assistant Secretary of the Navy (Installations & Environment)
Deputy Assistant Secretary of the Navy (Installations & Environment)
Office of Assistant General Council (Installations & Environment)
Commander, Navy Installations Command
Commander, Pacific Fleet N01CE
Commander, Pacific Fleet N7 (Mr. Long)
Naval Facilities Engineering Command, Pacific (Environmental)
Naval Facilities Engineering Command, Marianas (Environmental)

DEPARTMENT OF THE NAVY
U.S. DEFENSE REPRESENTATIVE GUAM/ COMMONWEALTH OF THE
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FPO AP 96540-1000

IN REPLY REFER TO:

3500
Ser N00/ 0259
September 6, 2007

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Commander, 196th Infantry Brigade
Headquarters Bldg 525
Fort Shafter, HI 96858-5300

Dear Colonel Tom Guthrie:

SUBJECT: MARIANA ISLANDS RANGE COMPLEX ENVIRONMENTAL IMPACT STATEMENT – COOPERATING AGENCY

The U.S. Department of Defense (DoD) has initiated an Environmental Impact Statement (EIS) to address the potential environmental impacts of proposed military training, research and development, and testing within the Mariana Islands Range Complex (MIRC). As an update to the 1999 EIS for Military Training in the Marianas, the MIRC EIS will analyze military training activities throughout Guam and the Commonwealth of Northern Mariana Islands (CNMI). The Commander, U.S. Pacific Fleet (COMPACFLT), on behalf of the Department of the Navy, will act as Executive Agent for DoD in completing this EIS. DoD requests your participation in this EIS as a cooperating agency pursuant to the National Environmental Policy Act and associated regulations.

DoD will study the environmental effects of increasing usage and enhancing the capability of the MIRC to achieve and maintain military readiness across all Service components, and to conduct current, emerging, and future training and research, development, testing, and evaluation (RDT&E) operations. The No-Action Alternative is the continuation of the current volume and types of training, RDT&E activities, and base operations that was approved in the 1999 EIS for Military Training in the Marianas. This includes all multi-Service training activities and operations on military ranges and training areas including: Andersen Air Force Base (Main Base, Northwest Field, Andersen South, and Tarague Beach); Commander, U.S. Naval Forces Marianas, and its off-shore areas; Farallon de Medinilla; Tinian; Saipan; Rota; and Air Traffic Control Assigned Airspace.

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In order to adequately evaluate the potential environmental effects of this proposed action, DoD components need to work together in assessing potential impacts to training activities and operations within the joint MIRC study area. It is DoD's desire to formalize this relationship as outlined in CEQ guidelines (40 CFR Part 1501.6).

As defined in 40 CFR 1501.6, DoD is the lead agency for the MIRC EIS. The MIRC EIS is funded through the Navy's Tactical Training Theater Assessment and Planning (TAP) program. COMPACFLT will process the MIRC EIS in accordance with other TAP documents to ensure consistency. The Chief of Naval Operations and the Assistant Secretary of the Navy (Installations and Environment) will provide concurrence prior to public release of the draft and final documents. DoD is requesting that the HQ 196th Infantry Brigade be a cooperating agency as defined in 40 CFR 1501.6.

Per 40 CFR 1501.6 DoD as the lead agency shall:

1. Request the participation of each cooperating agency in the NEPA process at the earliest possible time.
2. Use the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency.
3. Meet with a cooperating agency at the latter's request.

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1. Participate in the NEPA process at the earliest possible time.
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4. Make available staff support at the lead agency's request to enhance the latter's interdisciplinary capability.
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DoD views this agreement as important to the successful completion of the NEPA process for the MIRC EIS. DoD's goal is to complete the analysis as expeditiously as possible, while using the best scientific information available. The Draft EIS is scheduled for public review in February 2009 with the Final EIS released in October 2009, and the Record of Decision for this EIS published in December 2009. Your assistance will be invaluable in that endeavor.

3500
Ser N00/ 0259
September 6, 2007

We appreciate your consideration of our request and look forward to your response. Should you have any questions or need additional information, please contact Mr. Neil Sheehan, COMPACFLT N01CE13, at (808) 474-7836, or by email at neil.a.sheehan.ctr@navy.mil.

Sincerely,

W. D. FRENCH
Rear Admiral, U.S. Navy

Copy to:
Assistant Secretary of the Navy (Installations & Environment)
Deputy Assistant Secretary of the Navy (Installations & Environment)
Office of Assistant General Council (Installations & Environment)
Commander, Navy Installations Command
Commander, Pacific Fleet N01CE
Commander, Pacific Fleet N7 (Mr. Long)
Naval Facilities Engineering Command, Pacific (Environmental)
Naval Facilities Engineering Command, Marianas (Environmental)

DEPARTMENT OF THE NAVY
U.S. DEFENSE REPRESENTATIVE GUAM/ COMMONWEALTH OF THE
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FEDERATED STATES OF MICRONESIA/ REPUBLIC OF PALAU
PSC 455 BOX 152
FPO AP 96540-1000

IN REPLY REFER TO:

3500
Ser N00/ 0252
September 6, 2007

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Commander, Marine Corps Bases Pacific
Marine Corps Bases Hawaii
P.O. Box 64119
Camp H.M. Smith, HI 96861-4119

Attention: Director, Marine Corps Installations MidPac

Dear Colonel Burton:

SUBJECT: MARIANA ISLANDS RANGE COMPLEX ENVIRONMENTAL IMPACT STATEMENT – COOPERATING AGENCY

The U.S. Department of Defense (DoD) has initiated an Environmental Impact Statement (EIS) to address the potential environmental impacts of proposed military training, research and development, and testing within the Mariana Islands Range Complex (MIRC). As an update to the 1999 EIS for Military Training in the Marianas, the MIRC EIS will analyze military training activities throughout Guam and the Commonwealth of Northern Mariana Islands (CNMI). The Commander, U.S. Pacific Fleet (COMPACFLT), on behalf of the Department of the Navy, will act as Executive Agent for DoD in completing this EIS. DoD requests your participation in this EIS as a cooperating agency pursuant to the National Environmental Policy Act and associated regulations.

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and adjacent air and ocean areas. A complete description of the alternatives will be provided in the Description of Proposed Action and Alternatives, which is currently being completed.

In order to adequately evaluate the potential environmental effects of this proposed action, DoD components need to work together in assessing potential impacts to training activities and operations within the joint MIRC study area. It is DoD's desire to formalize this relationship as outlined in CEQ guidelines (40 CFR Part 1501.6).

As defined in 40 CFR 1501.6, DoD is the lead agency for the MIRC EIS. The MIRC EIS is funded through the Navy's Tactical Training Theater Assessment and Planning (TAP) program. COMPACFLT will process the MIRC EIS in accordance with other TAP documents to ensure consistency. The Chief of Navy Operations and the Assistant Secretary of the Navy (Installations and Environment) will provide concurrence prior to public release of the draft and final documents. DoD is requesting that the Marine Corps be a cooperating agency as defined in 40 CFR 1501.6.

Per 40 CFR 1501.6 DoD as the lead agency shall:

1. Request the participation of each cooperating agency in the NEPA process at the earliest possible time.
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Ser N00/ 0252
September 6, 2007

We appreciate your consideration of our request and look forward to your response. Should you have any questions or need additional information, please contact Mr. Neil Sheehan, COMPACFLT N01CE13, at (808) 474-7836, or by email at neil.a.sheehan.ctr@navy.mil.

Sincerely,

W. D. FRENCH
Rear Admiral, U.S. Navy

Copy to:
Assistant Secretary of the Navy (Installations & Environment)
Deputy Assistant Secretary of the Navy (Installations & Environment)
Office of Assistant General Council (Installations & Environment)
Commander, Navy Installations Command
Commander, Pacific Fleet N01CE
Commander, Pacific Fleet N7 (Mr. Long)
Naval Facilities Engineering Command, Pacific (Environmental)
Naval Facilities Engineering Command, Marianas (Environmental)

DEPARTMENT OF THE NAVY
U.S. DEFENSE REPRESENTATIVE GUAM/ COMMONWEALTH OF THE
NORTHERN MARIANA ISLANDS/
FEDERATED STATES OF MICRONESIA/ REPUBLIC OF PALAU
PSC 455 BOX 152
FPO AP 96540-1000

IN REPLY REFER TO:

3500
Ser N00/ 0255
September 6, 2007

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Mr. Kevin Billings
Deputy Assistant Secretary (Environment, Safety and Occupational Health)
HQ SAF/IEE
1665 Air Force Pentagon
Washington, DC 20330-1665

Dear Mr. Billings:

SUBJECT: MARIANA ISLANDS RANGE COMPLEX ENVIRONMENTAL IMPACT STATEMENT – COOPERATING AGENCY

The U.S. Department of Defense (DoD) has initiated an Environmental Impact Statement (EIS) to address the potential environmental impacts of proposed military training, research and development, and testing within the Mariana Islands Range Complex (MIRC). As an update to the 1999 EIS for Military Training in the Marianas, the MIRC EIS will analyze military training activities throughout Guam and the Commonwealth of Northern Mariana Islands (CNMI). The Commander, U.S. Pacific Fleet (COMPACFLT), on behalf of the Department of the Navy, will act as Executive Agent for DoD in completing this EIS. DoD requests your participation in this EIS as a cooperating agency pursuant to the National Environmental Policy Act and associated regulations.

DoD will study the environmental effects of increasing usage and enhancing the capability of the MIRC to achieve and maintain military readiness across all Service components, and to conduct current, emerging, and future training and research, development, testing, and evaluation (RDT&E) operations. The No-Action Alternative is the continuation of the current volume and types of training, RDT&E activities, and base operations that was approved in the 1999 EIS for Military Training in the Marianas. This includes all multi-Service training activities and operations on military ranges and training areas including: Andersen Air Force Base (Main Base, Northwest Field, Andersen South, and Tarague Beach); Commander, U.S. Naval Forces Marianas, and its off-shore areas; Farallon de Medinilla; Tinian; Saipan; Rota; and Air Traffic Control Assigned Airspace.

Two action alternatives are proposed. Alternative 1 includes the activities described in the No-Action Alternative with the addition of an increase in current training operations on existing ranges and training areas to support military units located either permanently or temporarily in DoD Area of Responsibility (AOR). Alternative 2 would include all the operations described in Alternative 1 with the addition of new types of operations on existing ranges and training areas

and adjacent air and ocean areas. A complete description of the alternatives will be provided in the Description of Proposed Action and Alternatives, which is currently being completed.

In order to adequately evaluate the potential environmental effects of this proposed action, DoD components need to work together in assessing potential impacts to training activities and operations within the joint MIRC study area. It is DoD's desire to formalize this relationship as outlined in CEQ guidelines (40 CFR Part 1501.6).

As defined in 40 CFR 1501.6, DoD is the lead agency for the MIRC EIS. The MIRC EIS is funded through the Navy's Tactical Training Theater Assessment and Planning (TAP) program. COMPACFLT will process the MIRC EIS in accordance with other TAP documents to ensure consistency. The Chief of Navy Operations and the Assistant Secretary of the Navy (Installations and Environment) will provide concurrence prior to public release of the draft and final documents. DoD is requesting that the U.S. Air Force be a cooperating agency as defined in 40 CFR 1501.6.

Per 40 CFR 1501.6 DoD as the lead agency shall:

1. Request the participation of each cooperating agency in the NEPA process at the earliest possible time.
2. Use the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency.
3. Meet with a cooperating agency at the latter's request.

Each cooperating agency shall:

1. Participate in the NEPA process at the earliest possible time.
2. Participate in the scoping process.
3. Assume, on request of the lead agency, responsibility for developing information and preparing environmental analyses, including portions of the environmental impact statement for which the cooperating agency has special expertise.
4. Make available staff support at the lead agency's request to enhance the latter's interdisciplinary capability.
5. Use their own funds.

DoD views this agreement as important to the successful completion of the NEPA process for the MIRC EIS. DoD's goal is to complete the analysis as expeditiously as possible, while using the best scientific information available. The Draft EIS is scheduled for public review in February 2009 with the Final EIS released in October 2009, and the Record of Decision for this EIS published in December 2009. Your assistance will be invaluable in that endeavor.

3500
Ser N00/ 0255
September 6, 2007

We appreciate your consideration of our request and look forward to your response. Should you have any questions or need additional information, please contact Mr. Neil Sheehan, COMPACFLT N01CE13, at (808) 474-7836, or by email at neil.a.sheehan.ctr@navy.mil.

Sincerely,

W. D. FRENCH
Rear Admiral, U.S. Navy

Copy to:
Assistant Secretary of the Navy (Installations & Environment)
Deputy Assistant Secretary of the Navy (Installations & Environment)
Office of Assistant General Council (Installations & Environment)
Commander, Navy Installations Command
Commander, Pacific Fleet N01CE
Commander, Pacific Fleet N7 (Mr. Long)
Naval Facilities Engineering Command, Pacific (Environmental)
Naval Facilities Engineering Command, Marianas (Environmental)

DEPARTMENT OF THE NAVY
U.S. DEFENSE REPRESENTATIVE GUAM/ COMMONWEALTH OF THE
NORTHERN MARIANA ISLANDS/
FEDERATED STATES OF MICRONESIA/ REPUBLIC OF PALAU
PSC 455 BOX 152
FPO AP 96540-1000

IN REPLY REFER TO:

3500
Ser N00/ 0256
September 6, 2007

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Commander, U.S. Coast Guard Sector Guam
PSC 455 Box 176
FPO AP 96540-1056

Dear Captain Marhoffer:

SUBJECT: MARIANA ISLANDS RANGE COMPLEX ENVIRONMENTAL IMPACT STATEMENT – COOPERATING AGENCY

The U.S. Department of Defense (DoD) has initiated an Environmental Impact Statement (EIS) to address the potential environmental impacts of proposed military training, research and development, and testing within the Mariana Islands Range Complex (MIRC). As an update to the 1999 EIS for Military Training in the Marianas, the MIRC EIS will analyze military training activities throughout Guam and the Commonwealth of Northern Mariana Islands (CNMI). The Commander, U.S. Pacific Fleet (COMPACFLT), on behalf of the Department of the Navy, will act as Executive Agent for DoD in completing this EIS. DoD requests your participation in this EIS as a cooperating agency pursuant to the National Environmental Policy Act and associated regulations.

DoD will study the environmental effects of increasing usage and enhancing the capability of the MIRC to achieve and maintain military readiness across all Service components, and to conduct current, emerging, and future training and research, development, testing, and evaluation (RDT&E) operations. The No-Action Alternative is the continuation of the current volume and types of training, RDT&E activities, and base operations that was approved in the 1999 EIS for Military Training in the Marianas. This includes all multi-Service training activities and operations on military ranges and training areas including: Andersen Air Force Base (Main Base, Northwest Field, Andersen South, and Tarague Beach); Commander, U.S. Naval Forces Marianas and its off-shore areas; Farallon de Medinilla; Tinian; Saipan; Rota; and Air Traffic Control Assigned Airspace.

Two action alternatives are proposed. Alternative 1 includes the activities described in the No-Action Alternative with the addition of an increase in current training operations on existing ranges and training areas to support military units located either permanently or temporarily in DoD Area of Responsibility (AOR). Alternative 2 would include all the operations described in Alternative 1 with the addition of new types of operations on existing ranges and training areas and adjacent air and ocean areas. A complete description of the alternatives will be provided in the Description of Proposed Action and Alternatives, which is currently being completed.

In order to adequately evaluate the potential environmental effects of this proposed action, DoD and the U.S. Coast Guard need to work together in assessing potential impacts to training activities and operations within the joint MIRC study area. It is DoD's desire to formalize this relationship as outlined in CEQ guidelines (40 CFR Part 1501.6).

As defined in 40 CFR 1501.6, DoD is the lead agency for the MIRC EIS. The MIRC EIS is funded through the Navy's Tactical Training Theater Assessment and Planning (TAP) program. COMPACFLT will process the MIRC EIS in accordance with other TAP documents to ensure consistency. The Chief of Navy Operations and the Assistant Secretary of the Navy (Installations and Environment) will provide concurrence prior to public release of the draft and final documents. DoD is requesting that the Coast Guard Sector Guam be a cooperating agency as defined in 40 CFR 1501.6.

Per 40 CFR 1501.6 DoD as the lead agency shall:

1. Request the participation of each cooperating agency in the NEPA process at the earliest possible time.
2. Use the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency.
3. Meet with a cooperating agency at the latter's request.

Each cooperating agency shall:

1. Participate in the NEPA process at the earliest possible time.
2. Participate in the scoping process.
3. Assume, on request of the lead agency, responsibility for developing information and preparing environmental analyses, including portions of the environmental impact statement for which the cooperating agency has special expertise.
4. Make available staff support at the lead agency's request to enhance the latter's interdisciplinary capability.
5. Use their own funds.

DoD views this agreement as important to the successful completion of the NEPA process for the MIRC EIS. DoD's goal is to complete the analysis as expeditiously as possible, while using the best scientific information available. The Draft EIS is scheduled for public review in February 2009 with the Final EIS released in October 2009, and the Record of Decision for this EIS published in December 2009. Your assistance will be invaluable in that endeavor.

3500
Ser N00/ 0256
September 6, 2007

We appreciate your consideration of our request and look forward to your response. Should you have any questions or need additional information, please contact Mr. Neil Sheehan, COMPACFLT N01CE13, at (808) 474-7836, or by email at neil.a.sheehan.ctr@navy.mil.

Sincerely,

W. D. FRENCH
Rear Admiral, U.S. Navy

Copy to:
Assistant Secretary of the Navy (Installations & Environment)
Deputy Assistant Secretary of the Navy (Installations & Environment)
Office of Assistant General Council (Installations & Environment)
Commander, Navy Installations Command
Commander, Pacific Fleet N01CE
Commander, Pacific Fleet N7 (Mr. Long)
Naval Facilities Engineering Command, Pacific (Environmental)
Naval Facilities Engineering Command, Marianas (Environmental)

DEPARTMENT OF THE NAVY
U.S. DEFENSE REPRESENTATIVE GUAM/ COMMONWEALTH OF THE
NORTHERN MARIANA ISLANDS/
FEDERATED STATES OF MICRONESIA/ REPUBLIC OF PALAU
PSC 455 BOX 152
FPO AP 96540-1000

IN REPLY REFER TO:

3500
Ser N00/ 0253
September 6, 2007

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Commanding General
U.S. Army Reserve
9th Regional Readiness Command
1557 Pass Street
Fort Shafter Flats
Honolulu, Hawaii 96819

Dear Brigadier General Alexander Kozolv:

SUBJECT: MARIANA ISLANDS RANGE COMPLEX ENVIRONMENTAL IMPACT STATEMENT – COOPERATING AGENCY

The U.S. Department of Defense (DoD) has initiated an Environmental Impact Statement (EIS) to address the potential environmental impacts of proposed military training, research and development, and testing within the Mariana Islands Range Complex (MIRC). As an update to the 1999 EIS for Military Training in the Marianas, the MIRC EIS will analyze military training activities throughout Guam and the Commonwealth of Northern Mariana Islands (CNMI). The Commander, U.S. Pacific Fleet (COMPACFLT), on behalf of the Department of the Navy, will act as Executive Agent for DoD in completing this EIS. DoD requests your participation in this EIS as a cooperating agency pursuant to the National Environmental Policy Act and associated regulations.

DoD will study the environmental effects of increasing usage and enhancing the capability of the MIRC to achieve and maintain military readiness across all Service components, and to conduct current, emerging, and future training and research, development, testing, and evaluation (RDT&E) operations. The No-Action Alternative is the continuation of the current volume and types of training, RDT&E activities, and base operations that was approved in the 1999 EIS for Military Training in the Marianas. This includes all multi-Service training activities and operations on military ranges and training areas including: Andersen Air Force Base (Main Base, Northwest Field, Andersen South, and Tarague Beach); Commander, U.S. Naval Forces Marianas and its off-shore areas; Farallon de Medinilla; Tinian; Saipan; Rota; and Air Traffic Control Assigned Airspace.

Two action alternatives are proposed. Alternative 1 includes the activities described in the No-Action Alternative with the addition of an increase in current training operations on existing ranges and training areas to support military units located either permanently or temporarily in DoD Area of Responsibility (AOR). Alternative 2 would include all the operations described in Alternative 1 with the addition of new types of operations on existing ranges and training areas

and adjacent air and ocean areas. A complete description of the alternatives will be provided in the Description of Proposed Action and Alternatives, which is currently being completed.

In order to adequately evaluate the potential environmental effects of this proposed action, DoD components need to work together in assessing potential impacts to training activities and operations within the joint MIRC study area. It is DoD's desire to formalize this relationship as outlined in CEQ guidelines (40 CFR Part 1501.6).

As defined in 40 CFR 1501.6, DoD is the lead agency for the MIRC EIS. The MIRC EIS is funded through the Navy's Tactical Training Theater Assessment and Planning (TAP) program. COMPACFLT will process the MIRC EIS in accordance with other TAP documents to ensure consistency. The Chief of Navy Operations and the Assistant Secretary of the Navy (Installations and Environment) will provide concurrence prior to public release of the draft and final documents. DoD is requesting that the U.S. Army Reserve be a cooperating agency as defined in 40 CFR 1501.6.

Per 40 CFR 1501.6 DoD as the lead agency shall:

1. Request the participation of each cooperating agency in the NEPA process at the earliest possible time.
2. Use the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency.
3. Meet with a cooperating agency at the latter's request.

Each cooperating agency shall:

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2. Participate in the scoping process.
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5. Use their own funds.

DoD views this agreement as important to the successful completion of the NEPA process for the MIRC EIS. DoD's goal is to complete the analysis as expeditiously as possible, while using the best scientific information available. The Draft EIS is scheduled for public review in

3500
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September 6, 2007

February 2009 with the Final EIS released in October 2009, and the Record of Decision for this EIS published in December 2009. Your assistance will be invaluable in that endeavor.

We appreciate your consideration of our request and look forward to your response. Should you have any questions or need additional information, please contact Mr. Neil Sheehan, COMPACFLT N01CE13, at (808) 474-7836, or by email at neil.a.sheehan.ctr@navy.mil.

Sincerely,

W. D. French
Rear Admiral, U.S. Navy

Copy to:
Assistant Secretary of the Navy (Installations & Environment)
Deputy Assistant Secretary of the Navy (Installations & Environment)
Office of Assistant General Council (Installations & Environment)
Commander, Navy Installations Command
Commander, Pacific Fleet N01CE
Commander, Pacific Fleet N7 (Mr. Long)
Naval Facilities Engineering Command, Pacific (Environmental)
Naval Facilities Engineering Command, Marianas (Environmental)

DEPARTMENT OF THE NAVY
U.S. DEFENSE REPRESENTATIVE GUAM/ COMMONWEALTH OF THE
NORTHERN MARIANA ISLANDS/
FEDERATED STATES OF MICRONESIA/ REPUBLIC OF PALAU
PSC 455 BOX 152
FPO AP 96540-1000

IN REPLY REFER TO:

3500
Ser N00/ 0258
September 6, 2007

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Adjutant General
Guam National Guard
430 Army Drive Bld 300, Rm 113
Barrigada, Guam 96913-4421

Dear Major General Goldhorn:

SUBJECT: MARIANA ISLANDS RANGE COMPLEX ENVIRONMENTAL IMPACT STATEMENT – COOPERATING AGENCY

The U.S. Department of Defense (DoD) has initiated an Environmental Impact Statement (EIS) to address the potential environmental impacts of proposed military training, research and development, and testing within the Mariana Islands Range Complex (MIRC). As an update to the 1999 EIS for Military Training in the Marianas, the MIRC EIS will analyze military training activities throughout Guam and the Commonwealth of Northern Mariana Islands (CNMI). The Commander, U.S. Pacific Fleet (COMPACFLT), on behalf of the Department of the Navy, will act as Executive Agent for DoD in completing this EIS. DoD requests your participation in this EIS as a cooperating agency pursuant to the National Environmental Policy Act and associated regulations.

DoD will study the environmental effects of increasing usage and enhancing the capability of the MIRC to achieve and maintain military readiness across all Service components, and to conduct current, emerging, and future training and research, development, testing, and evaluation (RDT&E) operations. The No-Action Alternative is the continuation of the current volume and types of training, RDT&E activities, and base operations that was approved in the 1999 EIS for Military Training in the Marianas. This includes all multi-Service training activities and operations on military ranges and training areas including: Andersen Air Force Base (Main Base, Northwest Field, Andersen South, and Tarague Beach); Commander, U.S. Naval Forces Marianas, and its off-shore areas; Farallon de Medinilla; Tinian; Saipan; Rota; and Air Traffic Control Assigned Airspace.

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In order to adequately evaluate the potential environmental effects of this proposed action, DoD and the Guam National Guard need to work together in assessing potential impacts to training activities and operations within the joint MIRC study area. It is DoD's desire to formalize this relationship as outlined in CEQ guidelines (40 CFR Part 1501.6).

As defined in 40 CFR 1501.6, DoD is the lead agency for the MIRC EIS. The MIRC EIS is funded through the Navy's Tactical Training Theater Assessment and Planning (TAP) program. COMPACFLT will process the MIRC EIS in accordance with other TAP documents to ensure consistency. The Chief of Navy Operations and the Assistant Secretary of the Navy (Installations and Environment) will provide concurrence prior to public release of the draft and final documents. DoD is requesting that the Joint Force Headquarters - Guam be a cooperating agency as defined in 40 CFR 1501.6.

Per 40 CFR 1501.6 DoD as the lead agency shall:

1. Request the participation of each cooperating agency in the NEPA process at the earliest possible time.
2. Use the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency.
3. Meet with a cooperating agency at the latter's request.

Each cooperating agency shall:

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2. Participate in the scoping process.
3. Assume, on request of the lead agency, responsibility for developing information and preparing environmental analyses, including portions of the environmental impact statement for which the cooperating agency has special expertise.
4. Make available staff support at the lead agency's request to enhance the latter's interdisciplinary capability.
5. Use their own funds.

DoD views this agreement as important to the successful completion of the NEPA process for the MIRC EIS. DoD's goal is to complete the analysis as expeditiously as possible, while using the best scientific information available. The Draft EIS is scheduled for public review in February 2009 with the Final EIS released in October 2009, and the Record of Decision for this EIS published in December 2009. Your assistance will be invaluable in that endeavor.

3500
Ser N00/ 0258
September 6, 2007

We appreciate your consideration of our request and look forward to your response. Should you have any questions or need additional information, please contact Mr. Neil Sheehan, COMPACFLT N01CE13, at (808) 474-7836, or by email at neil.a.sheehan.ctr@navy.mil.

Sincerely,

W. D. FRENCH
Rear Admiral, U.S. Navy

Copy to:
Assistant Secretary of the Navy (Installations & Environment)
Deputy Assistant Secretary of the Navy (Installations & Environment)
Office of Assistant General Council (Installations & Environment)
Commander, Navy Installations Command
Commander, Pacific Fleet N01CE
Commander, Pacific Fleet N7 (Mr. Long)
Naval Facilities Engineering Command, Pacific (Environmental)
Naval Facilities Engineering Command, Marianas (Environmental)

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR, HAWAII 96860-3131

IN REPLY REFER TO:
5090
Ser N01CE1/

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Paul C. Hubbell
Deputy Assistant Deputy Commandant for
Installations and Logistics (Facilities)
Headquarters, U.S. Marine Corps
2 Navy Annex
Washington, DC 20380-1775

Dear Mr. Hubbell:

SUBJECT: MARIANA ISLANDS RANGE COMPLEX ENVIRONMENTAL IMPACT STATEMENT- COOPERATING AGENCY

The U.S. Department of Defense Representative Guam and the Commonwealth of the Northern Mariana Islands (DoD Rep) has initiated an Environmental Impact Statement (EIS) to address the potential environmental impacts of proposed military training, research, development, and testing within the Marina Islands Range Complex (MIRC). As an update to the 1999 EIS for Military Training in the Marianas, the MIRC EIS will analyze military training activities throughout Guam and the Commonwealth of the Northern Marianas Islands (CNMI) on existing DOD facilities and does not include the requirements for proposed deployment of forces to Guam. The Commander, U.S. Pacific Fleet (COMPACFLT), on behalf of the Department of the Navy, is acting as Executive Agent for DoD Rep in completing this EIS. DoD Rep requests your participation in this EIS as a cooperating agency pursuant to the National Environmental Policy Act and associated regulations.

DoD Rep will study the environmental effects of increasing usage and enhancing the capability of the MIRC to achieve and maintain military readiness across all Service components, and to conduct current, emerging, and future training and research, development, testing, and evaluation (RDT&E) operations. The No-Action Alternative is the continuation of the current volume and types of training, RDT&E activities, and base operations that was approved in the 1999 EIS for Military Training in the

Marianas. This includes all multi-Service training activities and operations on military ranges and training areas including: Andersen Air Force Base (Main Base, Northwest Field, Andersen South, and Tarague Beach); Commander, U.S. Naval Force Marianas, and its off-shore areas; Farallon de Medinilla; Tinian; Saipan; and Air Traffic Control Assigned Airspace.

Two action Alternatives are proposed. Alternative 1 includes the activities described in the No-Action Alternative with the addition of an increase in current training operations on existing ranges and training areas to support military units located either permanently or temporarily in the DoD Rep Area of Responsibility (AOR). Alternative 2 would include all the operations described in Alternative 1 with the addition of new types of operations on existing ranges and training areas and adjacent air and ocean areas. A complete description of the alternatives will be provided in the Description of Proposed Action and Alternatives, which is currently being completed.

In order to adequately evaluate the potential environmental effects of this proposed action, DoD components need to work together in assessing potential impacts to training activities and operations within the joint MIRC study area. It is DoD's desire to formalize this relationship as outlined in CEQ guidelines (40 CFR Part 1501.6).

As defined in 40 CFR 1501.6, DoD Rep is the lead agency for the MIRC EIS. The MIRC EIS is funded through the Navy's Tactical Training Theater Assessment and Planning (TAP) program. COMPACFLT will process the MIRC EIS in accordance with other TAP documents to ensure consistency. The Chief of Navy Operations and the Assistant Secretary of the Navy (Installations and Environment) will provide concurrence prior to public release of the draft and final documents. DoD Rep is requesting that the Marine Corps be a cooperating agency as defined in 40 CFR 1501.6.

Per 40 CFR 1501.6, DoD Rep as the lead agency shall:

1. Request the participation of each cooperating agency in the NEPA process at the earliest possible time.

2. Use the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency.

3. Meet with a cooperating agency at the latter's request.

Each cooperating agency shall:

1. Participate in the NEPA process at the earliest possible time.

2. Participate in the scoping process.

3. Assume, on request of the lead agency, responsibility for developing information and preparing environmental analyses, including portions of the environmental impact statement for which the cooperating agency has special expertise.

4. Make available staff support at the lead agency's request to enhance the latter's interdisciplinary capability.

5. Use their own funds.

DoD views this agreement as important to the successful completion of the NEPA process for the MIRC EIS. DoD's goal is to complete the analysis as expeditiously as possible, while using the best scientific information available. The Draft EIS is scheduled for public review in February 2009 with the Final EIS released in October 2009, and the Record of Decision for this EIS published in December 2009. Your assistance will be invaluable in that endeavor.

We appreciate your consideration of our request and look forward to your response. Should you have any questions or need additional information, please contact Mr. Edward Lynch, COMPACFLT N01CE19, at (808) 471-1714, edward.j.lynch.ctr@navy.mil.

Sincerely,

J. P. RIOS
Captain, U.S. Navy

Copy to:
Assistant Secretary of the Navy (Installations & Environment)
Deputy Assistant Secretary of the Navy (Installations & Environment

Office of Assistant General Council (Installations & Environment)
Commander, Naval Installations Command
Commander, Pacific Fleet N7 (Mr. Long)
Commander, Navy Region Marianas
Naval Facilities Engineering Command, Pacific (EV)
Naval Facilities Engineering Command, Marianas (EV)

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ACCEPTANCE LETTERS

Dr. William T. Hogarth
Assistant Administrator
National Oceanic and Atmospheric
Administration (NOAA) Fisheries
1315 East West Highway
Silver Spring, MD 20910

Mr. James Cason
Associate Deputy Secretary of the Interior
Department of the Interior
1849 C Street, NW
Washington, DC 20240

Mr. Paul C Hubbell
Deputy Assistant Deputy Commandant
Installations and Logistics (Facilities)
Headquarters, USMC
2 Navy Annex
Washington, DC 20380-1775

Edith V. Parish
Acting Director
Systems Operations Airspace and Aeronautical Information Management
Air Traffic Organization
Federal Aviation Administration
800 Independence Avenue, SW.
Washington, DC 20591

HQ PACAF/A7N
Colonel William M. Corson
Director, Installations and Mission Support
25 E Street, Suite D-306
Hickam AFB, HI 96853-5412

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910
THE DIRECTOR

SEP 17 2007

Mr. William G. Mattheis
Acting Director, Environmental Readiness Division
Department of the Navy
2000 Navy Pentagon
Washington, DC 20350-2000

Dear Mr. Mattheis:

Thank you for your letter requesting that NOAA's National Marine Fisheries Service (NMFS) be a cooperating agency in the preparation of an Environmental Impact Statement (EIS) to evaluate potential environmental effects of using the Department of the Navy's Mariana Islands Range Complex to achieve and maintain military readiness and to support and conduct training activities and research, development, test, and evaluation events.

We support the Navy's decision to prepare an EIS on these activities and agree to be a cooperating agency, due, in part, to our responsibilities under section 101(a)(5)(A) of the Marine Mammal Protection Act and section 7 of the Endangered Species Act. As agreed upon with Navy staff, NMFS staff will provide comments on draft EISs to the Navy within 28 days of receipt of the document. Otherwise, NMFS will make every effort to support the Navy in the specific ways described in your letter.

If you need any additional information, please contact Ms. Jolie Harrison at (301) 713-2289, ext. 166.

Sincerely,

William T. Hogarth, Ph.D.

THE ASSISTANT ADMINISTRATOR
FOR FISHERIES

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THE ASSOCIATE DEPUTY SECRETARY OF THE INTERIOR
WASHINGTON

NOV 01 2007

Rear Admiral W.D. French, U.S.N.
Department of the Navy
U.S. Defense Representative
PSC 455 Box 152
FPO AP 96540-1000

Dear Admiral French:

Thank you for your September 6, 2007, letter to Secretary Kempthorne requesting the Department of the Interior to become a cooperating agency in the development of an Environmental Impact Statement to address the potential environmental impacts of proposed military training, research and development, and testing within the Mariana Islands Range Complex. We are pleased to accept your request.

The Office of Insular Affairs will be the Department's representative on this effort. Please contact Ms. Faride Komisar at (202) 208-6971, or by email at <faride_komisar@ios.doi.gov> should you have any questions or need additional information.

The Department of the Interior appreciates this opportunity to serve as a cooperating agency and we look forward to working closely with the U.S. Department of Defense during the EIS process.

Sincerely,

James E. Cason

James E. Cason

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Nora –

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EV

DEPARTMENT OF THE NAVY
HEADQUARTERS UNITED STATES MARINE CORPS
2 NAVY ANNEX
WASHINGTON, DC 20380-1775

IN REPLY REFER TO:
5090
LF

05 FEB 2008

J.P. Rios, Capt (USN)
Deputy Fleet Civil Engineer
Commander, Pacific Fleet (N01CE1)
250 Makalapa Drive
Pearl Harbor, HI 96860-3131

Dear Captain Rios:

This letter is in response to your 12 December 2007 letter requesting Marine Corps participation as a cooperating agency in the Mariana Islands Range Complex Environmental Impact Statement. The Marine Corps supports this effort and agrees to be a cooperating agency. We stand by ready to support as necessary, in addition to the staff level personnel already supplying support and data to the Commander, U.S. Pacific Fleet.

My point of contact for this matter is Ms. Mary Hassell. She can be contacted at DSN 695-8240, (703) 695-8232, ext. 3346, or email: mary.hassell@usmc.mil.

Sincerely,

Paul C. Hubbell
Deputy Assistant Deputy Commandant
Installations and Logistics
(Facilities)

Copy to:
ASN (I&E)
DASN (E)
OAGC (I&E)
CNIC
CDR NAVREG MARIANAS
NAVFAC PAC (EV)
NAVFAC MAR (EV)

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U.S. Department
of Transportation
**Federal Aviation
Administration**

System Operations Airspace and
Aeronautical Information Management
800 Independence Ave., SW.
Washington, DC 20591

OCT 9 2007

RECEIVED 19 OCT. 1

Rear Admiral William D. French
U.S. Defense Representative
Guam/Commonwealth of the
Northern Mariana Islands/
Federated States of Micronesia/
Republic of Palau
PSC 455 Box 152
FPO AP 96540-1000

Dear Admiral French:

Thank you for your letter of September 6, 2007 requesting Federal Aviation Administration participation in the environmental impact statement process associated with the proposed military training, research and development, and testing within the Mariana Islands Range Complex (MIRC).

We are pleased to participate as a cooperating agency, in accordance with the National Environmental Policy Act of 1969, as Amended, and the implementing regulations. Since the proposal contemplates activities associated with Special Use Airspace (SUA), the FAA will cooperate following the guidelines described in the Memorandum of Understanding between the FAA and the Department of Defense Concerning SUA Environmental Actions, dated October 4, 2005.

The FAA Western Service Area will be the primary focal point for environmental matters related to this proposal. I have forwarded a copy of this letter and your letter to the System Support Group Manager, Mr. Clark Desing. You can contact him directly at (425) 917-6700.

We look forward to working with the Navy on the environmental process for the proposed MIRC military training activities throughout Guam and the Commonwealth of Northern Mariana Islands.

Sincerely,

Edith V. Parish
Acting Director, System Operations Airspace & Aeronautical Information Management
Air Traffic Organization

cc with attachment: FAA Western Service Area

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DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

MEMORANDUM FOR COMPACFLT (Attn: N01CE, Mr. Larry Foster)

FROM: HQ PACAF/A7N
25 E Street, Suite D-306
Hickam AFB, HI 96853-5412

SUBJECT: Air Force Cooperating Agency Offer of Assistance for Military Training in the Marianas Environmental Impact Statement

1. The Air Force requests to participate as a formal cooperating agency in preparation of an update to the environmental impact statement (EIS) for the Military Training in the Marianas as prescribed in the President's Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) Regulations, 40 CFR §1501.6, Cooperating Agencies. For training purposes, the Air Force has interest in the airspace that overlays Farallon de Medinilla (FDM), which will be assessed in the subject EIS.

2. As a cooperating agency, the Air Force understands it will be expected to participate in various portions of the EIS development. As a cooperating agency, the Air Force asks to:

- Participate in the scoping process;
- Assume responsibility, upon request by your organization, for developing information and preparing analyses on issues for which it has special expertise; and
- Make Air Force staff available for interdisciplinary reviews.

3. The Air Force asks that it be provided appropriate, related information in a timely fashion to ensure unnecessary delays are avoided. In turn, the Air Force commits to respond in a prompt manner. Should you or your staff have further questions regarding this memo, our point of contact is Lt Col Christopher Sharp at (808) 448-0470, christopher.sharp@hickam.af.mil.

WILLIAM M. CORSON, Colonel, USAF
Director, Installations and Mission Support

cc:
HQ USAF/A7CPB
HQ PACAF/A7N

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APPENDIX B

NOTICE OF INTENT
AND
NOTICE OF AVAILABILITY

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Number Of Respondents: 229.

Responses Per Respondent: Approximately 2.

Annual Responses: 453.

Average Burden Per Response: 1 hour (reporting); 3.7 hours (recordkeeping).

Annual Burden Hours: 1,300.

Needs and Uses: DoD needs this information to evaluate whether the purposes of the DoD Pilot Mentor-Protege program have been met. These reports provide data for several reports to Congress required by Section 822 of the National Defense Authorization Act for FY1998 and Section 811 of the National Defense Authorization Act for FY2000.

Affected Public: Business or other for-profit; not-for-profit institutions.

Frequency: Semiannually (mentor); annually (protege).

Respondent's Obligation: Required to obtain or retain benefits.

OMB Desk Officer: Ms. Hillary Jaffe.

Written comments and recommendations on the proposed information collection should be sent to Ms. Jaffe at the Office of Management and Budget, Desk Officer for DoD, Room 10236, New Executive Office Building, Washington, DC 20503.

You may also submit comments, identified by docket number and title, by the following method:

• Federal eRulemaking Portal: *http://www.regulations.gov.* Follow the instructions for submitting comments.

Instructions: All submissions received must include the agency name, docket number and title for this **Federal Register** document. The general policy for comments and other submissions from members of the public is to make these submissions available for public viewing on the Internet at *http://www.regulations.gov* as they are received without change, including any personal identifiers or contact information.

DOD Clearance Officer: Ms. Patricia Toppings.

Written requests for copies of the information collection proposal should be sent to Ms. Toppings at WHS/ESD/Information Management Division, 1777 North Kent Street, RPN, Suite 11000, Arlington, VA 22209–2133

Dated: May 21, 2007.

Patricia L. Toppings,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 07–2712 Filed 5–31–07; 8:45 am]

BILLING CODE 5001–06–M

DEPARTMENT OF DEFENSE

Office of the Secretary

[No. DoD–2007–DARS–0053]

Submission for OMB Review; Comment Request

ACTION: Notice.

The Department of Defense has submitted to OMB for clearance, the following proposal for collection of information under the provisions of the Paperwork Reduction Act (44 U.S.C. Chapter 35).

DATES: Consideration will be given to all comments received by July 2, 2007.

Title, Form, and OMB Number: Foreign Acquisition—Defense Federal Acquisition Regulation Supplement Part 225 and Related Clauses at 252.225; DD Form 2139; OMB Control Number 0704–0229.

Type of Request: Revision.

Number of Respondents: 20,485.

Responses Per Respondent: Approximately 8.

Annual Responses: 154,924.

Average Burden Per Response: 31 hours.

Annual Burden Hours: 48,480 (48,385 reporting hours; 95 recordkeeping hours).

Needs and Uses: DoD needs this information to ensure compliance with restrictions on the acquisition of foreign products imposed by statute or policy to protect the industrial base; to ensure compliance with U.S. trade agreements and memoranda of understanding that promote reciprocal trade with U.S. allies; and to prepare reports for submission to the Department of Commerce on the Balance of Payments Program.

Affected Public: Business or other for-profit; not-for-profit institutions.

Frequency: On occasion.

Respondent's Obligation: Required to obtain or retain benefits.

OMB Desk Officer: Ms Hillary Jaffe.

Written comments and recommendations on the proposed information collection should be sent to Ms. Jaffe at the Office of Management and Budget, Desk Officer for DoD, Room 10236, New Executive Office Building, Washington, DC 20503.

You may also submit comments, identified by docket number and title, by the following method:

• Federal eRulemaking Portal: *http://www.regulations.gov.* Follow the instructions for submitting comments.

Instructions: All submissions received must include the agency name, docket number and title for this **Federal Register** document. The general policy for comments and other submissions from members of the public is to make these submissions available for public viewing on the Internet at *http://www.regulations.gov* as they are received without change, including any personal identifiers or contact information.

DOD Clearance Officer: Ms. Patricia Toppings.

Written requests for copies of the information collection proposal should be sent to Ms. Toppings at WHS/ESD/Information Management Division, 1777 North Kent Street, RPN, Suite 11000, Arlington, VA 22209–2133.

Dated: May 21, 2007.

Patricia L. Toppings,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 07–2713 Filed 5–31–07; 8:45 am]

BILLING CODE 5001–06–M

DEPARTMENT OF DEFENSE

Defense Representative Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia and Republic of Palau; Notice of Intent To Prepare an Environmental Impact Statement/Overseas Environmental Impact Statement for the Mariana Islands Range Complex and To Announce Public Scoping Meetings

AGENCY: Department of Defense Representative Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia and Republic of Palau.

ACTION: Notice.

SUMMARY: Pursuant to Section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969, as implemented by the Council on Environmental Quality Regulations (40 CFR parts 1500–1508), and Executive Order 12114 (Environmental Effects Abroad of Major Federal Actions), the Department of Defense Representative Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia and Republic of Palau (DoD REP) announces its intent to prepare an Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) to evaluate the potential environmental impacts associated with conducting military readiness activities in the Mariana Islands Range Complex (MIRC). The DoD REP proposes to support current and emerging training operations and research, development, testing, and evaluation (RDT&E) activities in the MIRC by: (1) Maintaining baseline

operations at current levels; (2) increasing training operations from current levels as necessary to support Military Service training requirements; (3) increasing and accommodating potential RDT&E operations; and (4) implementing new and enhanced range complex capabilities.

Dates and Addresses: Public scoping meetings will be held on Guam, Saipan, and Tinian to receive oral and/or written comments on environmental concerns that should be addressed in the EIS. The public scoping meetings will be held at the following dates, times, and locations:

1. Monday, June 18, 2007, 5 p.m.–8 p.m., Guam Hilton, 202 Hilton Road, Tumon Bay, Guam.
2. Wednesday, June 20, 2007, 5 p.m.–8 p.m., Hyatt Regency Saipan, Garapan Village (Across from American Memorial Park), Garapan, Saipan, CNMI.
3. Thursday, June 21, 2007, 5 p.m.–8 p.m., Dynasty Hotel, One Broadway, San Jose Village, Tinian, CNMI.

Details of the meetings will be announced in local newspapers. Additional information concerning the scoping meetings will be available on the EIS/OEIS Web page located at: *http://www.MarianasRangeComplexEis.com*.

FOR FURTHER INFORMATION CONTACT: LT Donnell Evans, U.S. Naval Forces Marianas Public Affairs Officer, *ATTN:* Code N00PA, PSC 455 Box 152, FPO AP 96540–1000, Building 3190, Sumay Drive, Santa Rita, Guam 96915; phone (671) 339–2115; e-mail at: *donnell.evans@guam.navy.mil*.

SUPPLEMENTARY INFORMATION: The Commander Naval Forces Marianas (COMNAVMAR) as the Department of Defense Representative Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia and Republic of Palau is the Executive Agent for the Commander United States Pacific Command (USPACOM) on all matters of MIRC management and sustainment. COMNAVMAR coordinates Joint Service planning and use of MIRC ranges and training areas. COMNAVMAR's role is to provide resources, range complex management, and training support to U.S. military forces in the Western Pacific (WESTPAC) Theater.

COMNAVMAR's mission in the MIRC is to support Army, Navy, Marine Corps, Air Force, U.S. Coast Guard, Army Reserves, and Guam National Guard tactical training by maintaining and operating facilities and range infrastructure and by providing services and material. The MIRC consists of multiple ranges and training areas of land, sea space (nearshore and offshore), undersea space, and air space under different controlling authorities in the Territory of Guam, the Commonwealth of the Northern Mariana Islands (CNMI), and surrounding waters.

The mission of USPACOM is to provide interoperable, trained, and combat-ready military forces to support the National Security Strategy of the United States in the WESTPAC Theater. United States military forces from all Services use the MIRC as a training venue to prepare for contingency warfare.

The MIRC is the westernmost military training complex in U.S. territory. The MIRC has range and training area assets in Guam and the Northern Mariana Islands archipelago. Guam is located roughly three quarters the distance from Hawaii to the Philippines, 1,600 miles east of Manila and 1,550 miles southeast of Tokyo. The southern extent of CNMI is located 40 miles north of Guam (Rota Island) and extends 330 miles to the northwest. The CNMI capital, Saipan, is 3,300 miles west of Honolulu and 1,470 miles south-southeast of Tokyo. The location of the MIRC allows for training of U.S. military forces in WESTPAC, without having to return to Hawaii or the continental United States.

The purpose of the Proposed Action is to: Achieve and maintain military readiness using the MIRC to conduct and support current, emerging, and future military training and RDT&E operations on existing DoD lands and ranges and adjacent air and ocean areas; and, upgrade and modernize range complex capabilities to enhance and sustain military training and RDT&E operations and to expand the Services warfare missions.

The Proposed Action stems from the need to: (1) Maintain current levels of military readiness by training in the MIRC; (2) accommodate future increases in operational training tempo on existing ranges and adjacent air and ocean areas in the MIRC and support the rapid deployment of military units and strike groups; (3) achieve and sustain readiness so that the Military Services can quickly surge required combat power in the event of a national crisis or contingency operation consistent with Service training requirements; (4) support the acquisition, testing, training, and fielding of advanced platforms and weapons systems into Service force structure; and, (5) maintain the long-term viability of the MIRC while protecting human health and the environment, enhancing the quality of training, communications, and safety within the range complex.

The EIS/OEIS will consider two action alternatives to accomplish these objectives, in addition to the No-Action Alternative. The No-Action Alternative is the continuation of training operations, RDT&E activities and on-going base operations. This includes all multi-Service training activities and operations on Navy and Non-Navy ranges and training areas including: Andersen Air Force Base (Main Base, Northwest Field, Andersen South, and Tarague Beach); Naval Station Guam and its off-shore areas; Farallon de Medinilla; Tinian; Saipan; and Air Traffic Control Assigned Airspace (ATCAA). Alternative 1 includes the activities described in the No-Action Alternative with the addition of increased training operations as a result of upgrades and modernization of existing ranges and training areas, and of operations on existing ranges that are required to support the relocation of military units to the DoD REP Area of Responsibility (AOR). Alternative 2 would include all the operations described in Alternative 1 with the addition of new operations on existing ranges and training areas and adjacent air and ocean areas with upgraded and modernized capabilities. In addition, Alternative 2 would incorporate the increased operations resulting from increased operational tempo and training event frequency to optimize training throughput in support of current and future contingencies.

Previously, the Navy's Joint Guam Program Office (JGPO) published a Notice of Intent to prepare an EIS/OEIS for the Relocation of U.S. Marine Corps Forces to Guam (**Federal Register**, 72 FR 10186, March 7, 2007). JGPO's proposed EIS/OEIS will examine potential impact from activities associated with the Marine Corps units' relocation from Okinawa, Japan to Guam, including operations, infrastructure changes and training. Since the proposed MIRC EIS/OEIS will cover all DoD training on existing DoD land and operating areas in and around Guam and CNMI, there will be some overlap between the two proposed EIS/OEISs. Therefore, preparation of these documents will be closely coordinated to ensure consistency.

Environmental issues that will be addressed in the EIS/OEIS include but are not limited to: Airspace; biological resources (including marine mammals and threatened and endangered species); cultural resources; health and safety; and noise. The analysis will include an evaluation of direct and indirect impacts, and will account for cumulative impacts.

The DoD REP is initiating the scoping process to identify community concerns and issues that must be addressed in the EIS/OEIS. Federal agencies, Government of Guam and CNMI agencies, the public, and other interested stakeholders are encouraged to provide oral and written comments to the Navy to identify specific issues or topics of concern for consideration in the EIS/OEIS. The DoD REP will hold three public scoping meetings. Each meeting will consist of an informal information session, staffed by Navy representatives. Members of the public can contribute oral or written comments at the scoping meetings or subsequent to the meetings by mail, fax, or e-mail. All comments, oral and written, will receive the same consideration during EIS/OEIS preparation. Written comments on the scope of the EIS/OEIS must be postmarked by July 16, 2007, and should be mailed to: MIRC TAP EIS, 258 Makalapa Drive, Suite 100, Pearl Harbor, HI 96860–3134, *Attention:* EV2. Comments can be faxed to 808–474–5419 or e-mailed to *marianas.tap.eis@navy.mil.*

Dated: May 24, 2007.

L.R. Almand,

Office of the Judge Advocate General, U.S. Navy, Federal Register Liaison Officer.

[FR Doc. E7–10629 Filed 5–31–07; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF DEFENSE

Office of the Secretary

Revised Non-Foreign Overseas Per Diem Rates

AGENCY: DoD, Per Diem, Travel and Transportation Allowance Committee.

ACTION: Notice of revised non-foreign overseas per diem rates.

SUMMARY: The Per Diem, Travel and Transportation Allowance Committee is publishing Civilian Personnel Per Diem Bulletin Number 253. This bulletin lists revisions in the per diem rates prescribed for U.S. Government employees for official travel in Alaska, Hawaii, Puerto Rico, the Northern Mariana Islands and Possessions of the United States. AEA changes announced in Bulletin Number 194 remain in effect. Bulletin Number 253 is being published in the **Federal Register** to assure that travelers are paid per diem at the most current rates.

DATES: *Effective Date:* June 1, 2007.

SUPPLEMENTARY INFORMATION: This document gives notice of revisions in per diem rates prescribed by the Per Diem Travel and Transportation Allowance Committee for non-foreign areas outside the continental United States. It supersedes Civilian Personnel Per Diem Bulletin Number 252. Distribution of Civilian Personnel Per Diem Bulletins by mail was discontinued. Per Diem Bulletins published periodically in the **Federal Register** now constitute the only notification of revisions in per diem rates to agencies and establishments outside the Department of Defense. For more information or questions about per diem rates, please contact your local travel office. The text of the Bulletin follows:

Dated: May 24, 2007.

C.R. Choate,

Alternate OSD Federal Register Liaison Officer, DoD.

BILLING CODE 5001–06–M

Total Burden Cost (operating/maintenance): None.

Dated: January 23, 2009.

Lois Nembhard,

Acting Director, AmeriCorps State and National.

[FR Doc. E9–1972 Filed 1–29–09; 8:45 am]

BILLING CODE 6050–$$–P

CORPORATION FOR NATIONAL AND COMMUNITY SERVICE

Information Collection; Submission for OMB Review, Comment Request

AGENCY: Corporation for National and Community Service.

ACTION: Notice.

SUMMARY: The Corporation for National and Community Service (hereinafter the ''Corporation''), has submitted a public information collection request (ICR) entitled ''AmeriCorps Member Application Form'' to the Office of Management and Budget (OMB) for review and approval in accordance with the Paperwork Reduction Act of 1995, Public Law 104–13 (44 U.S.C. Chapter 35). Copies of this ICR, with applicable supporting documentation, may be obtained by calling the Corporation for National and Community Service, Ms. Amy Borgstrom at (202) 606–6930. Individuals who use a telecommunications device for the deaf (TTY-TDD) may call (202) 565–2799 between 8:30 a.m. and 5 p.m. eastern time, Monday through Friday.

ADDRESSES: Comments may be submitted, identified by the title of the information collection activity, to the Office of Information and Regulatory Affairs, Attn: Ms. Sharon Mar, OMB Desk Officer for the Corporation for National and Community Service, by any of the following two methods within 30 days from the date of publication in this **Federal Register**:

(1) *By fax to:* (202) 395–6974, Attention: Ms. Sharon Mar, OMB Desk Officer for the Corporation for National and Community Service; and

(2) *Electronically by e-mail to: smar@omb.eop.gov.*

SUPPLEMENTARY INFORMATION: The OMB is particularly interested in comments which:

- Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the Corporation, including whether the information will have practical utility;
- Evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;
- Propose ways to enhance the quality, utility, and clarity of the information to be collected; and
- Propose ways to minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, *e.g.*, permitting electronic submissions of responses.

Comments:

A 60-day public comment Notice was published in the **Federal Register** on Wednesday, October 15, 2008. This comment period ended December 15, 2008. Two sets of public comments were received from Corporation grantees. The Corporation gave full consideration to those comments and, for the most part, incorporated their suggested changes in the information collection form.

Description: This Member Application Form will be used by applicants who are interested in serving as AmeriCorps members. The information requested in the application form makes it possible for programs to select members to serve. Programs also use this form as an example that they customize to develop their own recruitment materials. The Corporation also seeks to continue using the current Application Form until the revised Application Form is approved by OMB. The current form is due to expire on January 31, 2009.

Type of Review: Renewal.

Agency: Corporation for National and Community Service.

Title: AmeriCorps Member Application Form.

OMB Number: 3045–0054.

Agency Number: None.

Affected Public: Applicants to serve in AmeriCorps.

Total Respondents: 225,000 applicants.

Frequency: Annually.

Average Time per Response: 1.5 hours to apply.

Estimated Total Burden Hours: 281,250 hours.

Total Burden Cost (capital/startup): None.

Total Burden Cost (operating/maintenance): None.

Dated: January 26, 2009.

Kristin McSwain,

Chief of Program Operations, Corporation for National and Community Service.

[FR Doc. E9–1973 Filed 1–29–09; 8:45 am]

BILLING CODE 6050–$$–P

CORPORATION FOR NATIONAL AND COMMUNITY SERVICE

Sunshine Act Notice

The Board of Directors of the Corporation for National and Community Service gives notice of the following meeting:

DATE AND TIME: Wednesday, February 4, 2009, 10 a.m.–11:30 a.m.

PLACE: Corporation for National and Community Service; 8th Floor; 1201 New York Avenue, NW., Washington, DC 20525.

STATUS: Open.

MATTERS TO BE CONSIDERED:

I. Chair's Opening Remarks and Swearing in of New Member.
II. Consideration of Prior Meeting's Minutes.
III. CEO Report.
IV. Committee Reports.
V. Public Testimony on the Impact of the Economy on National Service Grantees.
VI. Honoring Departing Board Member.
VII. Public Comment.

ACCOMMODATIONS: Anyone who needs an interpreter or other accommodation should notify the Corporation's contact person by 5:00 p.m. Monday, February 4, 2009.

CONTACT PERSON FOR MORE INFORMATION: Lisa Guccione, Senior Policy Advisor, Office of the CEO, Corporation for National and Community Service, 10th Floor, Room 10207, 1201 New York Avenue, NW., Washington, DC 20525. Phone (202) 606–6637. Fax (202) 606–3460. TDD: (202) 606–3472. E-mail: *lguccione@cns.gov.*

Dated: January 27, 2009.

Frank R. Trinity,

General Counsel.

[FR Doc. E9–2115 Filed 1–28–09; 11:15 am]

BILLING CODE 6050–$$–P

DEPARTMENT OF DEFENSE

Defense Representative Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia and Republic of Palau; Notice of Public Hearings for the Mariana Islands Range Complex Draft Environmental Impact Statement/Overseas Environmental Impact Statement

AGENCY: Department of Defense Representative Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia and Republic of Palau.

ACTION: Notice.

SUMMARY: Pursuant to section 102(2)(c) of the National Environmental Policy Act (NEPA); the Council of Environmental Quality (CEQ) Regulations for implementing the procedural provisions of NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500–1508); and Executive Order (EO) 12114, Environmental Effects Abroad of Major Federal Actions, on behalf of the Department of Defense Representative Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia and Republic of Palau (DoD REP), the U.S. Navy (Navy) has prepared and filed with the U.S. Environmental Protection Agency a Draft Environmental Impact Statement/ Overseas Environmental Impact Statement (EIS/OEIS) for the Mariana Islands Range Complex (MIRC) for public release on January 30, 2009.

The National Marine Fisheries Service (NMFS), the U.S. Department of the Interior, Office of Insular Affairs, the Federal Aviation Administration, the United States Marine Corps, and the United States Air Force (USAF) are cooperating agencies in the preparation of this EIS/OEIS.

The Draft EIS/OEIS evaluates the potential environmental impacts associated with the military readiness training; research, development, testing, and evaluation (RDT&E) activities; and associated range capabilities enhancements within the existing MIRC. A Notice of Intent for this Draft EIS/OEIS was published in the **Federal Register** on June 1, 2007 (72 FR 30557).

The Navy will conduct five public hearings to receive oral and written comments on the Draft EIS/OEIS. Federal agencies, state agencies, and local agencies and interested individuals are invited to be present or represented at the public hearings. This notice announces the dates and locations of the public hearings for this Draft EIS/OEIS.

DATES AND ADDRESSES: An open house session will start before the scheduled public hearing at each of the locations listed below and will allow individuals to review the information presented in the MIRC Draft EIS/OEIS. DoD REP, Navy and USAF representatives will be available during the open house sessions to clarify information related to the Draft EIS/OEIS. All meetings will include an open house session from 5 p.m. to 9 p.m. and a formal presentation and public comment period from 7 p.m. to 9 p.m. Public hearings will be held on the following dates and at the following locations:

1. Thursday, February 19, 2009, at the Jesus & Eugenia Leon Guerrero School of Business and Public Administration Building, The Anthony Leon Guerrero Multi-Purpose Room 129, University of Guam, Mangilao, Guam;

2. Friday, February 20, 2009, at the Southern High School Cafeteria, #1 Jose Perez Leon Guerrero Drive, Santa Rita, Guam;

3. Monday, February 23, 2009, at the Multi-Purpose Center in Susupe, Saipan;

4. Tuesday, February 24, 2009, at the Tinian Elementary School Cafeteria, San Jose Village, Tinian;

5. Thursday, February 26, 2009, at the Sinapolo Elementary School Cafeteria, Sinapolo, Rota.

FOR FURTHER INFORMATION CONTACT: Mariana Islands Range Complex EIS, 258 Makalapa Drive, Suite 100, Attn: EV2, Pearl Harbor, HI 96860–3134; e-mail at: *marianas.tap.eis@navy.mil.*

SUPPLEMENTARY INFORMATION: The MIRC Study Area is located in the Western Pacific (WESTPAC) and consists of three primary components: ocean surface and undersea areas; special use airspace (SUA); and training land areas. For the purposes of this EIS/OEIS, the MIRC and the Study Area are the same geographical areas consisting of land areas and offshore areas off the coast of Guam and the Commonwealth of Northern Mariana Islands (CNMI). The ocean surface and undersea areas of the MIRC extend from the international waters south of Guam to north of Pagan, CNMI, and from the Pacific Ocean east of the Mariana Islands to the middle of the Philippine Sea to the west, encompassing 501,873 square nautical miles of open ocean and littorals (coastal areas).

The MIRC Study Area does not include the sovereign territory (including waters out to 12 nautical miles) of the Federated States of Micronesia. Portions of the Marianas Trench Marine National Monument, which was established in January 2009 by Presidential Proclamation under the authority of the Antiquities Act (16 U.S.C. 431), lie within the Study Area. The range complex includes land ranges and training area/facilities on Guam, Rota, Tinian, Saipan, and Farallon de Medinilla (FDM), encompassing 64 square nautical miles of land. SUA consists of Warning Area 517 (W–517), restricted airspace over FDM (R–7201), and Air Traffic Control Assigned Airspace encompassing 63,000 square nautical miles of airspace.

The MIRC is used to support tactical training by the U.S. Military Services (Services), including Army, Navy, Marine Corps, Air Force, Coast Guard, Army Reserves, and Guam National Guard, in the WESTPAC Theater. The proposed action does not involve extensive changes to MIRC facilities, operations, training, or RDT&E capacities. Rather, the proposed action would result in relatively small-scale but critical enhancements to the MIRC that are necessary if the Services are to maintain a state of military readiness commensurate with their national defense mission. The recommended range enhancements, as well as current and future training and testing operations, that have the potential to impact the environment, are the primary focus of the EIS/OEIS.

The purpose for the Proposed Action is to achieve and maintain military readiness using the MIRC to support and conduct current, emerging, and future training and RDT&E activities while enhancing training resources through investment in the ranges.

The need for the Proposed Action is to enable the Services to meet their statutory responsibility to organize, train, equip, and maintain combat-ready forces and to successfully fulfill their current and future global mission of winning wars, deterring aggression, and maintaining freedom of the seas. Activities involving RDT&E are an integral part of this readiness mandate. In this regard, the MIRC furthers the Services' execution of their Congressionally-mandated roles and responsibilities under Title 10 U.S.C. 5062.

To implement this Congressional mandate, the Services need to: (1) Maintain mandated levels of military readiness training in the MIRC; (2) accommodate future increases in training tempo on existing ranges and adjacent air and ocean areas in the MIRC and support the rapid employment of military units or strike groups; (3) achieve and sustain readiness so that the Services can quickly surge required combat power in the event of a national crisis or contingency operation consistent with Service training requirements and airspace requirements for the deployment of future live fire ranges; (4) support the acquisition, testing, training, and fielding of advanced platforms and weapons systems into Service force structure; and, (5) maintain the long-term viability of the MIRC while protecting human health and the environment and enhancing the quality of training, communications and safety within the range complex.

Alternatives in this EIS/OEIS were evaluated to ensure they met the purpose and need, giving due consideration to range complex attributes such as the capability to

support current and emerging training and RDT&E requirements; the capability to support realistic, essential training at the level and frequency sufficient to support the Tactical Training Theater Assessment and Planning Program (TAP); and the capability to support training requirements while following Service Personnel Tempo of Operations guidelines.

The three alternatives analyzed in this EIS/OEIS are: the No Action Alternative—Current training activities; Alternative 1—Increase training, modernization and upgrades; and Alternative 2—Increase major at-sea exercises and training.

The No Action Alternative will continue training and RDT&E activities of the same types, and at the same levels of training intensity as currently conducted, without change in the nature or scope of military activities in the EIS/OEIS study area.

Alternative 1, the Preferred Alternative, is a proposal designed to meet the Services' current and near-term operational training requirements. This is the Preferred Alternative, because it would meet all near-term training requirements by increasing training activities, as a result of upgrades and modernization of existing training areas, and increasing the number of exercises. This alternative also includes increased activities due to meeting new training and capability requirements for personnel and platforms.

Implementation of Alternative 2 would include all the actions proposed for MIRC, including the No Action Alternative and Alternative 1, and new activities related to additional major at-sea exercises.

The decision to be made by the DoD REP is to determine which of the alternatives analyzed in the EIS/OEIS best meets the needs of the Services given that all reasonably foreseeable environmental impacts have been considered.

The Draft EIS/OEIS addresses potential environmental impacts on multiple resources, including but not limited to: water resources; air quality; marine mammals; sea turtles; fish and essential fish habitat; seabirds and shorebirds; cultural resources; regional economy; and public health and safety. The Draft EIS/OEIS identifies aspects of the proposed action that could act as stressors to these resources. The stressors considered for analysis of potential environmental consequences include but are not limited to: Vessel movements; aircraft overflights; non-explosive practice munitions; sonar; and underwater detonations and high explosive ordnance.

No significant impacts are identified for any resource area in any geographic location within the MIRC Study Area that cannot be mitigated, with the exception of exposure of marine mammals to underwater sound. The Navy has requested from NMFS a Letter of Authorization in accordance with the Marine Mammal Protection Act to authorize the incidental take of marine mammals that may result from the implementation of the activities analyzed in the MIRC Draft EIS/OEIS. In accordance with section 7 of the Endangered Species Act, the Navy is consulting with NMFS and U.S. Fish and Wildlife Service for potential impacts to federally listed species.

The MIRC Draft EIS/OEIS has been distributed to Federal, State, and local agencies, elected officials, and other interested individuals and organizations. In addition, copies of the Draft EIS/OEIS are available for public review at the following libraries: University of Guam Robert F. Kennedy Memorial Library, Government Documents Tan Siu Lin Building, UOG Station, Mangilao, GU 96923; Nieves M. Flores Memorial Library, 254 Martyr Street, Hagätňa, GU 96910; Rota Public Library, P.O. Box 879, Rota, MP 96951; Joeten-Kiyu Public Library, P.O. Box 501092, Saipan, MP 96950; and Northern Marianas College Public Library, P.O. Box 459, Tinian, MP 96952.

The Draft EIS/OEIS is also available for electronic public viewing or download at *http://www.MarianasRangeComplexEIS.com.* A paper copy of the Executive Summary or a single CD with the Draft EIS/OEIS will be made available upon written request by contacting Mariana Islands Range Complex EIS, 258 Makalapa Drive, Suite 100, Attn: EV2, Pearl Harbor, HI 96860–3134; e-mail at: *marianas.tap.eis@navy.mil.*

Written comments can be submitted during the open house sessions. Oral statements will be heard and transcribed by a stenographer during the hearing sessions; however, to ensure the accuracy of the record, all statements should be submitted in writing. All statements, both oral and written, will become part of the public record on the Draft EIS/OEIS and will be addressed in the Final EIS/OEIS. Equal weight will be given to both oral and written statements. In the interest of available time, and to ensure all who wish to give an oral statement have the opportunity to do so, each speaker's comments will be limited to three (3) minutes.

If a long statement is to be presented, it should be summarized at the public hearing with the full text submitted either in writing at the hearing; mailed to Mariana Islands Range Complex EIS, 258 Makalapa Drive, Suite 100, Attn: EV2, Pearl Harbor, HI 96860–3134; or e-mailed to *marianas.tap.eis@navy.mil.* In addition, comments may be submitted on-line at *http://www.MarianasRangeComplexEIS.com* during the comment period. All written comments must be postmarked by March 16, 2009, to ensure they become part of the official record. All timely comments will be addressed in the Final EIS/OEIS.

Dated: January 16, 2009.

A.M. Vallandingham,

Lieutenant Commander, Judge Advocate General's Corps, U.S. Navy, Federal Register Liaison Officer.

[FR Doc. E9–2048 Filed 1–29–09; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF DEFENSE

Department of the Army

Availability for Non-Exclusive, Exclusive, or Partially Exclusive Licensing of U.S. Provisional Patent Application Concerning Treatment of the CNS for Status Epilepticus Due to Organophosphate Exposure

AGENCY: Department of the Army, DoD.

ACTION: Notice.

SUMMARY: Announcement is made of the availability for licensing of the invention set forth in U.S. Provisional Patent Application Serial No. 61/104,311 entitled "* * * Treatment of the CNS for Status Epilepticus Due to Organophosphate Exposure," filed October 10, 2008. The United States Government, as represented by the Secretary of the Army, has rights in this invention.

ADDRESSES: Commander, U.S. Army Medical Research and Materiel Command, *ATTN:* Command Judge Advocate, MCMR–JA, 504 Scott Street, Fort Detrick, Frederick, MD 21702–5012.

FOR FURTHER INFORMATION CONTACT: For patent issues, Ms. Elizabeth Arwine, Patent Attorney, (301) 619–7808. For licensing issues, Dr. Paul Mele, Office of Research & Technology Assessment, (301) 619–6664, both at telefax (301) 619–5034.

SUPPLEMENTARY INFORMATION: The invention is a method of post exposure treatment for chemical warfare nerve agent or organophosphate induced seizure/status epilepticus and neuropathology. The method of treatment utilizes a specific blood-brain

APPENDIX C

AGENCY CORRESPONDENCE

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APPENDIX C

AGENCY COORESPONDENCE

1. Mr. P. Michael Payne, Division Chief
   Permits, Conservation, and Education Division
   Office of Protected Resources
   National Marine Fisheries Service (NMFS)
   National Oceanic and Atmospheric Administration
   Letter Dated: November 9, 2007

2. Mr. Patrick Leonard, Field Supervisor
   Pacific Islands Fish and Wildlife Office
   U.S. Fish and Wildlife Service
   Letter Dated: March 26, 2008

3. Ms. Angela Somma
   Chief, Endangered Species Division
   National Marine Fisheries Service (NMFS)
   National Oceanic and Atmospheric Administration
   Letter Dated: April 3, 2008

4. Ms. Angela Somma
   Chief, Endangered Species Division
   National Marine Fisheries Service (NMFS)
   National Oceanic and Atmospheric Administration
   Letter Dated: May 27, 2009

5. Mr. Alberto A. Lamorena V, Director
   Guam Bureau of Statistics and Plans
   Letter Dated: March 18, 2009

6. Dr. John B. Joyner
   Director
   Coastal Resources Management Office
   Letter Dated: March 18, 2009

7. Mr. James Lecky, Director
   Office of Protected Resources
   National Oceanic and Atmospheric Administration
   National Marine Fisheries Service (NMFS)
   Letter Dated: June 23, 2009

8. Mr. Patrick Leonard
   Field Office Supervisor
   U.S. Fish and Wildlife Service
   Pacific Islands Field Office
   Letter Dated: July 17, 2009

9. Mr. Alberto A. Lamorena V
   Director
   Guam Bureau of Statistics and Plans
   Letter Dated: July 23, 2009

10. Mr. William Robinson
    Regional Administrator
    Pacific Islands Regional Office
    National Marine Fisheries Service
    Letter Dated: October 1, 2009

11. Letter From: Patrick Leonard
    Field Supervisor
    United States Department of the Interior
    Fish and Wildlife Service
    Pacific Islands Fish and Wildlife Office
    Letter Dated: May 2, 2008

12. Letter From: Alberto A. Lamorena V, Director
    Bureau of Statistics and Plans
    Government of Guam
    Letter Dated: June 25, 2009 & March 16, 2009

13. Letter From: Loyal Mehrhoff
    United States Department of the Interior
    Fish and Wildlife Service
    Pacific Islands Fish and Wildlife Office
    Letter Dated: August 21. 2009

14. Letter From: William Robinson
    Regional Administrator
    U.S. Department of Commerce
    National Oceanic and Atmospheric Administration
    National Marines Fisheries Service
    Pacific Islands Regional Office
    Letter Dated: September 2, 2009

15. Letter From: Loyal Mehrhoff
    United States Department of the Interior
    Fish and Wildlife Service
    Pacific Islands Fish and Wildlife Office
    Letter Dated: February 22, 2010

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, DC 20350-2000

IN REPLY REFER TO

5090
Ser N456/7U158324
November 9, 2007

Mr. P. Michael Payne
Division Chief
Permits, Conservation, and Education Division
Office of Protected Resources
National Marine Fisheries Service (NMFS)
National Oceanic and Atmospheric Administration

[redacted]

Dear Mr. Payne,

The Commander, U.S. Pacific Fleet (CPF), acting as executive agent for the Department of Defense is preparing an Environmental Impact Statement (EIS)/Overseas EIS (OEIS) to assess the potential environmental impacts associated with sustainable range usage and enhancements within the Mariana Islands Range Complex (MIRC).

The Proposed Action is to sustain, upgrade, modernize, and transform the ranges and training areas within the MIRC and will implement the US Pacific Command's strategic vision for the range complex. The purpose of the Proposed Action is to achieve and maintain military readiness using the MIRC to support current and future training requirements and Research, Development, Training and Evaluation (RDT&E) efforts within the DoD ranges and training areas. The area of the MIRC includes approximately 450,187 square nautical miles of ocean (enclosure 1).

Conduct of certain activities will likely result in acoustic exposure of marine mammals listed under the Marine Mammal Protection Act (MMPA) from Mid-Frequency Active Sonar (MFA) and impulsive sources, and likely requires a Letter of Authorization (LOA) from your office for those applicable activities. As such, the Navy will be submitting an LOA request to your office in the coming months for those applicable activities. It is expected that species for which an LOA is sought will include species listed under the Endangered Species Act (ESA).

Enclosures:

(1) Map of the MIRC study area
(2) Preliminary Draft Description of Proposed Action and Alternatives for the Mariana Island Range Complex Environmental Impact Statement/Overseas Environmental Impact Statement (August 2007)

Copy to (w/ enclosures):
Ms. Angela Somma,
Chief, Endangered Species Division, NMFS

Copy to (w/o enclosures):
OPNAV N43
CPF N01CE
CNMI

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, PACIFIC
258 MAKALAPA DR., STE. 100
PEARL HARBOR, HAWAII 96860-3134

5090.1G03
Ser EV22/ 237
26 MAR 2008

Mr. Patrick Leonard, Field Supervisor
Pacific Islands Fish and Wildlife Office
U.S. Fish and Wildlife Service

Dear Mr. Leonard:

SUBJECT: REQUEST FOR COMMENCEMENT OF SECTION 7, ENDANGERED SPECIES ACT, INFORMAL CONSULTATION REGARDING PROPOSED ACTIONS IN GUAM AND THE COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS

As part of the National Environmental Policy Act process, the Department of the Navy is developing a series of documents and studies considering the possible impacts to species of plants and animals protected by the Endangered Species Act (ESA) which may result from the proposed establishment and operation of the Mariana Islands Range Complex (MIRC) and the relocation of U.S. Marine Corps forces to Guam. Over the past year, we have worked with members of your staff to develop a list of such species and discuss the range of potential impacts, possible design and operational modifications that may reduce adverse impacts, and other related topics, and we thank you for your assistance.

The purpose of this letter is to establish a date-of-record for commencement of informal ESA Section 7 consultation as directed by 50 CFR 402.12 (c). While informal consultation technically began months ago during our conversations and meetings, this letter provides a date-certain for documentation purposes for both of our agencies. This letter also confirms agreement of the attached species list that we created together and received on February 12, 2008.

Biological Assessments are in preparation for the two actions and drafts will be provided for your review when completed. We will continue to work closely at the staff level and appreciate your assistance on these very challenging projects.

Sincerely,

KAREN SUMIDA
Business Line Manager
Environmental
Acting

5090.1G03
Ser EV22/ 237
26 MAR 2008

Enclosure: Federally listed, candidate, and delisted species in the Territory of Guam and Commonwealth of the Northern Mariana Islands

Copy to:
Joint Guam Program Office (JGPO, Ms. Theresa Bernhard)
COMPACFLT (N01CE1, Mr. Larry Foster)
Guam Department of Agriculture (Mr. Paul Bassler)

Federally listed, candidate, and delisted species in the Territory of Guam and Commonwealth of the Northern Mariana Islands.

Species	Protection Status[1]	Territory of Guam	Commonwealth of the Northern Mariana Islands														Citations
			Rota	Aguiguan	Tinian	Saipan	Farallon de Medinilla	Anatahan	Sarigan	Guguan	Alamagan	Pagan	Agrihan	Asuncion	Maug	Uracus	
Mariana Fruit Bat (*Pteropus mariannus*)	T	< 100 (2007)[a]	> 800 (1983)	< 10 (1983)	< 25 (1983)	< 50 (1983)		< ? (2007)	200 (2000)	350 (2000)	200 (2000)	1,500 (2000)	1,000 (2000)	400 (1983)	< 25 (1983)		Wiles et al. 1989, Cruz et al. 2000a-e, C. Kessler, pers. comm. 2007
Little Mariana Fruit Bat (*Pteropus tokudae*)	E	PEX															USFWS 2004
Sheath-tailed Bat (*Emballonura semicaudata*)	C	EX	EX	< 500 (2003)	EX	EX											Esselstyn et al. 2004
Nightingale Reed-warbler (*Acrocephalus luscinia*)	E	EX		PEX	EX	4,200 (1997)					173 (2000)	PEX					USFWS 1998a, Cruz et al. 2000c
Mariana Swiftlet (*Aerodramus bartschi*)	E	> 800 (2006)	EX	> 400 (2002)	EX	5,000 (2005)											Esselstyn et al. 2002, Cruz et al. 2007; A. Brooke pers. comm. 2006
Mariana Crow (*Corvus kubaryi*)	E	10 (2007)	80 pairs (2007)														J. Quitigua pers comm. 2007 Berry et al. 2007
Mariana Common Moorhen (*Gallinula chloropus*)	E	90 (2001)	2 (2001)		41 (2001)	154 (2001)						PEX					Takano and Haig 2004
Guam Micronesian Kingfisher (*Halcyon cinnamomina*)	E	CAP [95][b]															Bahner and Bier 2007
Micronesian Megapode (*Megapodius laperouse*)	E	EX	EX	< 80 (2002)	< 10 (1997)	< 25 (1997)	PEX	PEX	360 (2000)	305 (2000)	< 30 (1992)	134 (2000)	395 (2000)	< 25 (1992)	< 150 (1992)	PEX	USFWS 1998b, Cruz et al. 2000a-e
Guam Rail (*Gallirallus owstoni*)	E	CAP [?]	XP 60-80														P. Wenninger pers. comm. 2007, S. Medina pers. comm. 2007
Guam Bridled White-eye (*Zosterops conspicillatus*)	E	PE															USFWS 2004
Rota Bridled White-eye (*Zosterops rotensis*)	E		1,000 (1999)														Amidon 2000
Tinian Monarch (*Monarcha takatsukasae*)	D				56,000 (1996)												Lusk et al. 2000
Green Sea Turtle (*Chelonia mydas*)	T	NEST	NEST		NEST	NEST						UNK					Berger et al. 2005
Hawksbill Turtle (*Eretmochelys imbricate*)	E	NEST	UNK			UNK											Berger et al. 2005
Mariana Wandering Butterfly (*Vagrans egestina*)	C	PEX?	1 Pop. (1995)														Schreiner and Nafus 1996

Species	Protection Status[1]	Territory of Guam	Commonwealth of the Northern Mariana Islands														Citations
			Rota	Aguiguan	Tinian	Saipan	Farallon de Medinilla	Anatahan	Sarigan	Guguan	Alamagan	Pagan	Agrihan	Asuncion	Maug	Uracus	
Mariana Eight Spot Butterfly (*Hypolimnus oticula*)	C	10 Pop. (1995)				PEX?											Schreiner and Nafus 1996
Humped Tree Snail (*Partula gibba*)	C	> 600 (2006)	<1,600 (1996)	PEX?	PEX?	UNK		PEX?	>100k (2006)		UNK (1994)	UNK (1994)					B. Smith pers. comm. 2006, Bauman 1996, Kurozumi 1994
Langford's Tree Snail (*Partula langfordi*)	C			PEX?													B. Smith pers. comm. 2006
Guam Tree Snail (*Partula radiolata*)	C	22 Pop (2004)															B. Smith pers. comm. 2004
Fragile Tree Snail (*Samoana fragilis*)	C	4 Pop (2006)	1 Pop (1996)														B. Smith pers. comm. 2006, Bauman 1996
Nesogenes rotensis (No Common Name)	E		< 600 (2005)														USFWS 2006
Osmoxylon mariannense (No Common Name)	E		10 (2002)														USFWS 2006
Serianthes nelsonii (Hayun Lagu (Guam), Tronkon guafi (Rota))	E	1 (1992)	121 (1992)														Wiles et al. 1995, A. Brooke pers. comm. 2007

[1] **Federal Listing Status:** T = Threatened, E = Endangered, C = Candidate, and D = Delisted, Undergoing 5 Year Post-Delisting Monitoring

[2] **Population Status:** PEX = Presumed Extinct, UNK = Status Uncertain, CAP = Extirpated in the Wild, Captive Population Established, XP = Non-essential Experimental Population, and NEST = Nesting beaches

[a] Date of population estimate

[b] Population estimate

Migratory Bird Treaty Act, locally listed, IUCN, and other species of concern in the Territory of Guam and Commonwealth of the Northern Mariana Islands.

Species	Protection Status[1]	Territory of Guam	Commonwealth of the Northern Mariana Islands													
			Rota	Aguiguan	Tinian	Saipan	Farallon de Medinilla	Anatahan	Sarigan	Guguan	Alamagan	Pagan	Agrihan	Asuncion	Maug	Uracus
Wedge-tailed Shearwater (*Puffinus pacificus*)	M					X										
White-tailed Tropicbird (*Phaethon lepturus*)	M		X	X	X	X	X	U	X	X	X	X	X	X	X	
Red-tailed Tropicbird (*Phaethon rubricauda*)	M		X	X	X	X	X		X	X		X	X	X	X	X
Masked Booby (*Sula dactylatra*)	M					X	X	U		X					X	X
Brown Booby (*Sula leucogaster*)	M		X	X	X	X	X	U	X	X	X	X	X	X	X	X
Red-footed Booby (*Sula sula*)	M		X				X			X		X		X	X	
Great Frigatebird (Fregata minor)	M						X									
Little Tern (*Sterna albifrons*)	M					X										
Black-naped Tern (*Sterna sumatrana*)	M					U										
Spectacled Tern (*Sterna lunata*)	M					U		U	X	X						
Bridled Tern (*Sterna anaethetus*)	M						X									
Sooty Tern (*Sterna fuscata*)	M					X				X				X		X
Brown Noddy (*Anous stolidus*)	M	X	X	X	X	X	X	U	X	X	X	X	X	X	X	X
Black Noddy (*Anous minutus*)	M			X	X		X			X		X	X		X	
White Tern (*Gygis alba*)	M	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Species	Protection Status[1]	Territory of Guam	Commonwealth of the Northern Mariana Islands													
			Rota	Aguiguan	Tinian	Saipan	Farallon de Medinilla	Anatahan	Sarigan	Guguan	Alamagan	Pagan	Agrihan	Asuncion	Maug	Uracus
Yellow Bittern (*Ixobrychus exilis*)	M	X	X	X	X	X										
Pacific Reef Heron (*Ardea sacra*)	M	X	X	X	X	X	U		U	U	U	X	U	X	U	
White-throated Ground Dove (*Gallicolumba xanthonura*)	G,I,S		X	X	X	X	U		X	X	X	X	X	X		
Mariana Fruit Dove (*Ptilinopus roseicapilla*)	G,I,S		X	X	X	X										
Micronesian Starling (*Aplonis opaca*)	G.I,S	X	X	X	X	X	X	U	X	X	X	X	X	X	X	
Collared Kingfisher (*Halcyon chloris*)	S		X	X	X	X			X		X	X	X	X	X	
Tinian Monarch (*Monarcha takatsukasae*)	C,I				X											
Rufous Fantail (*Rhipidura rufifrons*)	G,S		X	X	X	X										
Micronesian Honeyeater (*Myzomela rubrata*)	G,S		X	X	X	X		?	X	X	X	X	X	X	X	
Bridled White-eye (*Zosterops conspicillatus*)	G,I,S			X	X	X										
Golden White-eye (*Cleptornis marchei*)	I,S			X		X										
Micronesian Gecko (*Perochirus ateles*)	G,C	X	X	?	X	X										
Oceanic Gecko (*Gehyra oceanica*)	G	X	X	X	X	X				X	X	?		X		
Pacific Slender-toed Gecko (*Nactus pelagicus*)	G	X	X		X	?					X	U				
Snake-eyed Skink (*Cryptoblepharus poecilopleurus*)	G	X	X	X	X	X	?	?	X	X	X	U	X	X	X	
Tide-pool Skink (*Emoia atrocostata*)	G		X							X	X	U				

Species	Protection Status[1]	Territory of Guam	Commonwealth of the Northern Mariana Islands													
			Rota	Aguiguan	Tinian	Saipan	Farallon de Medinilla	Anatahan	Sarigan	Guguan	Alamagan	Pagan	Agrihan	Asuncion	Maug	Uracus
Azure-tailed Skink (*Emoia cyanura*)	G	U														
Slevin's Skink (*Emoia slevini*)	G	X	X		X				X		X	U		X		
Moth Skink (*Lipinia noctua*)	G	X	U													
No Common Name (*Succinea guamensis*)	S	X														
No Common Name (*Succinea piratarum*)	I,S	X														
No Common Name (*Succinea quadrasi*)	I,S	X														
Coconut Crab (*Birgus latero*)	S	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Heritiera longipetiolata (Ufa-halomtano)	I,S	X	X		X	X										
Aglaia mariannensis	I	X	X	X	X	X		X	X	X	X	X	X	X		
Cyathea lunulata (Tsatsa)	G	X														
Lycopodium phlegmaria var. *logifolium* (Disciplina Fern)	C	X	X													

[1] **Protection Status:** M = Migratory Bird Treaty Act, I = IUCN Listed VU to CR, C = CNMI Listed, G = Guam Listed, S = Species of Concern (FWS, CNMI)
[2] **Population Status:** X = Present, U = Unknown

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR, HAWAII 96860-3131

IN REPLY REFER TO:
5090
Ser N01CE1/0353
3 Apr 08

Ms. Angela Somma
Chief, Endangered Species Division
National Marine Fisheries Service (NMFS)
National Oceanic and Atmospheric Administration

Dear Ms. Somma:

SUBJECT: REQUEST FOR CONCURRENCE/REVISION ON SPECIES LIST, TECHNICAL ASSISTANCE FOR BIOLOGICAL ASSESSMENT PREPARATION

The Commander, U.S. Pacific Fleet (COMPACFLT), acting as executive agent for the Department of Defense (DoD) is preparing an Environmental Impact Statement (EIS)/Overseas EIS (OEIS) to assess the potential environmental impacts associated with sustainable range usage and enhancements within the Mariana Islands Range Complex (MIRC).

The Proposed Action is to sustain, upgrade, modernize, and transform the ranges and training areas within the MIRC and will implement the US Pacific Command's strategic vision for the range complex. The purpose of the proposed action is to achieve and maintain military readiness using the MIRC to support current and future training requirements and Research, Development, Training and Evaluation (RDT&E) efforts within the DoD ranges and training areas. The area of the MIRC includes approximately 450,187 square nautical miles of ocean (Enclosure 1).

A Biological Assessment (BA) will be prepared in support of the MIRC EIS/OEIS. Although the activities of the Proposed Action do not constitute a major construction activity as defined by the Endangered Species Act, the BA will be prepared in accordance with 50 CFR 402.12(f). This letter includes a list of threatened and endangered species determined to have potential occurrence within, or near, the action areas relevant to the Proposed Action (Enclosure 2). Critical habitat for some species has been defined, but none of the critical habitats

include the Mariana Islands or Guam, and, therefore, critical habitat descriptions are not included here. Primary sources include various marine resource studies relevant to specific range areas.

Other action areas may have species under the mandate of the U.S. Fish and Wildlife Service (USFWS). A separate BA addressing the effects of the Proposed Action on terrestrial species will be submitted to the USFWS Pacific Islands Fish and Wildlife Office.

As per 50 CFR 402.12 (c), the Navy is requesting concurrence on the list of species, as well as possible revisions to the list NMFS deems relevant. If the BA is not commenced after 90 days from receipt of a species/critical habitat list, the Navy will verify the species list with NMFS (as per 50 FR 402.12 (e)).

We appreciate your continued support in helping us to meet our Section 7 responsibilities. My point of contact for this matter is Ms. Julie Rivers at (808) 472-1407 or julie.rivers@navy.mil

Sincerely,

J. P. RIOS
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

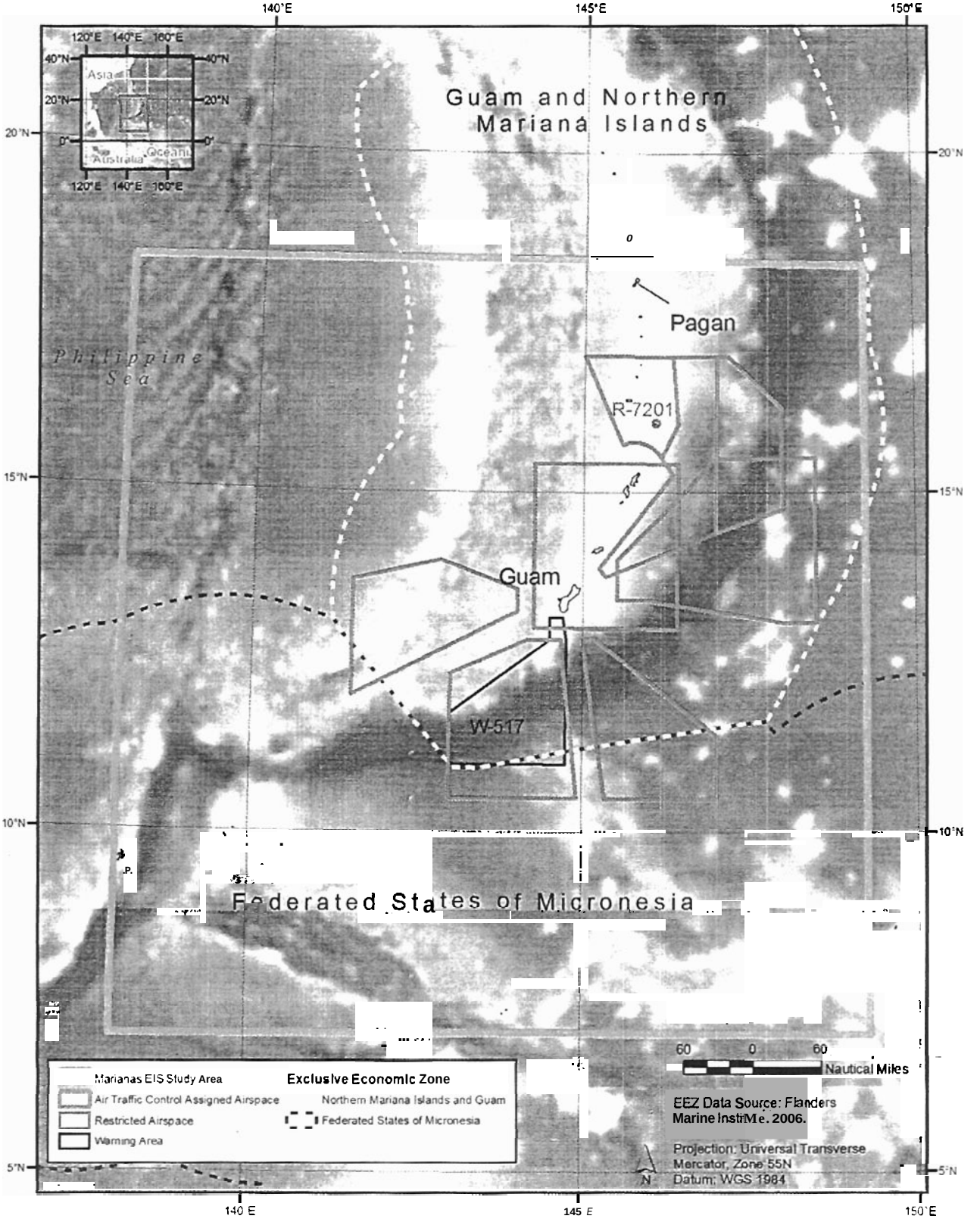
Enclosures:
(1) Map of the MIRC Study Area
(2) Marine Species Lists within the Mariana Islands

Copy to (w/ enclosures):
NMFS Pacific Islands Regional Office
USFWS Pacific Islands Fish and Wildlife Office

SUBJECT: REQUEST FOR CONCURRENCE/REVISION ON SPECIES LIST, TECHNICAL ASSISTANCE FOR BIOLOGICAL ASSESSMENT PREPARATION

Copy to (w/o enclosures):
OPNAV N45
Commander, Navy Region Marianas
Naval Facilities Engineering Command, Pacific (EV)
Naval Facilities Engineering Command, Marianas (EV)

Enclosure (1)
Map MIRC Study Area



ENCLOSURE 2 – Marine Species Identified for Section 7 Consultation with NOAA Fisheries Service

Scientific Name	English Name(s)	Chamorro/ Carolinian Name(s)	Federal Listing Status	Pacific Basin Habitat(s) [1]	Mariana Islands Sighting Records [2]
Marine Mammals					
Megaptera novaeangliae	Humpback whale		Endangered	Antarctic pelagic, in summer: temperate to subtropical. In winter: tropical coastal	(1) Stories of sightings and killings of nine whales in one season were recorded in the southern Mariana Islands (Beane 1905). (2) Two whales were reported about 100 m off the reef margin at Uruno Point on February 25, 1978 (Eads, personal communication cited in GovGuam 2005). (3) Three were sighted off the west coast of Guam on February 13, 1991 (Eads 1991). (4) A group of three was photographed off Saipan in February 1991 (Darling and Mori 1991). **(5)** A mother and calf werg sighted off the east coast of Rota in late February 1991 (Stinson, personal communication cited in GovGuam 2005). (6) A group of six or more was photographed at the entrance to Apra Harbor in January 1996 (1996 Anonymous citation, as cited in GovGuam 2005). (7) One visual sighting of several animals in waters off the coast of Saipan and Tinian on February 18, 2007. Six acoustic detections from towed array and 2 sonobuoy detections In waters of Guam and CNMI between February 6 –April 13,2007 (DoN 2007).
Balaenoptera borealis	Sei whale		Endangered	Oceanic, warm water breeding, cold water feeding grounds between 40 degs North and 20 degree isotherm.	(1) A single specimen was sighted west of Saipan (Masaki 1972). (2) Two tagged sei whales from the Northern Mariana Islands were later killed several hundred kilometers south of the western Aleutian Islands (Horwood 1987) (3) Sixteen total visual sightings; five acoustic detections from towed array and two sonobuoy detections in waters of Guam and CNMI between January 13 – April 13, 2007 (DoN 2007).

Scientific Name	English Name(s)	Chamorro/ Carolinian Name(s)	Federal Listing Status	Pacific Basin Habitat(s) [1]	Mariana Islands Sighting Records [2]
Physeter macrocephalus	Sperm whale		Endangered	Pelagic, offshore, deep water, temperate –tropical.	(1) Sightings throughout the year between 1761 and 1920, especially around the Marianas, Pohnpei, and Kosrae (Townsend 1935) (2) One 15-m albino sperm whale was found beached at Acho Bay, Inarajan, Guam on September 5,1962 (Bordallo 1962). (3) One stranding reported (Kami and Lujan 1976). (4) Eight sperm whales were sighted June 15, 2001, including a young calf with a trailing umbilical cord (as cited in GovGuam 2005). (5) Twenty-three total visual sightings; 60 acoustic detections from towed array and six detections from sonobuoy between January 13 – April 13, 2007 in waters of Guam and CNMI; (DoN 2007). [4]
Balaenoptea physalus	Fin whale		Endangered	In the northern hemisphere, most migrate seasonally from high Arctic feeding areas In summer to low latitude breeding and calving areas in winter.	Rare occurrences possible in the action area (NOAA Fisheries Biological Qpinion, Valiant Shield Training Exercises. 2007).
Balaenoptera musculus	Blue whale		Endangered	Mainly pelagic; generally prefers cold waters and open seas, but young are born In warmer waters of lower latitudes.	Rare occurrences possible in the action area (NOAA Fisheries Biological Opinion, Valiant Shield Training Exercises. 2007).
Sea Turtles					
Chelonia mydas	Green sea turtle	Haggan bed'di / Wong mool	Threatened	Oceanic beaches and coastal strand (for nesting), convergence zones in the open ocean, and benthic feeding grounds in coastal areas.	Known to occur in / around Mariana Islands. Nest site locations on Andersen AFB (Explosive Ordnance Disposal Beach) and Guam NWR.
Dermochelys coriacea	Leatherback sea turtle	Hagan tasi / Wong raaw	Endangered	Oceanic beaches and coastal strand (for nesting), convergence zones in the open ocean, and benthic feeding grounds in coastal areas.	Known to occur in / around Mariana Islands
Caretta caretta	Loggerhead sea turtle	Hagan tasi / Wong	Threatened	Oceanic beaches and coastal strand (for nesting), convergence zones in the open ocean, and benthic feeding grounds in coastal areas.	Known to occur in / around Mariana Islands
Eretmochelys imbricata	Hawksbill sea turtle	Hagan karai / Wong maaw	Endangered	Oceanic beaches and coastal strand (for nesting), convergence zones in the open ocean, and benthic feeding grounds in coastal areas.	Known to occur in / around Mariana islands. Dead individual recovered off Talofofo (Jeff's Pirate Cove), southeast coast of Guam. One visual sighting on the fourth survey leg (DoN 2007).

Scientific Name	English Name(s)	Chamorro/ Carolinian Name(s)	Federal Listing Status	Pacific Basin Habitat(s) [1]	Marlana Islands Slghting Records [2]
Lepidochelys olivacea	Olive Ridley sea turtle		Threatened	Oceanic beaches and coastal strand (for nesting), convergence zones in the open ocean, and benthic feeding grounds in coastal areas.	One stuffed individual sighted in handicraft shop In Saipan in the 1970s (Kolinski, et al. 2001).
Fish Species					
Bolbometopon muricatum	Bumphead parrotfish		Species of Concern	Diurnal: barrier and fringing reefs 3 – 100 feet below surface. Nocturnal: shallow sandy lagoon flats Juveniles associated with seagrass beds Inside lagoons, adults associated with outer lagoons and seaward reefs. Spawning associated with lunar cycle near outer reef slope or near promontories, gutters, or channel mouths.	Nearly extirpated from Guam's reefs (NMFS 2007)
Cheilinus undulatus	Humphead wrasse		Species of Concern	Extremely patchy distribution with adults confined to steep outer reef slopes, channel slopes, and lagoon reefs In water 1- 100 meters deep.	Nearly extirpated from Guam's reefs (NMFS 2007)

1. Habitat sources from GovGuam DAWR (2005) and NOAA Fisheries Service factsheets for Bumphead parrotfish and Humphead wrasse (NMFS 2007).
2. Sighting records from GovGuam DAWR (2005) and Mariana islands Sea Turtle and Cetacean Survey Crulse Report (DoN 2007).

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DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, DC 20350-2000

IN REPLY REFER TO
5090
Ser N456K/9U158820
27 May 2009

Ms. Angela Somma
Division Chief Protected Resources
National Oceanic and Atmospheric Administration
National Marine Fisheries Services (NMFS)
B-SSMC3 Room 13821

Dear Ms. Somma:

The Commander, U.S. Pacific Fleet (CPF) is preparing an Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) to assess the potential environmental impacts associated with sustainable range usage and enhancements within the Navy's Mariana Islands Training Complex (MIRC). Specifically, the proposed action is to sustain, upgrade, modernize, and transform the ranges and training areas within the MIRC and implement the US Pacific Command's strategic vision for the range complex. Through our cooperating agency agreement, the Navy and National Marine Fisheries Services (NMFS) are working together to develop these EISs/OEISs to release for public comment.

In a letter dated November 7, 2007, the Navy requested the NMFS' permit division initiate early consultation in anticipation of submitting a Marine Mammal Protection Act request for rulemaking and Letters of Authorization. In accordance with 50 CFR §401.12(f) the Navy is submitting its Biological Assessment (BA) [Enclosure 1] and is requesting formal consultation pursuant to Section 7(a)(2).

This BA assesses the potential effects of the proposed actions on species protected under the Endangered Species Act (ESA) that potentially occur within the MIRC.

In accordance with 50 CFR §401.14(c), the attached BA includes: (1) a description of the proposed action; (2) descriptions of the specific areas where the proposed action will occur (also called the Study Area); (3) descriptions of the listed species and critical habitat that may be affected by the actions; (4)

the potential effects on listed and proposed species or critical habitat; (5) an analysis of cumulative effects; and (6) measures proposed by the Navy to mitigate potential effects of the proposed action.

Additional technical information regarding the process by which the Navy determined the listed species distribution in these geographic areas is detailed in Enclosure 2. These reports are in a draft stage and would benefit from your staff's input, should any technical errors by identified. We are providing this report as additional relevant technical information for purposes of consultation under the ESA.

My staff point of contact for this matter is Dr. Kelly Brock, who can be reached at 703-604-5420 or via email at kelly.brock@navy.mil; Commander, U.S. Pacific Fleet's point of contact for this matter is Ms. Julie Rivers, who can be reached at (808) 472-1407 or julie.rivers@navy.mil.

Sincerely,

for

Ronald E. Tickle
Head, Operational Environmental
Readiness and Planning Branch
Environmental Readiness Division
(OPNAV N45)

Enclosures:
(1) Biological Assessment for the Mariana Islands Range Complex.
(2) Marine Resource Assessment Update for the Mariana Islands Operating Area (Draft Report August 2005 - CD Copy).

Copy to (w/o enclosures):
DASN(E)
OPNAV N43
CPF NO1CE
CNMI

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR, HAWAII 96860-3131

IN REPLY REFER TO:
5090
Ser N01CE1/0312
18 Mar 09

Mr. Alberto A. Lamorena V
Director
Guam Bureau of Statistics and Plans

Dear Mr. Lamorena:

SUBJECT: FEDERAL CONSISTENCY DETERMINATION FOR THE DEPARTMENT OF DEFENSE ACTIVITIES WITHIN THE MARIANA ISLANDS RANGE COMPLEX (MIRC)

In accordance with the Federal Coastal Zone Management Act, we request your review and concurrence on the Department of Defense Representative Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia and Republic of Palau (DoD Rep) consistency determination based on the assessment provided in the January 2009 MIRC draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) previously provided to you as well as the information contained herein.

As detailed in the draft EIS/OEIS separately provided to you, the proposed federal action is to achieve and maintain military readiness using the MIRC to support and conduct current, emerging, and future training and RDT&E activities, while enhancing training resources through investment in the MIRC. Although the majority of actions proposed to take place within the MIRC are outside the coastal zone or are either at sea in international waters or on Federally-owned lands and submerged lands on military installations and therefore outside of Guam's coastal zone, the DoD Rep is submitting this consistency determination.

As part of the National Environmental Policy Act (NEPA) process, the Navy acting for the DoD Rep, assessed reasonably foreseeable direct and indirect effects on Guam's defined coastal zone, Guam's resources and reviewed relevant management program enforceable policies. A completed Guam Coastal Management Program Assessment form is attached in support of this consistency determination. DoD Rep has determined that

SUBJECT: FEDERAL CONSISTENCY DETERMINATION FOR THE DEPARTMENT OF DEFENSE ACTIVITIES WITHIN THE MARIANA ISLANDS RANGE COMPLEX (MIRC)

based upon an evaluation in light of Guam's applicable enforcement policies there are no adverse direct or indirect (cumulative or secondary) effects on coastal uses or resources and the proposed action and its alternatives are consistent to the maximum extent practicable with the enforceable policies of Guam's CZM Program.

We appreciate your continued support. If you have any questions on this matter, please contact Mr. Edward J. Lynch, at (808) 471-1714 or by email at edward.j.lynch.ctr@navy.mil.

Sincerely,

J. P. RIOS
Captain, U.S. Navy
By direction

Enclosure: Guam Coastal Management Program Assessment Form

Copy to:
Naval Facilities Engineering Command, Pacific (EV)
Naval Facilities Engineering Command, Marianas (EV - Mr. Robert Wescom)

GUAM COASTAL MANAGEMENT PROGRAM

ASSESSMENT FORMAT

DEVELOPMENT POLICIES (DP):

DP1. Shore Area Development

Intent: To insure environmental and aesthetic compatibility of shore area land uses.

Policy: Only those uses shall be located within the Seashore Reserve which: enhance, are compatible with or do not generally detract from the surrounding coastal area's aesthetic and environmental quality and beach accessibility; or can demonstrate dependence on such a location and the lack of feasible alternative sites.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. There would be no effect on Guam-owned shore area lands due to continuing military training conducted on Guam. Training will continue on federally-owned lands and submerged lands, which are not part of Guam's coastal zone.

DP2. Urban Development

Intent: To cluster high impact uses such that coherent community design, function, infrastructure support and environmental compatibility are assured.

Policy: Commercial, multi-family, industrial and resort-hotel zone uses and uses requiring high levels of support facilities shall be concentrated within urban districts as outlined on the Land Use Districting Map.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam and does not involve the development of commercial, multi-family, industrial and resort-hotel zone uses and uses requiring high levels of support facilities.

DP3. Rural Development

Intent: To provide a development pattern compatible with environmental and infrastructure support suitability and which can permit traditional lifestyle patterns to continue to the extent practicable.

Policy: Rural districts shall be designated in which only low density residential and agricultural uses will be acceptable. Minimum lot size for these uses should be one-half acre until adequate infrastructure including functional sewering is provided.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Rural or agricultural districts will not be affected.

DP4. Major Facility Siting

Intent: To include the national interest in analyzing the siting proposals for major utilities, fuel and transport facilities.

Policy: In evaluating the consistency of proposed major facilities with the goals, policies, and standards of the Comprehensive Development and Coastal Management Plans, the Territory shall recognize the national interest in the siting of such facilities including those associated with electric power production and transmission, petroleum refining and transmission, port and air installations, solid waste disposal, sewage treatment, and major reservoir sites.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. The proposed project does not involve construction or siting of major utilities, fuel, or transport facilities. Existing training areas and facilities may be enhanced in support of military training activities and associated construction or facility modification, if any, will be confined to federally-owned lands/submerged lands on Guam.

DP 5. Hazardous Areas

Intent: Development in hazardous areas will be governed by the degree of hazard and the land use regulations.

Policy: Identified hazardous lands, including flood plains, erosion-prone areas, air installations, crash and sound zones and major fault lines shall be developed only to the extent that such development does not pose unreasonable risks to the health, safety or welfare of the people of Guam, and complies with the land use regulations.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Existing training areas and facilities may be enhanced in support of military training activities and associated construction, if any, will be confined to federally-owned lands/submerged lands on Guam. Proposed training activities will also adhere to Department of Defense safety criteria, including those associated with the use and storage of munitions and explosives (quantity/distance criteria), design and maintenance/operation of training ranges, use of airfields (Air Installation Compatible Use Zones), exposure to electromagnetic radiation, and others.

DP 6. Housing

Intent: To promote efficient community design placed where the resources can support it.

Policy: The government shall encourage efficient design of residential areas, restrict such development in areas highly susceptible to natural and manmade hazards, and recognize the limitations of the island's resources to support historical patterns of residential development.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. The proposed project does not involve residential development. Housing for transient military trainees will be provided by the military using existing military housing, temporary housing (e.g. tents) at training venues, or available commercial temporary lodging facilities on Guam.

DP 7. Transportation

Intent: To provide transportation systems while protecting potentially impacted resources.

Policy: The Territory shall develop an efficient and safe transportation system, while limiting adverse environmental impacts on primary aquifers, beaches, estuaries and other coastal resources.

Discussion: The proposed project does not include the development of transportation systems. The proposed project would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. No new transportation systems are proposed. Existing transportation systems within military installations and on Guam will be used to access training venues. Transportation for transient military trainees to training venues will be provided by the military using existing military vehicles on Guam or commercially available rental vehicles.

DP 8. Erosion and Siltation

Intent: To control development where erosion and siltation damage is likely to occur.

Policy: Development shall be limited in areas of 15% or greater slope by requiring strict compliance with erosion, sedimentation, and land use districting guidelines, as well as other related land use standards for such areas.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Existing training areas and facilities may

be enhanced in support of military training activities and associated construction, if any, will be confined to federally-owned lands/submerged lands on Guam. Training restrictions to prevent erosion, sedimentation, and siltation include controlling run on and runoff at training sites, military vehicles to stay on designated corridors with no off-roading allowed, avoiding creating areas of exposed dirt (e.g. vegetation clearing will be conducted in such a manner to leave roots intact), and others.

RESOURCES POLICIES (RP):

RP1. Air Quality

Intent: To control activities to insure good air quality.

Policy: All activities and uses shall comply with all local air pollution regulations and all appropriate Federal air quality standards in order to ensure the maintenance of Guam's relatively high air quality.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Training activities on land may result in temporary, intermittent, short-term emissions but do not include permanent, continuous emission sources that could impair local air quality.

RP2. Water Quality

Intent: To control activities that may degrade Guam's drinking, recreational, and ecologically sensitive waters.

Policy: Safe drinking water shall be assured and aquatic recreation sites shall be protected through the regulation of uses and discharges that pose a pollution threat to Guam's waters, particularly in estuaries, reef and aquifer areas.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Training restrictions to prevent degradation of drinking, recreational and ecologically sensitive waters include controlling run on and runoff at training sites, immediate cleanup of spills, no wash water or brine discharge into Fena Reservoir, nearby streams, and drainage ditches, and other control measures.

RP3. Fragile Areas

Intent: To protect significant cultural areas, and natural marine and terrestrial wildlife and plant habitats.

Policy: Development in the following types of fragile areas shall be regulated to

protect their unique character.

- historical and archeological sites
- wildlife habitats
- pristine marine and terrestrial communities
- limestone forests
- mangrove stands and other wetlands

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Military installations on Guam implement Integrated Cultural Resources Management Plans and Integrated Natural Resources Management Plans in accordance with applicable federal regulations for the preservation and management of historical, archaeological, and natural resources within base boundaries. The Department of Defense has initiated consultation efforts with the US Fish and Wildlife Service and the National Marine Fisheries Service for the project's effects on wildlife and wildlife habitats, including marine mammals, under the Endangered Species Act. The Department of Defense is also coordinating with the State Historic Preservation Officer for a Programmatic Agreement for the preservation of Guam's cultural resources located within military installations, with particular emphasis on cultural resources located in or near training areas.

RP4. Living Marine Resources

Intent: To protect marine resources in Guam's waters.

Policy: All living resources within the territorial waters of Guam, particularly corals and fish, shall be protected from over harvesting and, in the case of marine mammals, from any taking whatsoever.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. The Navy is currently undertaking coral reef protection/enhancement projects as stewards of federally-owned submerged lands on Guam. In addition, the Navy implements reasonable and prudent measures to minimize impacts of incidental take of green sea turtles and hawksbill turtles during training activities at Sumay Cove as defined in the Biological Opinion and Conference Report for Military Training in the Marianas (Log No. 1-2-98-F-07, 4 January 1999) issued by the U.S. Fish and Wildlife Service (USFWS). The Navy has initiated the Endangered Species Act and Marine Mammal Protection Act compliance processes with the USFWS and the National Marine Fisheries Service (NMFS), respectively. The Navy will obtain the appropriate permits from NMFS and USFWS, and a letter of authorization for activities that take place at sea or in water.

RP5. Visual Quality

Intent: To protect the quality of Guam's natural scenic beauty

Policy: Preservation and enhancement of, and respect for the island's scenic resources shall be encouraged through increased enforcement of and compliance with sign, litter, zoning, subdivision, building and related land-use laws. Visually objectionable uses shall be located to the maximum extent practicable so as not to degrade significant views from scenic overlooks, highways and trails.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. All military training activities will be conducted within the boundaries of federal military installations and will have no impact on the aesthetic quality of Guam's scenic views. Solid waste (litter) generated during training activities, which may impair visual quality, will be collected, consolidated and disposed on military landfills in accordance with base solid waste management plans.

RP6. Recreation Areas

Intent: To encourage environmentally compatible recreational development.

Policy: The Government of Guam shall encourage development of varied types of recreational facilities located and maintained so as to be compatible with the surrounding environment and land uses, adequately serve community centers and urban areas and protect beaches and such passive recreational areas as wildlife and marine conservation areas, scenic overlooks, parks and historical sites.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Recreational areas and facilities on federal military installations will continue to be maintained by the military. For those recreational areas and facilities where the public is allowed access, access may be temporarily curtailed during military training activities and restored upon completion of the training exercises.

RP7. Public Access

Intent: To ensure the right of public access.

Policy: The public's right of unrestricted access shall be ensured to all non-federally owned beach areas and all Territorial recreation areas, parks, scenic overlooks, designated conservation areas and their public lands; and agreements shall be encouraged with the owners of private and federal property for the provision of releasable access to and use of resources of public nature located on such land.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, which are restricted-access military installations. No

non-federally owned beach areas, territorial recreation areas, parks, scenic overlooks, designated conservation areas or other public lands would be affected. For security and safety reasons, public access normally allowed (by permit) within military installations may be temporarily curtailed during military training activities and restored upon completion of the training exercise(s).

RP8. Agricultural Lands

Intent: To stop urban types of development on agricultural land.

Policy: Critical agricultural land shall be preserved and maintained for agricultural use.

Discussion The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Therefore urban development of agricultural lands would not occur.

FEDERAL CONSISTENCY

SUPPLEMENTAL INFORMATION FORM

Date: March 16, 2009

Project/Activity Title or Description: MARIANA ISLANDS RANGE COMPLEX

Location: MARIANA ISLANDS

Other applicable area(s) affected, if appropriate:
_____

Est. Start Date:_____Est. Duration: _____

APPLICANT

Name & Title: Department of Defense Representative Guam, Commonwealth of the Northern Marianas Islands, Federated States of Micronesia and Republic of Palau (DoD Rep)
Agency/Organization: _____
Address: _____
_____ Zip Code _____

Telephone No. during business hours:

A/C (___) _____
A/C (___) _____
Fax (___) _____

E-mail Address: _____

AGENT

Name & Title: _____
Agency/Organization: _____
Address: _____
_____ Zip Code _____

Telephone No. during business hours:

A/C (___) _____
A/C (___) _____
Fax (___) _____

E-mail Address: _____

CATEGORY OF APPLICATION (check one only)

(X) I Federal Agency Activity
( ) II Permit or License
( ) III Grants & Assistance

TYPE OF STATEMENT (check one only)

(X) Consistency
( ) General Consistency (Category I only)
( ) Negative Determination (Category I only)
( ) Non-Consistency (Category I only)

APPROVING FEDERAL AGENCY (Categories II & III only)

Agency: _____
_____

Contact Person: _____

Telephone No. during business hours:

A/C (___) _____
A/C (___) _____
Fax (___) _____

FEDERAL AUTHORITY FOR ACTIVITY

Title of Law: Title 10 – Armed Forces, United States Code
Section: Subtitle A – General Military Law, Part III – Training and Education

OTHER TERRITORIAL APPROVALS REQUIRED

Date of: _____

Agency	Type of Approval	Application	Status

GUAM COASTAL MANAGEMENT PROGRAM

ASSESSMENT FORMAT

DEVELOPMENT POLICIES (DP):

DP1. Shore Area Development

Intent: To insure environmental and aesthetic compatibility of shore area land uses.

Policy: Only those uses shall be located within the Seashore Reserve which: enhance, are compatible with or do not generally detract from the surrounding coastal area's aesthetic and environmental quality and beach accessibility; or can demonstrate dependence on such a location and the lack of feasible alternative sites.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. There would be no effect on Guam-owned shore area lands due to continuing military training conducted on Guam. Training will continue on federally-owned lands and submerged lands, which are not part of Guam's coastal zone.

DP2. Urban Development

Intent: To cluster high impact uses such that coherent community design, function, infrastructure support and environmental compatibility are assured.

Policy: Commercial, multi-family, industrial and resort-hotel zone uses and uses requiring high levels of support facilities shall be concentrated within urban districts as outlined on the Land Use Districting Map.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam and does not involve the development of commercial, multi-family, industrial and resort-hotel zone uses and uses requiring high levels of support facilities.

DP3. Rural Development

Intent: To provide a development pattern compatible with environmental and infrastructure support suitability and which can permit traditional lifestyle patterns to continue to the extent practicable.

Policy: Rural districts shall be designated in which only low density residential and agricultural uses will be acceptable. Minimum lot size for these uses should be one-half acre until adequate infrastructure including functional sewering is provided.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Rural or agricultural districts will not be affected.

DP4. Major Facility Siting

Intent: To include the national interest in analyzing the siting proposals for major utilities, fuel and transport facilities.

Policy: In evaluating the consistency of proposed major facilities with the goals, policies, and standards of the Comprehensive Development and Coastal Management Plans, the Territory shall recognize the national interest in the siting of such facilities including those associated with electric power production and transmission, petroleum refining and transmission, port and air installations, solid waste disposal, sewage treatment, and major reservoir sites.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. The proposed project does not involve construction or siting of major utilities, fuel, or transport facilities. Existing training areas and facilities may be enhanced in support of military training activities and associated construction or facility modification, if any, will be confined to federally-owned lands/submerged lands on Guam.

DP 5. Hazardous Areas

Intent: Development in hazardous areas will be governed by the degree of hazard and the land use regulations.

Policy: Identified hazardous lands, including flood plains, erosion-prone areas, air installations, crash and sound zones and major fault lines shall be developed only to the extent that such development does not pose unreasonable risks to the health, safety or welfare of the people of Guam, and complies with the land use regulations.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Existing training areas and facilities may be enhanced in support of military training activities and associated construction, if any, will be confined to federally-owned lands/submerged lands on Guam. Proposed training activities will also adhere to Department of Defense safety criteria, including those associated with the use and storage of munitions and explosives (quantity/distance criteria), design and maintenance/operation of training ranges, use of airfields (Air Installation Compatible Use Zones), exposure to electromagnetic radiation, and others.

DP 6. Housing

Intent: To promote efficient community design placed where the resources can support it.

Policy: The government shall encourage efficient design of residential areas, restrict such development in areas highly susceptible to natural and manmade hazards, and recognize the limitations of the island's resources to support historical patterns of residential development.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. The proposed project does not involve residential development. Housing for transient military trainees will be provided by the military using existing military housing, temporary housing (e.g. tents) at training venues, or available commercial temporary lodging facilities on Guam.

DP 7. Transportation

Intent: To provide transportation systems while protecting potentially impacted resources.

Policy: The Territory shall develop an efficient and safe transportation system, while limiting adverse environmental impacts on primary aquifers, beaches, estuaries and other coastal resources.

Discussion: The proposed project does not include the development of transportation systems. The proposed project would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. No new transportation systems are proposed. Existing transportation systems within military installations and on Guam will be used to access training venues. Transportation for transient military trainees to training venues will be provided by the military using existing military vehicles on Guam or commercially available rental vehicles.

DP 8. Erosion and Siltation

Intent: To control development where erosion and siltation damage is likely to occur.

Policy: Development shall be limited in areas of 15% or greater slope by requiring strict compliance with erosion, sedimentation, and land use districting guidelines, as well as other related land use standards for such areas.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Existing training areas and facilities may

be enhanced in support of military training activities and associated construction, if any, will be confined to federally-owned lands/submerged lands on Guam. Training restrictions to prevent erosion, sedimentation, and siltation include controlling run on and runoff at training sites, military vehicles to stay on designated corridors with no off-roading allowed, avoiding creating areas of exposed dirt (e.g. vegetation clearing will be conducted in such a manner to leave roots intact), and others.

RESOURCES POLICIES (RP):

RP1. Air Quality

Intent: To control activities to insure good air quality.

Policy: All activities and uses shall comply with all local air pollution regulations and all appropriate Federal air quality standards in order to ensure the maintenance of Guam's relatively high air quality.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Training activities on land may result in temporary, intermittent, short-term emissions but do not include permanent, continuous emission sources that could impair local air quality.

RP2. Water Quality

Intent: To control activities that may degrade Guam's drinking, recreational, and ecologically sensitive waters.

Policy: Safe drinking water shall be assured and aquatic recreation sites shall be protected through the regulation of uses and discharges that pose a pollution threat to Guam's waters, particularly in estuaries, reef and aquifer areas.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Training restrictions to prevent degradation of drinking, recreational and ecologically sensitive waters include controlling run on and runoff at training sites, immediate cleanup of spills, no wash water or brine discharge into Fena Reservoir, nearby streams, and drainage ditches, and other control measures.

RP3. Fragile Areas

Intent: To protect significant cultural areas, and natural marine and terrestrial wildlife and plant habitats.

Policy: Development in the following types of fragile areas shall be regulated to

protect their unique character.

- historical and archeological sites
- wildlife habitats
- pristine marine and terrestrial communities
- limestone forests
- mangrove stands and other wetlands

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Military installations on Guam implement Integrated Cultural Resources Management Plans and Integrated Natural Resources Management Plans in accordance with applicable federal regulations for the preservation and management of historical, archaeological, and natural resources within base boundaries. The Department of Defense has initiated consultation efforts with the US Fish and Wildlife Service and the National Marine Fisheries Service for the project's effects on wildlife and wildlife habitats, including marine mammals, under the Endangered Species Act. The Department of Defense is also coordinating with the State Historic Preservation Officer for a Programmatic Agreement for the preservation of Guam's cultural resources located within military installations, with particular emphasis on cultural resources located in or near training areas.

RP4. Living Marine Resources

Intent: To protect marine resources in Guam's waters.

Policy: All living resources within the territorial waters of Guam, particularly corals and fish, shall be protected from over harvesting and, in the case of marine mammals, from any taking whatsoever.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. The Navy is currently undertaking coral reef protection/enhancement projects as stewards of federally-owned submerged lands on Guam. In addition, the Navy implements reasonable and prudent measures to minimize impacts of incidental take of green sea turtles and hawksbill turtles during training activities at Sumay Cove as defined in the Biological Opinion and Conference Report for Military Training in the Marianas (Log No. 1-2-98-F-07, 4 January 1999) issued by the U.S. Fish and Wildlife Service (USFWS). The Navy has initiated the Endangered Species Act and Marine Mammal Protection Act compliance processes with the USFWS and the National Marine Fisheries Service (NMFS), respectively. The Navy will obtain the appropriate permits from NMFS and USFWS, and a letter of authorization for activities that take place at sea or in water.

RP5. Visual Quality

Intent: To protect the quality of Guam's natural scenic beauty

Policy: Preservation and enhancement of, and respect for the island's scenic resources shall be encouraged through increased enforcement of and compliance with sign, litter, zoning, subdivision, building and related land-use laws. Visually objectionable uses shall be located to the maximum extent practicable so as not to degrade significant views from scenic overlooks, highways and trails.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. All military training activities will be conducted within the boundaries of federal military installations and will have no impact on the aesthetic quality of Guam's scenic views. Solid waste (litter) generated during training activities, which may impair visual quality, will be collected, consolidated and disposed on military landfills in accordance with base solid waste management plans.

RP6. Recreation Areas

Intent: To encourage environmentally compatible recreational development.

Policy: The Government of Guam shall encourage development of varied types of recreational facilities located and maintained so as to be compatible with the surrounding environment and land uses, adequately serve community centers and urban areas and protect beaches and such passive recreational areas as wildlife and marine conservation areas, scenic overlooks, parks and historical sites.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Recreational areas and facilities on federal military installations will continue to be maintained by the military. For those recreational areas and facilities where the public is allowed access, access may be temporarily curtailed during military training activities and restored upon completion of the training exercises.

RP7. Public Access

Intent: To ensure the right of public access.

Policy: The public's right of unrestricted access shall be ensured to all non-federally owned beach areas and all Territorial recreation areas, parks, scenic overlooks, designated conservation areas and their public lands; and agreements shall be encouraged with the owners of private and federal property for the provision of releasable access to and use of resources of public nature located on such land.

Discussion: The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, which are restricted-access military installations. No

non-federally owned beach areas, territorial recreation areas, parks, scenic overlooks, designated conservation areas or other public lands would be affected. For security and safety reasons, public access normally allowed (by permit) within military installations may be temporarily curtailed during military training activities and restored upon completion of the training exercise(s).

RP8. Agricultural Lands

Intent: To stop urban types of development on agricultural land.

Policy: Critical agricultural land shall be preserved and maintained for agricultural use.

Discussion The proposed project, military training activities, would continue to take place either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam. Therefore urban development of agricultural lands would not occur.

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DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR, HAWAII 96860-3131

IN REPLY REFER TO:
5090
Ser N01CE1/0310
18 Mar 09

Dr. John B. Joyner
Director
Coastal Resources Management Office

Dear Dr. Joyner:

SUBJECT: COASTAL ZONE MANAGEMENT ACT (CZMA) NEGATIVE DETERMINATION NOTICE, MARIANA ISLANDS RANGE COMPLEX (MIRC) ENVIRONMENTAL IMPACT STATETEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATETEMENT (EIS/OEIS)

The Department of Defense Representative Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia and Republic of Palau (DoD Rep) wishes to inform you of its negative determination under the CZMA for the subject proposed action. As detailed in the draft EIS/OEIS separately provided to you, the proposed federal action is to achieve and maintain military readiness using the MIRC to support and conduct current, emerging, and future training and RDT&E activities, while enhancing training resources through investment in the MIRC.

A federal consistency determination for this action is not required because the proposed action occurs on federal property, in waters for which the use is by law subject solely to the discretion of or which is held in trust by the Federal Government, or is not located within the coastal zone of the Commonwealth of the Northern Mariana Islands (CNMI) as defined by the CZMA. The proposed actions would not have reasonably foreseeable direct or indirect effects on any coastal use or resource of the coastal zone of the CNMI. Federally-leased lands of the CNMI include the island of Farallon de Medinilla (FDM), the Military Lease Area (MLA) on the island of Tinian, land at Tanapag Harbor on the island of Saipan, and the waters over federally controlled submerged lands in the CNMI, all of which form parts of the MIRC.

SUBJECT: COASTAL ZONE MANAGEMENT ACT (CZMA) NEGATIVE DETERMINATION NOTICE, MARIANA ISLANDS RANGE COMPLEX (MIRC) ENVIRONMENTAL IMPACT STATETEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATETEMENT (EIS/OEIS)

The lease of these public lands was enacted under the 1976 *Covenant to Establish a Commonwealth of the Northern Mariana Islands in Political Union with the United States of America*, "made available to the United States by lease to enable it to carry out its defense responsibilities" for an initial period of 50 years with an option to renew the lease for another 50 years. For purposes of evaluating federal consistency of federal activities under the CZMA, these lands have been designated as excluded lands according to the Covenant. In addition, the waters over federally owned submerged lands of the Commonwealth have been designated as excluded lands of the Commonwealth under the CZMA.

A copy of this negative determination is being provided to you under 15 CFR 930.35(3), as the DoD Rep undertook a thorough consistency assessment before arriving at the negative determination. In addition to the draft EIS/OEIS previously submitted, the following is provided to you: 1) detailed description of the proposed project; 2) a description of the project's associated facilities; 3) a description of the combined, cumulative coastal effect of the project; and 4) data and additional information to support the DoD's negative determination.

The Navy welcomes your concurrence with the negative determination. If you have any questions on this matter, please contact Mr. Edward J. Lynch, at (808) 471-1714 or by email at edward.j.lynch.ctr@navy.mil.

Sincerely,

J. P. RIOS
Captain, U.S. Navy
By direction

SUBJECT: COASTAL ZONE MANAGEMENT ACT (CZMA) NEGATIVE DETERMINATION NOTICE, MARIANA ISLANDS RANGE COMPLEX (MIRC) ENVIRONMENTAL IMPACT STATETEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATETEMENT (EIS/OEIS)

Enclosures:
1. Detailed Description of the Proposed Project
2. Description of Associated Project Facilities
3. Description of the Combined, Cumulative Coastal Effect of the Project
4. Additional Information in Support of the DoD's Consistency Determination

Copy to:
Naval Facilities Engineering Command, Pacific (EV)
Naval Facilities Engineering Command, Marianas (EV - Mr. Robert Wescom)

Detailed Description of the Proposed Project

The Military Services propose to implement actions within the Mariana Islands Range Complex (MIRC) to support current, emerging, and future training and research, development, test and evaluation (RDT&E) operations in the MIRC. Lands of the CNMI that are included in the MIRC include the island of Farallon de Medinilla (FDM), the northern two-thirds of the island of Tinian, 144 acres of Tanapag Harbor on Saipan, and non-Department of Defense (DoD) training facilities on Rota. FDM supports live and inert bombing, missile strikes and strafing. Training on Tinian is conducted on two parcels within the Military Lease Area (MLA): the Exclusive Military Use Area (EMUA) and the Leaseback Area (LBA). The MLA supports small unit level through large field exercises and expeditionary warfare operations. Rota provides non-DoD training facilities supporting special warfare training in coordination with local law enforcement on an as requested basis.

Potential actions specific to the CNMI for enhancing training in the MIRC include the following:

- Increased training activities of the types currently being conducted on FDM and Tinian
- Use of inert ordnance at FDM, with a portion of the island to remain available for live-fire
- Installation of Microwave and Data Link Backbone on Tinian
- Use of the commercial port facility at Rota for boat refueling and maintenance associated with forward staging and use of civilian owned properties on a case by case basis for staging Military Operations in Urban Terrain (MOUT) training by Naval Special Warfare (NSW) personnel

Current training operations on FDM, Tinian and Rota are as listed in Table 1.

Table 1

Military Training Activities Conducted at the CNMI		
Farallon de Medinilla	Tinian	Rota
Bombing Exercise (BOMBEX)	Surveillance and Reconnaissance (S&R)	NSW Training
Missile Exercise (MISSILEX)	Field Training Exercises (FTX)	MOUT
Direct Action	Ship to Objective Maneuver (STOM)	
Firing Exercise (FIREX)	Non-Combatant Evacuation Order (NEO)	
Hydrographic Surveys	Assault Support (AS)	
	Direct Action	
	Hydrographic Surveys	
	Combat Search & Rescue (CSAR)	
	Company Level Maneuver	
	Field Carrier Landing Practice (FCLP)	
	Breaching	
	MOUT	
	Amphibious landings	
	Night Vision Goggle (NVG) Training	

Descriptions of the above training events are as follows:

Military Operations in Urban Terrain (MOUT) - MOUT operations encompass advanced offensive close quarter battle techniques used on urban terrain conducted by units trained to a higher level than conventional infantry. Techniques include advanced breaching, selected target engagement, and dynamic assault techniques using organizational equipment and assets. MOUT is primarily an offensive operation, where noncombatants are or may be present.

Surveillance & Reconnaissance (S&R) – S&R are conducted to evaluate the battlefield, enemy forces, and gather intelligence. For training of assault forces, opposition forces (OPFOR) units may be positioned ahead of the assault force and permitted a period of time to conduct S&R and prepare defenses to the assaulting force.

Field Training Exercise (FTX) - An FTX is an exercise where the battalion and its combat and combat service support units deploy to field locations to conduct tactical operations under simulated combat conditions.

Ship to Objective Maneuver (STOM) – STOM is conducted to gain a tactical advantage over the enemy in terms of both time and space. The maneuver is not aimed at the seizure of a beach, but builds upon the foundations of expanding the battlespace.

Non-Combatant Evacuation Order (NEO) - NEO operations are conducted when directed by the Department of State, the Department of Defense, or other appropriate authority whereby noncombatants are evacuated from foreign countries when their lives are endangered by war, civil unrest, or natural disaster to safe havens or to the United States.

Assault Support (AS) – AS Assault Support exercises provide helicopter support for command and control, assault escort, troop lift/logistics, reconnaissance, search and rescue (SAR), medical evacuation (MEDEVAC), reconnaissance team insertion/extract and Helicopter Coordinator (Airborne) (HC(A)) duties. Assault support provides the mobility to focus and sustain combat power at decisive places and times. It provides the capability to take advantage of fleeting battlespace opportunities. There are three levels of assault support: tactical, strategic, and operational.

Direct Action – Direct Action is either covert or overt directed against an enemy force to seize, damage, or destroy a target and/or capture or recover personnel or material. Training operations are small-scale offensive actions including raids; ambushes; standoff attacks by firing from ground, air, or maritime platforms; designate or illuminate targets for precision-guided munitions; support for cover and deception operations; and sabotage inside enemy-held territory. Units involved are typically at the squad or platoon level staged on ships at sea. They arrive in the area of operations by helicopter or small rubber boats across a beach.

Hydrographic Surveys - Hydrographic Reconnaissance is conducted to survey underwater terrain conditions and report findings to provide precise analysis typically in

support of amphibious landings and precise ship and small craft movement through cleared routes. Exercises involve the methodical reconnoitering of beaches and surf conditions during the day and night to find and clear underwater obstacles and to determine the feasibility of landing an amphibious force on a particular beach. Units periodically survey FDM and Tinian to determine the condition of coral around the islands and to detect the presence of unexploded ordnance.

Combat Search & Rescue (CSAR) - CSAR operations train rescue forces personnel the tasks needed to be performed to affect the recovery of distressed personnel during war or military operations other than war. These operations could include aircraft, surface ships, submarines, ground forces (NSW and Marine Corps), and their associated personnel in the execution of training events.

Direct Fires – Direct Fires are used to train personnel in the use of all small arms weapons for the purpose of defense and security. Direct Fire operations are strictly controlled and regulated by specific individual weapon qualification standards.

Bombing Exercise (BOMBEX) – BOMBEX allows aircrews to train in the delivery of bombs and munitions against ground targets. The weapons commonly used in this training on FDM are inert training munitions (e.g., MK-76, BDU-45, BDU-48, BDU-56 and MK-80-series bombs), and live MK-80-series bombs and precision guided munitions (Laser Guided Bombs [LGBs] or Laser Guided Training Round [LGTRs] or Joint Direct Attack Munitions [JDAMS]). Cluster bombs, fuel-air explosives, and incendiary devices are not authorized on FDM. Depleted uranium rounds are not authorized on FDM. BOMBEX exercises can involve a single aircraft, a flight of two, four, or multiple aircraft. The types of aircraft that frequent FDM are attack and fighter aircraft from all services and allied forces when conducting joint combined training exercises. (e.g.FA-18, B-1B, B-2, B-52, JDF F2 and H-60). FDM is an uncontrolled and un-instrumented, laser certified range with fixed targets, which includes CONEX boxes in various configurations within the live-fire zones, and high fidelity anti aircraft missile, armor and gun shape targets within the inert only zone.

Missile Firing Exercises (MISSILEX) - Air-to-ground MISSILEX trains aircraft crews in the use of air-to-ground missiles. On FDM it is conducted mainly by H-60 aircraft using Hellfire missiles and occasionally by fixed wing aircraft using Maverick missiles. A basic air-to-ground attack involves one or two H-60 aircraft. Typically, the aircraft will approach the target, acquire the target, and launch the missile. The missile is launched in forward flight or at hover at an altitude of 300 feet above ground level.

Firing Exercise (FIREX) - FIREX on FDM consists of the shore bombardment of an impact area by Navy guns as part of the training of both the gunners and Shore Fire Control Parties (SFCP). A SFCP consists of spotters who act as the eyes of a Navy ship when gunners cannot see the intended target. From positions on the ground or air, spotters provide the target coordinates at which the ship's crew directs its fire. The spotter provides adjustments to the fall of shot, as necessary, until the target is destroyed. On FDM, spotting may be conducted from the special use 'no fire' zone or provided from

a helicopter platform.

Obstacles/Breaching - Breaching operations train personnel to employ any means available to break through or secure a passage through an enemy defense, obstacle, minefield, or fortification. This enables a force to maintain its mobility by removing or reducing natural and man-made obstacles.

Field Carrier Landing Practice (FCLP) – An FCLP is an exercise where a Navy or Marine Corps pilot practices landings and take-offs from a simulated carrier landing deck which are observed by a landing signal officer who grades or critiques each landing. Airspeed, altitude and power are all precisely choreographed to simulate landing conditions on an aircraft carrier.

Amphibious Landings – Amphibious landings get troops and equipment from ship to shore for subsequent inland maneuvers. Tracked amphibious vehicles and large landing craft are used to deliver troops and equipment from ships. Amphibious attack vehicles cross landing beaches without delay and function as armored personnel carriers during inland maneuvers. Landing craft transport wheeled vehicles, equipment and personnel. Small inflatable boats may also be used to land on beaches to be close enough to deliver swimmers to beaches normally under cover of darkness.

Night Vision Goggle (NVG) Training – NVG training involves using NVGs while flying multiple circular or oblong patterns in the vicinity of a designated airfield to practice landing in a remote airfield with little or no ambient light.

Description of Project Associated Facilities

There are no new permanent project associated facilities proposed in conjunction with continuing military training activities in the CNMI. Runways, roadways, bivouac areas and structures already in place will continue to be used. Only temporary equipment appropriate to a specific training activity will be staged and removed at the conclusion of the training activity.

Description of the Combined, Cumulative Coastal Effect of the Project

FDM

FDM is an uninhabited and undeveloped island on lease to the Federal government and excluded from the CNMI's coastal zone per the Covenant. FDM will continue to be used as an inert and live bombing range. Access to the island, including a 3 mile radius of ocean around the island, is restricted to military personnel only. To provide for public safety a 10 NM access restriction has been proposed to assure safety during certain training events. To limit impacts on FDM, cluster bombs, fuel air explosives, incendiaries, and ordnance greater than 2,000 lbs are not allowed to be used on FDM. Combined, cumulative coastal effects from military training operations involving the intermittent use of FDM as a bombing range are as follows:

Air quality – Minor particulate emissions intermittently generated from the impact of ordnance on the land mass of FDM will continue. Particulate emissions will either be deposited on land or blown away by trade winds and dispersed over the surrounding ocean.

Waste Discharges – Metal debris, inert material from inert ordnance , ordnance residues or munitions constituents, and pyrotechnique residues will be deposited on FDM from bombing practice. Minor amounts of ordnance and pyrotechnique residues result from these materials not being consumed in the detonation and ensuing explosion.

Water Discharges – There are no wastewater discharges associated with training activities involving FDM. Small amounts of ordnance and pyrotechnique residues deposited on FDM may be carried out to the ocean by percolating surface waters from precipitation, however, these residues have low solubility in saltwater and will eventually be dispersed over the vast ocean.

Natural Resources – FDM is sparsely vegetated, except in the interior flat areas where there are dense herbaceous communities. This vegetation supports a small population of the endangered Micronesian megapode, especially on the northern part of the island. In 1999, 10 megapodes were identified on the island. Recent surveys (December 2007) conducted by the Navy identified 21 pairs of megapodes. Mitigation measures specified in previous consultations with the US Fish and Wildlife Service (USFWS) for military training, coupled with restricted access preventing poaching activities, may have benefited megapodes on FDM. Mitigation measures include a no-fire zone on the northern portion of the island. In conjunction with the proposed project, the Navy is in consultation with the USFWS for effects on potentially affected threatened and endangered species within the project area.

Tinian

The northern two-thirds of Tinian is also leased to the Federal government and excluded from the CNMI's coastal zone per the Covenant. The area is designated the Military Lease Area (MLA), which is divided into the Exclusive Military Use Area (EMUA) and

the Leaseback Area (LBA). Existing and proposed military activities described in the project description are limited to the EMUA. Combined, cumulative coastal effects from military training activities within the EMUA are as follows:

Air Quality – Vehicular emissions will be generated from ships, small water craft, and aircraft transiting to and from Tinian during military training activities and from trucks and light-wheeled vehicles while operating within the EMUA. Emissions will be intermittent and short-term, resulting in no significant impact to the air quality of Tinian.

Waste Discharges – Military activities on Tinian will generate domestic waste (trash) which will be collected and consolidated for disposal on Guam. Other potential wastes include unintentional spills of petroleum, oils and lubricants (POL) and expended training materials. To preclude spills of POL and hazardous materials from occurring, all fuel bladders and hazardous material containers brought to Tinian will be staged on existing pavement within berms with impervious liners or secondary containment. Expended training materials (brass, clips and lead) will be collected for handling on Guam.

Water Discharges – Water discharges will be limited to gray water, which will be contained in soakage trenches and pits fitted with grease traps. Aircraft washdowns will not be conducted on Tinian. Oily waste and bilge water will be disposed on facilities available at Guam or Saipan.

Natural Resources – Potential impacts to natural resources on Tinian from military training activities are listed as follows, with the corresponding avoidance measures that are currently being implemented.

Potential Natural Resource Impact	Avoidance Measure
Coral head breakage when operating landing craft air cushion (LCAC) at landing beaches	Land at high tide, one craft at a time. Remain on cushion when over shallow reef
Damage to sea turtle nests	Survey beach area within 6 hours of landing and flag potential turtle nests for avoidance. Restore beach topography after the exercise by smoothing deep ruts
Disturbance and/or harm to T&E species and habitat from offroad vehicles, noise, vegetation clearing, fire-causing activities.	Designation of No Training (NT), No Wildlife Disturbance (NWD) areas. Prohibit vehicular cross-country, off-road travel. Prohibit vegetation clearing in bivouac areas. Implement a fire prevention plan and have available fire fighting equipment and materials.

In addition, the potential for the introduction of BTS to Tinian from Navy boats, military aircraft, and equipment exists. To preclude the introduction of BTS to the island, the Services will continue its practice of thoroughly inspecting boats, aircraft, vehicles, cargo and personnel before deployment to Tinian.

Cultural Resources - Potential impacts to cultural resources on Tinian from military training activities are listed as follows, with the corresponding avoidance measures that are currently being implemented.

Potential Cultural Resource Impact	Avoidance Measure
Vandalism and/or removal of cultural resources	Designation of No Cultural Resource Disturbance (NCRD) areas. Briefing troops on cultural resources prior to training. Notify highest ranking officer when cultural resources are uncovered where digging is allowed
Disturbance or damage to cultural resources present in beach areas during LCAC and other vehicle operations	Designation of NCRD areas within beach areas. Vehicles to stay within roadways and designated ingress and egress areas.

Saipan

Only land navigation training exercises are conducted on Saipan by the Army Reserve on non-DoD property on the northern east side of Saipan. The Army Reserve Center at Garapan does not support field maneuvers. There are no impacts to the CNMI coastal zone resources from land navigation training.

Rota

Naval Special Warfare (NSW) training activities occur on non-DoD lands on Rota on a very limited basis. By special permission from the Mayor of Rota, the Navy uses Angyuta Island near SongSong's West Harbor as a Forward Staging Base/Bivouac Area and conducts boat refueling and maintenance at the commercial harbor. The Navy also conducts MOUT training with local law enforcement on non-DoD land.

Air Quality – Emissions will be generated from small water craft transiting to and from Rota during military training activities. Emissions will be intermittent and short-term, resulting in no significant impact to the air quality of Rota.

Waste Discharges – Navy training on Rota will generate domestic waste (trash) which will be collected and consolidated for disposal on Guam. Other potential wastes include unintentional spills of petroleum, oils and lubricants (POL) and expended training materials. To preclude spills of POL and hazardous materials from occurring, all fuel bladders and hazardous material containers brought to Rota will be staged on existing pavement within berms with impervious liners or secondary containment. Expended training materials (brass, clips and lead) will be collected for handling on Guam.

Water Discharges – Water discharges will be limited to gray water, which will be contained in soakage trenches and pits fitted with grease traps.

Natural Resources –The potential for the introduction of BTS to Rota from Navy boats and equipment exists. To preclude the introduction of BTS to the island, the Navy will continue its practice of thoroughly inspecting watercraft, cargo and personnel before deployment to Rota.

Additional Information in Support of the DoD's Negative Determination

1998 Biological Opinion/Conference Report of the U.S. Fish and Wildlife Service for Programmatic Aerial Bombardment, Naval Gunfire and Small Arms Gunfire at Farallon de Medinilla, Commonwealth of the Marianas Islands

1999 Biological Opinion and Conference Report (Log Number 1-2-98-1-07), Military Training in the Marianas

1999 Programmatic Agreement Among the Commander in Chief, U.S. Pacific Command Representative Guam and the Commonwealth of the Northern Mariana Islands (USCINCPAC REP GUAM/CNMI), the Advisory Council on Historic Preservation, and the CNMI Historic Preservation Officer Regarding Implementation of Military Training on Tinian

COMNAVMARIANASINST 5440.1D. Instructions to Military Commanders of Tinian Deployed Units. 18 November 1996.

COMNAVMARIANASINST 3500.3M. Fleet Operating Areas and Training Facilities – Marianas Area. 18 August 1998.

COMNAVMARIANASINST 5090.10A. Brown Tree Snake Control and Interdiction Plan. 14 February 2005.

COMNAVMARIANASINST 3502.1. Standard Operating Procedures and Regulations for Restricted Area 7201 and Farallon de Medinilla (FDM) Laser Bombing Range. 25 April 2005.

Appendix D-23
Biological Opinion/Conference Report of the U.S. Fish and Wildlife Service for Programmatic Aerial Bombardment, Naval Gunfire, and Small Arms Gunfire at Farallon de Medinilla, Commonweath of the Northern Mariana Islands

BIOLOGICAL OPINION/CONFERENCE REPORT
of the
U.S. FISH AND WILDLIFE SERVICE
for
PROGRAMMATIC AERIAL BOMBARDMENT, NAVAL GUNFIRE, AND SMALL ARMS GUNFIRE AT FARALLON DE MEDINILLA, COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS

April 6, 1998

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United States Department of the Interior

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In Reply Refer To: mri 1-2-98-F-03 APR 6 1998

Melvin N. Kaku
Director, Environmental Planning Division
Department of the Navy
Pacific Division
Naval Facilities Engineering Command
Pearl Harbor, HI 96860-7300

RE: Biological Opinion and Conference Report (Log Number 1-2-98-F-03), Farallon de Medinilla (FDM), Commonwealth of the Northern Mariana Islands (CNMI).

Dear Mr. Kaku:

This represents the biological opinion and conference report of the U.S. Fish and Wildlife Service (Service) in accordance with section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544; Stat. 884), as amended, (Act) regarding potential impacts to the federally endangered Micronesian megapode, *Megapodius laperouse laperouse*, and the proposed threatened Mariana fruit bat, *Pteropus mariannus mariannus*, from proposed programmatic aerial bombardment, naval gunfire, and small arms gunfire. The Department of the Navy (Navy), as the range manager, proposes to use FDM for aerial bombardment, naval gunfire, and small arms gunfire for the next three years (May 1, 1998 to May 1, 2001). In the event that the Mariana fruit bat is listed, the Navy may request that the Service adopt this conference report as a biological opinion under section 7 of the Act, provided that the reinitiation criteria at 50 CFR 402.16 do not apply.

This biological opinion and conference report is based upon 1) the Navy's December 12, 1997, letter requesting formal consultation, 2) information provided in the Service's *Draft Recovery Plan for the Micronesian Megapode* (USFWS 1997), 3) *Endangered and Threatened Wildlife and Plants; Proposed Reclassification From Endangered to Threatened Status for the Mariana Fruit Bat From Guam, and Proposed Threatened Status for the Mariana Fruit Bat From the Commonwealth of the Northern Mariana Islands* (63 FR 14641), 4) the *Draft Recovery Plan for U.S. Pacific Populations of the Green Turtle* and in the *Draft Recovery Plan for U.S. Pacific Populations of the Hawksbill Turtle*, 5) the Service's *Status and Distribution of Marine Turtles on the Island of Tinian, Commonwealth of the Northern Mariana Islands - 1994 & 1995*, 6) literature published on megapodes, fruit bats, green sea turtles, and hawksbill sea turtles, 7) a site visit to FDM on November, 4, 1996, 8) a January 8, 1997, memorandum from Tim Sutterfield (Navy) summarizing the results of a site visit on December 16-17, 1996, 9) a March 24, 1997, memorandum from Tim Sutterfield assessing impacts to the fauna of FDM as a result of the

training activities covered in the Service's January 29, 1997, biological opinion, 10) a July 8-10, 1997, marine resources survey of FDM, 11) an August 21, 1997, memorandum from Melvin Kaku assessing impacts to the fauna of FDM as a result of the training activities covered in the Service's May 16, 1997, biological opinion, 12) a December 1, 1997, memorandum from Melvin Kaku assessing impacts to the fauna of FDM as a result of the training activities covered in the Service's September 11, 1997, biological opinion, 13) personal communication with Tim Sutterfield assessing impacts to megapodes as a result of training activities on FDM outlined in a January 12, 1998, letter to the Service, and 14) a March 20, 1998, memorandum from Melvin Kaku assessing impacts to the fauna of FDM as a result of the training activities carried out at FDM on February 23, 1998.

The log number for this consultation and conference is 1-2-98-F-03. A complete administrative record of this consultation is on file in the Service's Pacific Islands Office in Honolulu, Hawaii.

Consultation History

Farallon de Medinilla has been used as a bombardment range by the Navy and Air Force since at least 1971. An Environmental Assessment was completed for the use of FDM as a bombardment range by the Navy in 1975. The Navy initiated formal consultation with the Service for naval and aerial bombardment of FDM on December 6, 1996, and April 4, 1997, for ship to shore gunnery practice on August 27, 1997, and aerial bombardment and small arms gunfire on December 12, 1997. The Service completed biological opinions for these actions on January 29, 1997, May 16, 1997, September 11, 1997, and December 30, 1997, respectively. In the January 29, 1997, biological opinion the Service authorized incidental take of ten adult or juvenile megapodes, four active megapode nests, one green sea turtle, one hawksbill sea turtle, and four active turtle nests. In the May 16, 1997, biological opinion, the Service determined that take of megapodes was indeterminate and anticipated the loss of all adult and juvenile megapodes and their nests. The sea turtle take remained the same. Both the September 11, 1997, and December 30, 1997 biological opinions concluded that the authorized take in the May 16, 1997, biological opinion had been met and anticipated the loss of any remaining or newly arrived adult and juvenile megapodes and their nests. Neither the September 11, 1997, nor the December 30, 1997, biological opinions authorized take for sea turtles because it was determined during a July 8-10, 1997, marine resources survey conducted by the Navy, the Service, and the National Marine Fisheries Service (NMFS), that the beaches on FDM were unsuitable for sea turtle nesting (Naughton 1997). In all four biological opinions the Service determined that the level of take was not likely to jeopardize the continued existence of the Micronesian megapode and in the January 29, 1997, and May 16, 1997, biological opinions the Service determined that the level of take was not likely to jeopardize the continued existence of the green sea turtle or hawksbill sea turtle. This conference report represents the first consultation of the Navy with the Service in regards to the proposed threatened Mariana fruit bat. The Mariana fruit bat was proposed as threatened within the CNMI on March 26, 1998 (63 CFR 14641).

Beginning with the first FDM training consultation initiated by the Navy on December 6, 1996, the Service has requested that the Navy initiate a programmatic consultation to cover all routine and continuing training activities on FDM. The Service believed that completion of a

programmatic consultation would alleviate the burden of addressing individual training exercises that are similar in nature. This consultation represents the fulfillment of the Service's request. The Navy initiated programmatic section 7 consultation in a letter received on December 12, 1997.

BIOLOGICAL OPINION/CONFERENCE REPORT

Description of the Proposed Action

The Navy proposes to engage in periodic strategic and tactical bombing, naval gunfire, and small boat gunfire over the next three years on FDM, CNMI. Approximate training tempo and ordnance delivered would consist of:

a. Strategic bombing: U.S. Air Force bombers may fly to FDM up to 160 days per year, with up to 2 range sorties per day (320 range sorties). A total of 5 to 612 live and/or inert ordnance may be dropped per month, with lower numbers being more typical.

b. Close air support bombing: Fighter/attack aircraft may drop a maximum of 80 air-to-surface missiles, 840 air-to-surface rockets (400 2.75-inch, 400 5-inch, and 40 AT-4s), and 4,020 conventional high explosive and inert bombs, of which 1,400 would be small (250 to 500 pounds), and 1,240 would be large (1,000 to 2,000 pounds). This ordnance would be delivered over the course of three, three-week U.S. Marine Corps exercises per year, four, five-day exercises in support of aircraft carriers per year, and five annual seven to fourteen day combined forces exercises.

c. Naval gunfire: Naval guns may fire approximately 1,040 5-inch shells and 400 76-millimeter (mm) shells per year. The exercises would probably occur monthly, with each lasting several days.

d. Small arms fire from raider boats: small groups may fire 7.62-mm and .50 caliber sniper rifles (about 50,000 and 600 rounds per year, respectively) as well as 40-mm grenade launchers (2,600 rounds per year) at the cliffs and, indirectly, to the top surface of the island. These exercises would occur approximately four times per year and last one day each.

It is possible that aerial bombardment, naval gunfire, and small arms gunfire will occur at night. Exercises described above will use small caliber arms and will deploy bomb tonnage similar to those exercises covered under the four previous consultations.

As part of the *Conservation Recommendations* in the January 29, 1997, biological opinion, the Service recommended that the Navy consider funding megapode conservation and recovery projects in the Mariana islands. The Navy has agreed to program funding for this project, up to $100,000 per year for three years. Their participation in this program is now included as part of the project description for the programmatic consultation.

Biology and Population Status of the Species

Although the Micronesian megapode and Mariana fruit bat are the only known listed and proposed species to occur on FDM, there are several other rare or sensitive species that have been recorded on FDM. FDM supports colonies of breeding seabirds, including masked boobies (*Sula dactylatra*), brown boobies (*Sula leucogaster*), red-footed boobies (*Sula sula*), great frigatebirds (*Fregata minor*), common noddies (*Anous stolidus*), black noddies (*Anous minutus*), and white terns (*Gygis alba*). FDM is particularly important for great frigatebirds as it is one of only two small breeding colonies known to exist in the Mariana Island chain (Stinson 1994) and for masked boobies because it represents the largest known nesting site for this species in the Mariana Islands (Reichel 1991). FDM also provides habitat for migratory shorebirds, including bristle-thighed curlews (*Numenius tahitiensis*), whimbrels (*Numenius phaeopus*), ruddy turnstones (*Arenaria interpres*), and lesser golden-plovers (*Pluvialis dominica*) (Lusk and Kessler 1996). All of these seabirds and migratory shorebirds are protected under the Migratory Bird Treaty Act of 1918 [16 U.S.C. 703-712; 40 Stat. 755], as amended.

FDM is not known to have any endangered or threatened plants, and only two plant species that might be considered rare or uncommon have been recorded there. Seaside cotton (*Gossypium hirsutum* var. *taitense*) has a patchy distribution throughout the Pacific and bunch grass (*Digitaria gaudichaudii*) has only been recorded approximately twice before in the Marianas (Whistler 1996). No true wetlands are known to occur on the island (Whistler 1996).

Although the beaches on FDM are too small and overwashed to provide sea turtle nesting habitat, sea turtles are known to occur in the waters surrounding FDM (Naughton 1997). Marine mammals are also likely to occur in the waters surrounding FDM (Michael Molina, U.S. Fish and Wildlife Service, personal communication 1998). Both of these species will be covered by the National Marine Fisheries Service in a separate programmatic consultation with the Navy.

a) Micronesian Megapode

The Micronesian megapode is the only species addressed in this biological opinion that is currently listed. The Micronesian megapode was listed as endangered on June 2, 1970 (35 FR 8491). This species formerly occurred on all of the islands in the Marianas archipelago (Figure 1) but was extirpated from Guam, Rota, and Saipan in the 19th and early 20th centuries. Currently, it is found on 12 islands with population estimates as follow: 10-15 megapodes on the island of Aguiguan, less than 10 on Tinian, 10-25 on Saipan, less than 10 on FDM, 200-300 on Anatahan, 545-810 on Sarigan, 500 on Guguan, less than 30 on Alamagan, 50-100 on Pagan, less than 25 on Asuncion, 50-150 on Maug, and an unknown number on Agrihan. Recent estimates yield a total of about 1,440 to 1,975 birds (USFWS 1997) for the entire archipelago.

The Micronesian megapode is a small, pigeon-sized bird in the family Megapodiidae, a family comprised of seven genera found only in the Australasian region. Members of this family are known as "incubator birds" because of their reliance on external heat sources, such as solar energy, volcanic activity, or microbial decay, to incubate their eggs (Clark 1964). Micronesian megapodes apparently use both burrow nesting and mound building in egg incubation (USFWS

1997), are believed to be monogamous, and may defend a territory of approximately one hectare (ha) on a year-round basis (Glass and Aldan 1988). Exact nesting seasons for this subspecies are not known; however, nesting probably occurs year-round on some of the Mariana Islands and seasonally on others, depending upon the heat sources used for incubation (USFWS 1997). These birds are omnivorous and have been observed to feed on seeds, beetles, ants, other insects, and plant matter (Glass and Aldan 1988, Stinson 1993).

Historical extirpations of Micronesian megapodes on Guam, Rota, Tinian, and Saipan were likely due to overexploitation by humans and habitat losses associated with agricultural practices and introduced ungulates. Loss of habitat through the effects of vulcanism is also known to have caused serious declines. Loss of habitat due to development projects and predation by introduced monitor lizards, feral dogs, cats, rats, and pigs are known current threats to this subspecies. Perhaps the most serious potential threat, however, is the possible establishment of the brown tree snake (*Boiga irregularis*) on islands other than Guam in the Marianas archipelago.

b) Mariana Fruit Bat

The Mariana fruit bat was proposed as threatened throughout the Marianas archipelago on March 26, 1998 (63 FR 14641). Should this listing action go final, the fruit bats on Guam, which are currently listed as endangered (49 FR 33881) will be downlisted to threatened and all other fruit bats in the Marianas archipelago will be protected as threatened species. Although the status of the Mariana fruit bat prior to the 20th century is unknown, it likely occurred throughout the Mariana Islands and was probably common on the larger southern islands in the archipelago. Currently, there are estimated to be between 200 and 750 animals on Guam (Wiles 1996, Wiles et al. 1995), 25 to 125 animals on each of the islands of Aguijan, Saipan, and Tinian (Lemke 1984, Wiles 1996, Worthington and Taisacan 1996, Marshall et al. 1995), 1,000 on Rota (Worthington and Taisacan 1996), and a minimum of 7,450 bats on the smaller islands north of Saipan (Anonymous 1984, Wiles et al. 1989). Bats may be uncommon on some of the smaller islands such as Maug, Uracus, and FDM, but are known to occur on all of them (USFWS 1998). Based on these figures, the total population for the Mariana Islands is estimated to be at least 8,725 animals, although this figure is based on very rough estimates from the northern Mariana Islands. Evidence indicates that bats move regularly between the larger southern islands and at least annually between the more remote northern islands (Wiles and Glass 1990, Worthington and Taisacan 1996, Wiles et al. 1989, G. Wiles, pers. comm. 1997). For the purposes of conservation, individual island subpopulations of fruit bats in the Mariana islands should be considered and managed as one contiguous population (Lemke 1986, USFWS 1990, Wiles and Glass 1990, Worthington and Taisacan 1996).

The Mariana fruit bat is a medium-sized fruit bat in the family Pteropididae weighing 0.66 to 1.15 pounds (330 to 577 grams) and has a forearm length ranging from 5.3 to 6.1 in (13.4 to 15.6 cm); males are slightly larger than females (USFWS 1998). The rounded ears and large eyes give a canine-like appearance, giving rise to the nickname "flying foxes." The Mariana fruit bat is highly colonial, forming colonies of a few to over 800 animals (Pierson and Raincy 1992, Wiles 1987a, Worthington and Taisacan 1995). The bats group themselves into harems (one male and

two to 15 females) or bachelor groups (predominately males); or reside as single males on the edge of the colony (Wiles 1987a). Reproduction is believed to occur throughout the year on Guam, with no apparent peak in births (Wiles 1987a). Female bats of this family generally have one young per year, resulting in a slow recovery rate when populations are reduced in numbers (Pierson and Raincy 1992). Mariana fruit bats forage and roost primarily in native forest, and occasionally in coconut groves and strand vegetation (Wiles 1987b, Worthington and Taisacan 1996). At least 22 plant species are used as food sources by the Mariana fruit bat, including fruits of 17 species of plants, the flowers of seven, and leaf stems and twig tips of Artocarpus spp. (USFWS 1990, Wiles 1987a).

Fruit bat populations on Guam have been reduced possibly due to the introduction of firearms (Coultas 1931) and the brown tree snake (Wiles 1996, Wiles et al. 1995). Loss of habitat through the effects of typhoons, development projects, and the introduction of feral rats, pigs, and goats has also contributed to the decline of this species throughout the Marianas (Kessler 1997, Marshall et al. 1995, USFWS 1998). Throughout both the inhabited southern and uninhabited northern islands, poaching continues to be one of the most important factors in the decline of the Mariana fruit bat (Glass and Taisacan 1988, Lemke 1992b, Marshall et al.1995, USFWS 1990, Worthington and Taisacan 1996, UFWS 1998).

Environmental Baseline

The environmental baseline describes the status of the species and factors affecting the environment of the species or critical habitat in the proposed action area contemporaneous with the consultation in process. The baseline includes State, local, and private actions that affect a species at the time the consultation begins. Unrelated Federal actions that have already undergone formal or informal consultation are also a part of the environmental baseline. Federal actions within the action area that may benefit listed species or critical habitat are also included in the environmental baseline.

a) Micronesian Megapode

A total of four megapodes were discovered on FDM during a site visit on November 4, 1996 (Lusk and Kessler 1996). Two megapodes were found on the island during a Navy site visit on December 17, 1996 (Figure 2) (Sutterfield *in lit.* 1997). The size of the island, 0.7 km^2, led the Service to estimate that at the time of the 1996 site visit there were likely no more than ten megapodes on the island. This number represents less than 1.0% of the total estimated population within the Marianas archipelago. Aerial and naval bombardment of the island since the 1996 site visit has likely decreased the numbers of megapodes on the island, but exact loss of megapodes is indeterminate due to inability to visit the island. Megapodes may have emigrated to FDM since 1996, or reproduction on the island may have occurred since then, but recruitment levels through either of these avenues has not been determined. In regards to immigration, the nearest island to FDM with a substantial megapode population, Anatahan, is approximately 50 miles away. No nesting has been recorded on FDM, but the possibility does exist.

b) Mariana Fruit Bat

Two fruit bats were observed roosting in low shrubs on FDM by Tim Sutterfield, Fish and Wildlife Biologist for the Navy, during a site visit in December 1996 (Sutterfield *in lit.* 1997). These two bats probably do not represent a permanent roosting or breeding colony. Although some of the vegetation on the island may provide forage for bats, the low, shrubby nature of the vegetation makes it unlikely that bats utilize FDM for more than a temporary roosting site during travel between larger islands. No roosting or flying bats have been reported from FDM during other site visits or during pre- or post-training helicopter surveys, as would be expected if large numbers of bats were utilizing FDM on a regular basis. The two bats observed on FDM represent a minute fraction of the total population for the Mariana islands.

The Navy has conducted bombing exercises on FDM regularly over the past 20 years and intends to continue to do so in the future. Such exercises occurred in January, May, and September 1997 (SOCEX exercises scheduled for January/February 1998 were canceled). Before and after the January 1997, and May 1997, exercises, Tim Sutterfield conducted helicopter surveys in accordance with the Terms and Conditions of the January 29, 1997, and May 16, 1997, biological opinions. A helicopter survey was conducted by a Navy Fish and Wildlife Biologist before the September exercise in accordance with the September 11, 1997, biological opinion, and a fixed-wing aircraft survey was conducted by a Navy biologist after the exercise. None of the surveys revealed any direct evidence of death or injury to megapodes or fruit bats. However, observations of megapodes on FDM indicate that they are likely to remain underneath brushy cover and, therefore, deaths or injury from either direct strikes or indirectly from shrapnel would be difficult to detect from aerial surveys. Death or injury to fruit bats would be equally difficult to ascertain from aerial surveys for similar reasons. On-the-ground surveys are not permitted by the Navy due to the high incidence of unexploded ordnance distributed over the island.

Effects of the Action

The primary concerns of the Service with regard to the effects of aerial bombardment and small arms gunfire practice on the Micronesian megapode and Mariana fruit bat are (1) direct death of megapodes and fruit bats, (2) destruction or abandonment of active megapode nests, (3) abandonment of juvenile fruit bats by mothers, and (4) destruction of required foraging, roosting, and/or nesting habitat. The potential for all of these effects was apparent when on August 2, 1997, the Navy conducted post-bombardment surveys of FDM in accordance with the terms and conditions set forth in the Service's May 16, 1997, biological opinion. As detailed in the Navy's August 21, 1997, memorandum, 25 to 50 new bomb craters were observed and a large section of the central northern portion of the island, an area believed to represent megapode habitat, was "burned to bare earth" (Kaku *in lit.* 1997). The Service believes the August 2, 1997, survey to be representative of the type of damage that can occur during aerial bombardment, naval gunfire, and/or from small arms fire such as grenade launchers or anti-tank rockets. Although fruit bats are strong fliers and likely to abandon the island once bombardment begins, there still exists the strong possibility of death or injury to roosting bats from training activities.

The impact areas for aerial bombardment, naval gunfire, and small arms gunfire cover the entire

area of FDM. Therefore the Service anticipates the possible direct death of any remaining megapodes and destruction of their nests, and the death of any fruit bats occurring on the island during the next three years of training.

Cumulative Effects

Cumulative effects include the effects of future State, local, or private actions that are reasonably certain to occur in the area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. The Service has not identified any cumulative effects in the project area that may impact Micronesian megapodes or Mariana fruit bats.

Conclusion

After reviewing the current status of the Micronesian megapode and Mariana fruit bat, the environmental baseline of these species in the action area, and the effects of the proposed action, including cumulative effects, it is the Service's biological opinion that aerial bombardment, naval gunfire, and small arms gunfire over the next three years is not likely to jeopardize the continued existence of the Micronesian megapode or Mariana fruit bat. No critical habitat has been designated for these species; therefore, none will be affected.

INCIDENTAL TAKE

Sections 4(d) and 9 of the Act, as amended, prohibit the taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct) of a listed species of fish and wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in the death or injury to listed species by significantly impairing behavioral patterns, such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement. The measures described below are non-discretionary and must be implemented by the Navy in order for the exemption in section 7(o)(2) to apply.

The Navy has a continuing duty to regulate the activity that is covered by this incidental take statement. If the Navy fails to adhere to the terms and conditions of the incidental take statement the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The Service believes that the last two military exercises, which occurred from July 21 to August 1, 1997, and from September 12 to 13, 1997, may have resulted in the taking of all the megapodes that occurred on FDM at the time of the bombing and gunnery practice. Such taking

likely took the form of direct death or injury, harm and harassment. We, therefore, believe that the level of incidental take authorized in biological opinion #1-2-97-F-05 and biological opinion #1-2-97-F-08 has likely been met. The military exercise covered under the December 30, 1997, biological opinion (#1-2-98-F-02) was not conducted. We anticipate that any megapodes still present on FDM, or that may colonize the island prior to the onset of any of the military exercises covered under this biological opinion over the next three years, may also be incidentally taken. We also anticipate that any bats present on the island at the time of commencement of military activities covered under this conference report over the next three years may also be incidentally taken. However, because the inability to conduct on-the-ground surveys precludes exact analysis, the Service authorizes take for both megapodes and bats at an indeterminate level.

Effect of the Take

The Service has determined that this level of impact is not likely to result in jeopardy to the Micronesian megapode or Mariana fruit bat because, even if all of the megapodes and/or bats are extirpated from FDM, such losses do not represent a threat to the stability of the overall populations of the species in the Marianas archipelago.

Reasonable and Prudent Measure

The reasonable and prudent measure, with its implementing terms and conditions, is designed to minimize the impacts of the incidental take that might otherwise result from the proposed action. With implementation of this measure, the Service believes that take of Micronesian megapodes and Mariana fruit bats will be minimized.

The Navy will minimize take of adult and juvenile megapodes and fruit bats, and minimize disruption to breeding activities (including destruction of any active megapode nests) during project implementation.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, it is mandatory that the Navy comply with the following term and condition, which implements the reasonable and prudent measure described above:

(1) The Navy shall restrict their impact zone to the central interior portion and/or southern tip of the island and western cliff faces, to the extent possible.

(2) The Navy shall prohibit the use of cluster bombs in training on FDM.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

Loss of even small numbers of megapodes and their nests or fruit bats slows the recovery of these species and represents an adverse effect. Further, destruction of nesting, foraging, and/or roosting habitat for megapodes and fruit bats by shell impacts or by resulting fires may not represent a permanent loss, but it does slow the recovery process of these species by requiring time for the habitat to recover suitably and therefore, represents an adverse effect. In order to minimize the effect of these losses of individuals and habitat, the Service recommends that the Navy fund conservation and recovery projects for the megapode and fruit bats in the Marianas. Examples of conservation and recovery projects that should be considered for funding by the Navy include: (1) efforts to eradicate feral ungulates on uninhabited northern islands, (2) surveys to assess status, distribution, and nesting/roosting areas of megapodes and fruit bats, (3) basic research into the life history and demography of the megapode and/or fruit bat, and (4) rat (*Rattus* spp.) eradication on uninhabited northern islands.

In addition, the Service recommends that the Navy monitor the effects of their training activities on megapode and fruit bat habitat and the direct take of megapodes and fruit bats whenever possible. To monitor changes in megapode and fruit bat habitat, the Navy should monitor the extent of vegetation change on FDM by conducting helicopter overflight surveys of FDM with two qualified biologists at least twice a year during each of the three years covered by this biological opinion. One of the biologists on the flight should be a biologist familiar with megapode and/or fruit bat foraging, breeding, and roosting habitat. To assess the direct take of megapodes and fruit bats, if the Navy can ever safely conduct an on the ground reconnaissance mission of any type on FDM, the Navy should allow at least one biologist familiar with megapode and/or fruit bat biology to accompany the Navy reconnaissance team on the ground.

In order to minimize and avoid impacts to nesting and roosting seabirds colonies on FDM, the Service recommends that the Navy concentrate impacts on the southern portion, or within the central interior portion of the island. The Navy should also consider establishing a long-term monitoring program to evaluate the effects of aerial bombardment, naval gunnery, and small arms gunfire on seabird populations.

In order for the Service to be kept informed of actions that either minimize or avoid adverse effects or that benefit listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

This concludes formal section 7 consultation on this action. As provided in 50 CFR 402.16, reinitiation of formal consultation is required if (1) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered

in this opinion, (2) the agency action is subsequently modified in a manner that causes an adverse effect to the listed species or critical habitat that was not considered in this opinion, or (3) a new species is listed or critical habitat designated that may be affected by this action.

If you have questions concerning any of the information contained in this biological opinion, please contact Interagency Program Leader Margo Stahl or Wildlife Biologist Michael Lusk (phone: 808/541-3441, fax: 808/541-3470, e-mail: Michael_Lusk@mail.fws.gov).

Sincerely,

Brooks Harper

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Field Supervisor
Ecological Services

cc: CNMI, DFW, Saipan
NMFS, Honolulu
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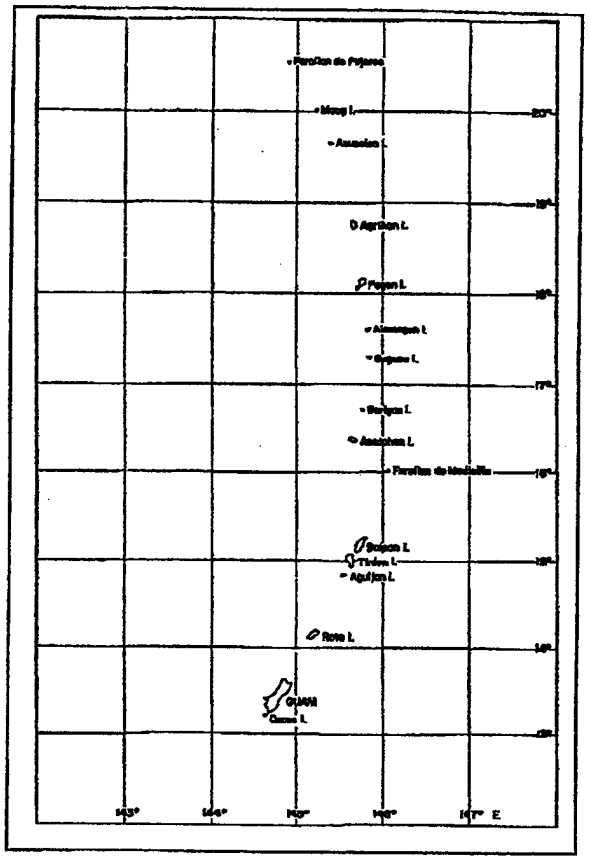

Figure 1. Mariana Islands archipelago.

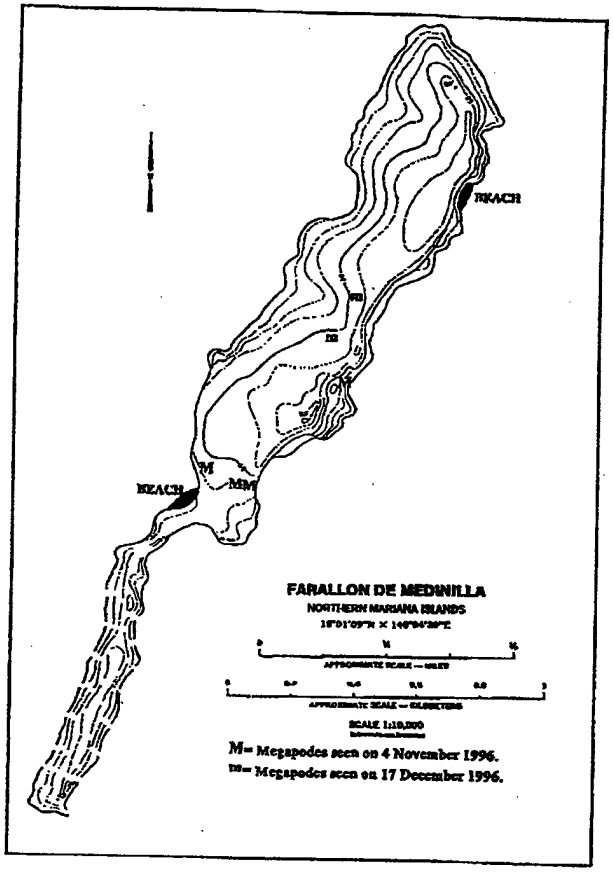

Figure 2. Location of megapode sightings and beaches on Farallon de Medinilla (beaches not to scale).

Appendix D-24
Biological Opinion and Conference Report (Log Number 1-2-98-F-07), Military Training in the Marianas

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FISH AND WILDLIFE SERVICE
Pacific Islands Ecoregion
300 Ala Moana Boulevard, Room 3-122
Box 50088
Honolulu, Hawaii 96850

In Reply Refer To: 1-2-98-F-07 (LTG)

JAN - 4 1999

Mr. Fred Minato
Environmental Planning Division
Pacific Division, Naval Facilities Engineering Command
Building 258 Makalapa
Pearl Harbor, Hawaii 96860-7300

RE: Biological Opinion and Conference Report (Log Number 1-2-98-F-07), Military Training in the Marianas

Dear Mr. Minato:

This responds to your August 19, 1998, request for formal consultation under section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, Stat. 884), as amended (Act), relative to military (*i.e.*, Air Force, Navy, Guam National Guard, Army Reserve, and Marine Corps) training activities on the islands of Guam, Rota, Tinian, and Farallon de Medinilla in the Mariana Islands. The Department of Defense (DOD) is the action agency for this project. This document represents the Service's biological opinion (BO) on the effects of the proposed project on the endangered hawksbill sea turtle (*Eretmochelys imbricata*), Micronesian megapode (*Megapodius laperouse*), the threatened Tinian monarch (*Monarcha takatsukasae*) and green sea turtle (*Chelonia mydas*), and conference report on the effects of the proposed project on the proposed Mariana fruit bat (*Pteropus mariannus mariannus*) within the Commonwealth of the Northern Mariana Islands (CNMI) in accordance with section 7(a)(2) of the Act. Potential effects to the federally endangered Guam rail (*Rallus owstoni*), Mariana crow (*Corvus kubaryi*), Guam swiftlet (*Collocalia bartschi*), Mariana common moorhen (*Gallinula chloropus guami*), and Hayun lagu tree (*Serianthes nelsonii*) were also identified. However, the Service has concurred that the proposed military training activities are not likely to adversely affect these species.

Your August 19, 1998, request for formal consultation was received on August 21, 1998. This biological opinion and conference report is based on the following information: 1) the June 1998 draft environmental impact statement (DEIS) for Military Training in the Marianas; 2) previous biological opinions; 3) the biological literature (see References Cited section at the end of the document); and 4) other information sources. Our log number for this consultation is 1-2-98-F-07. Copies of pertinent materials and documentation are maintained in an administrative record in the Service's office in Honolulu, Hawaii.

Consultation History

The following are summaries of previous section 7 consultations regarding military training activities in the Mariana Islands applicable to the proposed action and a description of correspondence for the proposed action.

On May 2, 1984, the Service issued a BO (1-2-84-F-26) to the Navy addressing the potential impacts of "Kennel Bear" exercises on Tinian on federally listed species, including the Tinian monarch. These activities included unloading and loading of personnel, supplies, and equipment from C-130 aircraft, clearing of vegetation for establishing bivouac camps, setting up a perimeter defense around camps, and firing of weapons at the firing range. These activities were to occur twice each year for one to two weeks each time.

On July 17, 1984, the Service issued a BO (1-2-84-F-44) to the Navy addressing the potential impacts of Marine Corps exercises on Tinian on federally listed species, including the Tinian monarch. These activities included unloading and loading of personnel, supplies, and equipment from and on C-130 aircraft, establishing bivouac camps, firing of weapons at firing ranges, and tactical airdrops. The training involved approximately 400 persons and was to occurr approximately three times per year for four weeks each.

On July 25, 1989, the Service issued a BO (1-2-89-F-47) to the Navy addressing the potential impacts of helicopter training on Anderson Air Force Base, Guam. The federally listed species at issue was the Mariana crow.

On May 4, 1990, the Service issued a BO (1-2-90-F-003) to the Navy addressing the potential impacts of engineering field survey work needed prior to the construction and operation of the Relocatable Over-the-Horizon Radar Project P-225 on Guam (WESTPAC Finegayan) and in the northern portion of Tinian. The federally listed species at issue were the Tinian monarch, Mariana crow, and the Mariana fruit bat.

On August 15, 1990, the Service issued a BO (1-2-90-F-024) to the Navy for reinitiation of consultation for the construction of the P-223 radar transmitter facility on Tinian due to an increase in the number of acres of forest to be cleared. The federally listed species at issue was the Tinian monarch.

On June 22, 1992, the Service issued a BO (1-2-92-F-07) to the Navy addressing the potential impacts of VRC-50 flight squadron field carrier landing practice (FCLP) at Anderson Air Force Base, Guam. The federally listed species at issue were the Mariana crow and the Mariana fruit bat.

On July 30, 1993, the Service issued a BO (1-2-93-F-14) to the Navy addressing the potential impacts from the Navy's permanent relocation of the VRC-50 Squadron to Andersen and the need to conduct VRC-50 flight squadron field carrier land practice (FCLP) training missions. The federally listed species at issue were the Mariana crow and Mariana fruit bat.

On June 27, 1994, the Service issued a BO (1-2-94-F-05) to the Navy addressing the potential impacts of including aircraft training operations by carrier air wing CVW-5, at Anderson Air Force Base, Guam. The federally listed species at issue were the Mariana crow and the Mariana fruit bat.

On September 3, 1994, the Service issued a BO (1-2-94-F-06) to the Navy addressing the potential impacts of performing air operations, including field carrier landing practices (FCLPs) with aircraft from a transiting carrier air wing (CVW) at Andersen Air Force Base, Guam. The federally listed species at issue were the Mariana crow and the Mariana fruit bat.

On February 28, 1996, the Service responded to the DOD's Notice of Intent to prepare the Draft Environmental Impact Statement (DEIS) for Marianas Military Training Plan for the Territory of Guam and the Commonwealth of the Northern Marianas Islands (CNMI). In our response, we stated that the DEIS should describe endangered and threatened species, migratory fishes and birds, and rare, and native species to be affected by the proposed project, and assess the impacts to these species and identify appropriate mitigation measures, as well as address the possible introduction of the brown treesnake (*Boiga irregularis*) into the CNMI. We also recommended that section 7 consultation be initiated prior to issuance of the DEIS. The U.S. Pacific Command was identified as the lead agency for the proposed project and the Pacific Division, Naval Facilities Engineering Command as the coordinating agency.

On January 29, 1997, the Service issued a BO (1-2-97-F-01) to the Navy addressing the potential impacts of aerial bombardment and gunnery training over a four week period in February and/or March 1997 on Farallon de Medinilla (FDM). The federally listed species at issue were the Micronesian megapode, the green sea turtle, and the hawksbill sea turtle.

On April 16, 1997, the Service provided comments on the DEIS for Military Training in the Mariana Islands (January 1997 version) to the Department of the Interior (DOI). The Service recommended that a revised DEIS be prepared due to numerous deficiencies. In August 1998, the Service received the Revised DEIS for Military Training in the Marianas (June 1998 version) and provided comments to the DOI on September 21, 1998.

In an informal consultation dated May 2, 1997 with the U.S. Air Force, overflight conditions for activities at AAFB were negotiated in order to establish a not likely to adversely affect determination for the Mariana crow and Mariana fruit bat.

On May 16, 1997, the Service issued a BO (1-2-97-F-05) to the Navy addressing the potential impacts of gunnery training and aerial bombardment from July 21, 1997 to August 1, 1997, on FDM. The federally listed species at issue were the Micronesian megapode, green sea turtles, and hawksbill sea turtles.

On September 11, 1997, the Service issued a BO (1-2-97-F-08) to the Navy addressing the potential impacts of ship to shore gunnery practice during September 1997, on FDM. The federally listed species at issue were the Micronesian megapode, green sea turtle, and the hawksbill turtle.

On December 30, 1997, the Service issued a BO (1-2-98-02) to the Navy addressing aerial bombardment and small arms gunfire during January and February 1998 on FDM. The federally listed species at issue were the Micronesian megapode and the Mariana fruit bat.

On April 6, 1998, the Service issued a BO (1-2-98-03) to the Navy addressing aerial bombardment, naval gunfire, and small arms gunfire for the next three years on FDM. The federally listed species at issue were the Micronesian megapode and the proposed Mariana fruit bat.

On August 21, 1998, we received a request from the Department of the Navy on behalf of the Department of Defense to initiate section 7 consultation regarding Military Training in the Marianas. On October 2, 1998, the Service wrote a letter stating that the BO would be delivered on or before January 13, 1999 (should have stated January 2, 1999) and that all information required for the consultation was available.

BIOLOGICAL OPINION/ CONFERENCE REPORT

I. Description of the Proposed Action

A. Proposed Action

The following descriptions of the proposed military training actions are taken from the June 1998 Draft Environmental Impact Statement for Military Training in the Marianas and proposed action modifications and clarifications identified in Navy biologist Tim Sutterfield's October 1 and October 19, 1998 electronic mail messages to Assistant Field Supervisor Karen Rosa.

Guam

a) Waterfront Annex

The Waterfront Annex includes Orote Point and most of the shoreline of the Inner and Outer Harbors of Apra Harbor.

Ongoing or continuing activities at the Waterfront Annex include general field maneuvers, logistics support, aviation training, amphibious landing training, live fire

ranges, and underwater demolitions. Field maneuvers are defined as all general military training that occur on land, with the exception of live weapons fire and aviation-related activities. This includes tactical maneuvers on foot, travel in wheeled and tracked vehicles, use of signals and flares, clandestine raiders, rappelling, bivouacs, nuclear biological and chemical (NBC) training, and other miscellaneous activities. A training group for a field maneuver activity may consist of one to 2,000 individuals. Ongoing aviation training includes helicopter insertion and extraction, paradrops, firefighting bucket off loading, search and rescue, and cast and recovery training. Other ongoing training activities include amphibious landings of Landing Craft Air Cushions (LCAC), Landing Craft Utility (LCU), and Amphibian Assault Vehicles (AAV), riverine training, live fire ranges (*i.e.*, small arms known range, distance range, pistol range), and underwater demolitions.

Proposed or new training includes field maneuvers (stress course and rapid runway repair), aviation training, amphibious landing training, underwater demolition training, and live fire ranges. Proposed new aviation training includes forward area refueling near the small arms range and helicopter insertions and extractions in the North Tipalao rappelling area. Proposed now amphibious training includes LCAC landings at Tipalao, Dadi, and Toyland beaches; AAV landing sites at Sumay Cove Marina, the former WWII refueling pier, Tipalao, Toyland, Polaris Point, and Drydock Island beaches; and LCU landing sites at Sumay Cove Marina, the former WWII refueling pier, and Polaris Point and Toyland beaches. A new fire and maneuver range, skeet range, and shooting house is proposed for the southern section of Orote Point. One new deep-water underwater demolition training area is proposed offshore from Dadi Beach and three new shallow-water underwater demolition training sites are proposed (Tipalao, Spanish Steps, west tip of Outer Apra Harbor breakwater).

b) Ordnance Annex
The Ordnance Annex is located in the southern half of Guam and covers 36 square kilometers (sq km). Fena Reservoir, Guam's major surface water body, is located within Ordnance Annex.

Ongoing or continuing activities include field maneuvers, logistics support, and aviation training. Field maneuvers and logistics support training involve water purification, land navigation, small unit reconnaissance patrolling, command post exercises, and bivouac (small to medium). Ongoing aviation training involves using existing helicopter landing zones to land and recover embarked personnel and equipment, personnel insertions and extractions, simulated Tactical Recovery of Aircraft and Personnel (TRAP) and Close Air Support (CAS) in areas north of the ammunition storage area, and using Fena Reservoir to train helicopter crews to load an external fire bucket.

New proposed training activities include paradrops and live firing ranges. Proposed paradrops will use an existing drop zone for small groups of troops delivered from helicopters. A new range area that contains a sniper range, breaching house, jungle trail range, and one SDZ is proposed for the entire southern portion of the Ordination Annex.

c) Andersen Air Force Base and Communication Annexes
Andersen Air Force Base (AAFB), Andersen South, and the two Communication Annexes (*i.e.*, Barrigada and Finegayan) comprise 92 sq km. A National Wildlife Refuge Overlay has been established over much of northwest AAFB and an Ecological Reserve Area has been established at the Communications Annex Finegayan, including Haputo Beach.

Ongoing training activities include the continued use of the area for field maneuvers, aviation training, Explosive Ordnance Disposal (EOD) demolition, and live fire training.

The proposed new training activities involve the rapid runway repair to be conducted on a former taxiway of Northwest Field, fire bucket off loads in the Main Base area, and the use of mortars (training rounds) at the small arms range at AAFB's Tarague Beach.

Non-DOD Lands

a) Guam
The continuing activity involves the Army National Guard conducting parachute jumps at the Casper and Ghost Drop Zones, near NASA Road in Talofofo on private land in Dandan. This training is conducted bimonthly in small units (typical training unit of 24 personnel).

b) Rota
Continuing activities on Rota include the use of a small island in Songsong Harbor for a small forward staging base for approximately 7 days per month.

Tinian
The action area for military training activities (proposed and ongoing) on Tinian occurs within the Military Lease Area (MLA) and a portion of the southern one-third of Tinian. The MLA consists of the northern two-thirds of the island of Tinian. On the southern one-third of the island troops are brought into the MLA via West Tinian Airport or San Jose Harbor. Troops brought in at the airport and harbor will conduct a "movement to contact" by tactically moving north to the MLA by vehicle or by foot.

Ongoing or continuing training activities considered on Tinian include large-scale maneuvers (airfield seizure/defense and bivouacs), a variety of aviation training, and LCAC training. Ongoing aviation training includes airmobile training (airmobile landings, C-130 cargo drops), airborne training (paradrops), helicopter insertion and extraction, night vision goggle training, fighter and attack aircraft training, firefighting and forward area refueling. Ongoing amphibious landing training on Tinian includes LCAC training at Unai Chulu and Unai Dankulo beaches and LCU landings at Kammer Beach.

Proposed new activities include constructing a small logistics support base camp and new amphibious training. The new camp will be located on the eastern edge of the VOA. New amphibious landings proposed are AAV landings at Kammer and Unai Babui beaches.

After the receipt of the DEIS, several changes and clarifications concerning the training activities on Tinian were made by biologist Tim Sutterfield in his October 1 and October 19, 1998, electronic mail messages to the Service, including:

1) The fire and maneuver range was deleted from the preferred alternative;

2) The only beaches to be used for LCAC landings are Unai Chulu and Unai Dankulo beaches; Tachagna Beach will not be used;

3) No clearing of vegetation is proposed for training areas and bivouac areas; and

4) The only vegetation to be cleared is for the logistic support facility that will be located in the boundary of the VOA site and will require the clearing of 0.75 acres of grassland.

Farallon de Medinilla (FDM)
All of the military training activities on FDM were reviewed in the Service's April 6, 1998, BO (1-2-98-F-03). No new military activities for FDM are proposed in the DEIS that were not covered in this previous BO (Tim Sutterfield, personal communication 1998).

B. Actions to minimize threats to endangered and listed species

1. Brown Treesnake Control/Interdiction Plan (BTS Plan) for Military Training Exercises

Included within the DEIS is a description of the measures to be implemented by DOD to minimize the threat of further dispersal of the brown treesnake (BTS) in the Pacific due to military activities. These measures are described in the BTS Plan in Appendix E of the DEIS.

Specific measures identified in the BTS Plan are as follows:

a) The USDA Wildlife Services (WS) office on Guam is the primary agent for BTS control for the military and is responsible for the following:

1) Inspection of military cargo staged at AAFB and in Apra Harbor on Guam for BTS;
2) Maintenance of trapping and night searches at high-risk areas, airfields, and ports whether training occurs or not;
3) Providing personnel, traps, lights, bait, and guidance for military training exercises on Tinian;
4) Establishing quarantine procedures on Tinian in coordination with local wildlife and/or customs officials and performing inspections of all arriving cargo, in coordination with the CNMI Department of Fish and Wildlife. Quarantine activities required at all ports of entry include erecting temporary barriers, establishing sterile areas, and activating snake traps.
5) Delegation of manpower and dogs construct cargo containment areas (snake proof enclosures or exclosures); and
6) Providing additional information and assistance as needed.

b) Military aircraft will not be able to take off from Guam without having been properly inspected by WS;

c) All training personnel arriving on Guam for an military training exercise will be provided with an BTS information packet and briefed on the BTS hazard prior to leaving Guam for Tinian or Rota;

d) Any person sighting a BTS should attempt to kill or trap the snake and report the incident immediately to WS officials;

e) For all exercises involving interisland transport, COMNAVMARIANAS or AAFB environmental personnel will advise WS in as many days in advance as possible;

f) COMNAVMARIANAS will monitor compliance with the BTS Plan by coordinating with WS and base environmental personnel on at least a quarterly basis to keep abreast of lessons learned and new problem solving techniques.

2. Mitigation for amphibious vehicle landings on turtle nesting beaches:
a) Prior to beach landings by amphibious vehicles, known turtle nesting

beaches will be surveyed by a Navy biologist for the presence of sea turtle nests no more than six hours prior to a landing;

b) Areas free of nests will be flagged, and vehicles will be directed to remain within these areas;

c) A Navy biologist will monitor beaches during any nocturnal landings.

d) If any sea turtles are observed or known to be in the area, training will be discontinued until all nests have been located and turtles have left the area;

e) LCAC landings on Tinian will occur during high tide, LCAC's must maintain a full cushion until they reach the top of the beach (off of the sand), and complete the initial 180 degree turn prior to coming off full cushion;

f) On Tinian surveys will be conducted before and after each LCAC landing and AAV landing at least two times per year at Unai Chulu and Unai Babui with Unai Lamlam surveyed as a control site. Navy contracted surveyors will record percent coral cover, turbidity, fish assemblage, sedimentation rates, and the topography of the site;

g) AAV landings at Unai Babui will be restricted to an established approach lane and allowed to land only during high tide and in single file.

3. Overflight conditions over AAFB to minimize impacts to the Mariana crow and Mariana fruit bat.

a) No overflights below 1,600 feet Above Mean Sea Level (MSL) are allowed over Munitions Storage Area 1.

b) For the rest of Andersen AFB, overflights would be allowed below the 1,600 foot MSL during the three- month crow non-breeding season (June through August).

c) No overflights are allowed below 1,600 foot MSL directly above crow territories during the nine-month crow breeding season (September through May). Crow territories will be determined by consultation with the Guam Division of Aquatic and Wildlife Resources.

d) Helicopters are to remain ½ nautical mile from the perimeter of the bat colony at Pati Point, with the exception of flights originating from the end of runways (similar to fixed wing aircraft operations).

4. Areas designated as "No wildlife disturbance"
Within a "no wildlife disturbance" area, the following activities are prohibited:

a) Off-road vehicular traffic;

b) Pyrotechnics or open fires;

c) Firing blanks;

d) Live ammunition or training demolition;

e) Digging;

f) Mechanical vegetation clearing;

g) Flights below 305 meters (m) (1,000 feet) AGL: and

h) Helicopter landing zones.

5. Areas designated as "No training"
Within a "no training" area, no training is allowed, except troop and vehicle movement along established roads to protect wetlands and other rare habitats.

II. Biology and Population Status of the Species

A. Species Not Likely to Be Adversely Affected

The following are summaries of the species considered by the Service during the consultation period for which no adverse effects are anticipated:

Guam rail (*Rallus owstoni*)

Guam rails have been reintroduced to Area 50, AAFB, Guam. Area 50 has been fenced and is in the process of having brown treesnakes removed from the site. The Service does not anticipate that military training activities within AAFB are likely to adversely affect the Guam rail.

Mariana fruit bat (*Pteropus mariannus mariannus*)

Fruit bats are known to forage within the Ordnance Annex on Guam. Military training activities within the sniper range could cause fruit bats foraging in the area to disperse to other areas of Guam. The Service does not anticipate that these activities are likely to adversely affect the Mariana fruit bat on Guam.

Mariana Crow (*Corvus kubaryi*)

In a July 1996 report issued by the Service to the Navy entitled *The Effects of Aircraft Overflights on Endangered Mariana Crows and Mariana Fruit Bats at Andersen Air Force Base, Guam*, the Service documented that low altitude aircraft flights (< 183 meters (m) [600 foot (ft)] Above Ground Level (AGL)) can elicit distress, cause crows to flush, and disrupt nest building, incubation, and nest attendance at least temporarily. Mariana crows also maintain year-round territories and are very susceptible to disturbance during the nest tree selection process immediately prior to the breeding season. The pre-nest building phase of the breeding season is critical for successful breeding and is generally categorized by behaviors such as increased vocalizations, allopreening, and carrying and offering sticks. Disturbance during this critical phase could preclude breeding altogether.

In an informal consultation (May 2, 1997) with the U.S. Air Force, overflight conditions for activities at AAFB were negotiated in order to establish a not likely to adversely affect determination for the Mariana crow. Overflight conditions over Andersen AFB are as follows: (1) no overflights below 487 m (1,600 ft) Above Mean Sea Level (MSL) are allowed over Munitions Storage Area 1, (2) for the rest of Andersen AFB, overflights would be allowed below the 487 m (1,600 ft) MSL during the three- month crow non-breeding season (June through August), and (3) no overflights are allowed below 487 m (1,600 ft) MSL directly above crow territories during the nine-month crow breeding season (September through May). Crow territories will be determined by consultation with the Guam Division of Aquatic and Wildlife Resources.

Guam Swiftlet (*Collocalia bartschi*)

The Guam swiftlet is endemic to the Mariana Islands of Guam, Aguiguan, and Saipan and is the only resident swift in the Mariana Islands. Guam swiftlets seem to prefer to forage above forested ridges and open grassy areas, but they forage over a wide variety of terrain and vegetation and they roost and nest in caves (Pratt *et al.* 1987, USFWS 1991). Caves are occupied throughout the year (USFWS 1991).

Guam swiftlets are found in Mahlac and Fachi Caves, and have been observed foraging along Fena Valley Reservoir and Sadog Gago River (J. Morton, USFWS, personal communication 1998), all of which are located within the Ordnance Annex on Guam. Mahlac Cave harbors what is estimated to be 90% of all swiftlets on Guam, housing between 280-300 birds (USFWS 1991). It is the only significant breeding colony that remains on Guam. Fachi Cave, located within an ammunition bunker, harbors an estimated 15-25 swiftlets (J. Morton, USFWS, personal communication 1998). Military training is not allowed within the area of these two caves. The only public access being considered for Mahlac Cave by the Navy is a recreational fishing program initiated on August 3, 1996, at Fena Lake. It is not likely that this fishing program will lead to more visitors to Mahlac Cave, due to the close supervision of the public and the distance of the lake from Mahlac Cave (L. Morton, Natural Resources Manager, Naval Activities, Guam, personal communication 1996). It is also important that the name of the cave be omitted from any published reports, as the name may serve as a locational guide to persons familiar with the location of Mahlac Stream, which flows through the east side of the Navy base near the cave. The Navy has previously agreed to omit locational information (Biological Opinion 1-2-96-F-06).

Military training activities within the sniper range (Ordnance Annex) would likely cause swiftlets foraging within the lower portion of Fena Valley Reservoir or along Sadog Gago River to disperse to other foraging grounds. Therefore, the Service has determined that the proposed project is not likely to adversely affect the Guam swiftlet.

Mariana Common Moorhen (*Gallinula chloropus guami*)

Moorhens in the Mariana Islands are found primarily at freshwater human-made and natural wetlands that are both seasonal and permanent. Occasionally, they are recorded in brackish water wetlands. The current total estimated population of Mariana common moorhens in the Mariana Islands is approximately 300 to 400 birds (USFWS 1996a). Within the action area, Lake Hagoi, Mahalang, and Batcha Wetlands on Tinian and four wetlands each within the Ordnance Annex and the Waterfront Annex on Guam support moorhens. Lake Hagoi supports approximately 40 birds (USFWS 1996a) and is designated as a "no training" area by the military. The only military training activities allowed within a "no training" area are troop and vehicle movements along established roads. It is anticipated that military training will not affect moorhens using Lake Hagoi. Mahalang and Batcha Wetlands are estimated to support no more than 10 moorhens (USFWS 1996a). Military training activities near these wetlands would likely cause moorhen to temporarily disperse to other wetlands.

Riverine training in Atantano River (Waterfront Annex) is expected to occur seven days a month and involve 16-20 people. The area surrounding the proposed training area is a mangrove swamp and is known to occasionally support moorhen (M. Ritter, USFWS, personal communication 1998). The mangrove swamp is designated as a "no training" area; however, it is anticipated that military training activities in the Atantano River could cause moorhen using the mangrove swamp to disperse to another wetland. There is no military training proposed or ongoing that will affect the other three wetlands known to support moorhen within the Waterfront Annex.

There are four wetlands within the Ordnance Annex that provide habitat for the moorhen. Two seasonal wetlands are located within a "no training" area and the majority of Fena Reservoir is within a "no wildlife disturbance area." A "no wildlife disturbance" designation is described as an area in which the following are prohibited: off-road vehicular travel, pyrotechnics, demolition, digging, mechanical vegetation clearing, flights below 305 m (1,000 ft) AGL, and helicopter landing zones. Heliborne firebucket (onload) and combat swimmer training occur within the northern portion of Fena Valley Reservoir, which is not known to support moorhen. There are no proposed or ongoing military training exercises affecting the fourth wetland within the Ordnance Annex. It is anticipated that no moorhens within the Ordnance Annex will be affected by ongoing or proposed military training activities. However, it is anticipated that military activities in Atantano River on Guam and near Mahalang and Batcha Wetlands on Tinian could cause moorhens using the wetlands to temporarily disperse to another part of the wetland or another wetland. It has been determined that the proposed training exercises are not likely to adversely affect the Mariana moorhen.

Serianthes nelsonii

Two populations of *Serianthes nelsonii* are known from Rota and Guam. All remaining individuals of *Serianthes nelsonii* occur in native limestone forest on soils derived from limestone substrates, with most trees growing on or near steep hillsides or cliffs. However, the species formerly inhabited sites with volcanic soils in southern Guam (USFWS 1993). There were 122 individual plants known in 1993 (USFWS 1993). Currently, there is one mature tree remaining on Guam on Anderson Air Force Base on top of the sea cliffs at Ritidian Point and three seedlings persist on Northwest Field in the vicinity of the tree that was destroyed in 1992 during Typhoon Omar (G. Hughes, USFWS, personal communication 1998; Wiles *et al.* 1995). The mature tree is enclosed within a 3,048 square m (10,000 square ft) fence and the three seedlings are contained within a protective cage to prevent browsing by ungulates. Another 121 individuals are scattered along the Sabana cliffs on Rota, primarily above the town of Songsong. However, this population does not occur within an area of ongoing or proposed military activities. The Service has determined that the proposed project is not likely to adversely affect populations of *Serianthes nelsonii* due to the fencing that protects the mature plant on Guam from training activities and the fact that the plants on Rota do not occur within the action area.

B. Species Likely to be Adversely Affected

Green Sea Turtle (*Chelonia mydas*)

The green sea turtle was listed as a threatened species on July 28, 1978. Green sea turtles are distributed globally throughout tropical and subtropical seas with temperatures above 20 degrees Centigrade (National Marine Fisheries Service [NMFS] 1998a), and are known to occur in the waters of the CNMI (USFWS 1996b).

Green sea turtle hatchlings average 4.7 to 5.4 centimeters (cm) (1.9 to 2.2 inches [in]) in carapace length and weigh between 22 to 31 grams (gm) (0.8 to 1.1 ounces [oz]) and can grow to more than one meter in carapace length and weigh over 100 kilograms (kg) (220 pounds [lbs]) (NMFS 1998a). The color of the green sea turtle's carapace changes as it grows from a hatchling to an adult. The dorsal side of hatchlings is black and the ventral side is pure white (NMFS 1998a). Juveniles are between 35-65 cm (14-26 in) in length have a streaked or radiating sunburst of patterns of yellowish-gold, olive, light and dark brown, reddish-brown, and black (NMFS 1998a). The color of an adult carapace varies from light to dark brown, sometimes shaded with olive, with radiating wavy or mottled markings of a darker color or with large blotches of dark brown (NMFS 1998a).

Green sea turtles greater than 30-35 cm (12-14 in) feed exclusively on macroalgae and seagrasses, while post-hatchlings and juveniles feed carnivorously (*e.g.*, invertebrates and fish eggs) (NMFS 1998a).

Wild green sea turtles have exhibited slow growth and delayed sexual maturity (NMFS 1998a). Studies have estimated that the average age for sexual maturity is at least 25 years (NMFS 1998a). Green sea turtles have been documented to migrate long distances, over 1,000 kilometers (km) (600 miles), between foraging grounds and nesting beaches (NMFS 1998a). For example, a turtle tagged on Tinian was recently sighted in the Philippines (George Balazs, NMFS, personal communication 1997). After completing migration to nesting beaches, green sea turtles lay several successive clutches of eggs during the nesting season before returning to the foraging grounds. On average the green sea turtle lays 1.8 clutches of eggs per season or up to 6 clutches. Each clutch is laid at 10 to 15 day intervals and contains approximately 100 eggs per clutch. Eggs incubate in the sand for 54 to 88 days (mean of 64.5 days). Green sea turtles are known to nest in the CNMI from January through August, which means hatching may continue into October (USFWS 1996b). Female green sea turtles migrate to breed only once every two or possibly more years.

There are no population estimates for the CNMI populations of green sea turtles, but there are some records available. In 1995, six to ten turtles were recorded nesting on the island of Tinian and a similar number probably nested there in 1994 (USFWS 1996). This implies that the nesting population in the CNMI is not very large presently, but at one time may have been much larger (USFWS 1996). Fewer than ten green turtles nest on the islands of Saipan, Tinian, and Rota each year (NMFS 1998a). Turtles are also known to nest on FDM and Guam (G. Davis, Guam Department of Wildlife Resources, personal communication 1998).

The green sea turtle was listed due to its declining numbers associated with overexploitation for commercial and other purposes, habitat loss and degradation. Populations of the green sea turtle in the Pacific region have continued to decline due to directed harvest (both illegal and legal) and negative impacts to essential habitats (NMFS 1998a). Spread of fibropapilloma has also slowed the recovery of green sea turtle populations (NMFS 1998a).

Green sea turtles are known to nest on the beaches of Tinian and FDM. Amphibious landing training on several beaches of Tinian and bombing activities on FDM are likely to adversely affect the green sea turtle.

Hawksbill Sea Turtle (*Eretmochelys imbricata*)

Hawksbills are usually less than 95 cm (38 in) in carapace length, which is considered relatively small. They have a narrow head with a tapering beak, thick, overlapping shell scutes, and strongly serrated posterior margin of the carapace (NMFS 1998b). Hatchlings of the hawksbills average 13.2 gm (0.5 oz) and have a tan-colored carapace, top of the head and neck, while the sides and bottom of the head and neck (including the beak) are dark grey; the dorsal and ventral sides of the fore flippers are grey with a whitish fringe around the posterior edge; the dorsal and ventral sides of the hind flippers and plastron are dark grey with two whitish ridges posteriorly on the plastron (NMFS 1998b). Juvenile hawksbill

turtles vary in color; the carapace ranges from light brown to black with varying amounts of distinct yellow streaks and blotches (NMFS 1998b). The adult has a carapace that is dark brown with faint yellow streaks and blotches; the scales on the dorsal side of the flippers and head are dark brown to black with yellow margins; the ventral side of the flippers and the plastron are pale yellow, with scattered dark scales on the flippers (NMFS 1998b).

The hawksbill sea turtle was listed as an endangered species on June 2, 1970. Hawksbill sea turtles occur globally, generally occurring between 30 degrees north and 30 degrees south latitudes in the Atlantic, Pacific, and Indian oceans and associated bodies of water (NMFS 1998b), and are known to occur in the waters of the CNMI (USFWS 1996). Hawksbill sea turtles appear to feed exclusively on sponges (NMFS 1998b).

Hawksbill sea turtles have been documented to migrate long distances, over 1,000 km (600 miles), between foraging grounds and nesting beaches (NMFS 1998b). Hawksbill turtles lay several successive clutches of eggs during the nesting season before returning to the foraging grounds. The hawksbill turtle lays between three to six clutches per season. There is a 13- to 19-day interval between consecutive clutches with approximately 100 eggs per clutch. Eggs incubate for approximately 60 days. The size of a clutch and the days of incubation vary from nest to nest, and site to site. There is no information available regarding the exact month(s) hawksbills nest in the CNMI or Guam. In other areas of the world, hawksbill sea turtles have been recorded nesting year-round (NMFS 1998b).

There are no population estimates for hawksbill sea turtles in the CNMI and Guam, and there is little evidence that hawksbill turtles nest within the CNMI and Guam. However, this does not rule out that they are nesting at low levels at unknown locations (NMFS 1998b). Although no hawksbill turtles were observed nesting on Tinian in 1995, there have been a few reports of hawksbills nesting on Rota and Saipan within the CNMI and on Guam (USFWS 1996).

Hawksbill turtles in the Pacific Islands have dramatically declined. The most serious threat is the harvesting of turtles on nesting beaches and in coastal waters by humans (NMFS 1998b). Other threats to hawksbills in the Pacific include habitat loss due to expansion of resident human populations and/or increased tourism development, and the incidental take of turtles in distant-water fisheries (NMFS 1998b).

Hawksbill sea turtles are known to nest within the action area on Guam. Amphibious landing exercises on Guam are likely to adversely affect the hawksbill sea turtle.

Mariana fruit bat (*Pteropus mariannus mariannus*)

The Mariana fruit bat, locally known as *fanihi*, is a medium-sized fruit bat in the family Pteropididae. This subspecies is restricted to the Mariana archipelago, comprised of the

Territory of Guam and the CNMI. These bats weigh between 330 to 577 gm (0.66 to 1.15 lbs) and have a forearm length ranging from 13.4 to 15.6 cm (5.3 to 6.1 in); males are slightly larger than females (USFWS 1998a). The underside (abdomen) is colored black to brown, with gray hair interspersed, creating a grizzled appearance. The shoulders (mantel) and sides of the neck are usually bright golden brown, but may be paler in some individuals. The head varies from brown to dark brown. The well-formed and rounded ears and large eyes give a canine-like appearance giving rise to the nickname "flying foxes."

The Mariana fruit bat on Guam was listed as endangered on August 27, 1984, without critical habitat (49 FR 33881). On March 26, 1998, the Service proposed to downlist the Mariana fruit bat on Guam to threatened status, and designate all Mariana fruit bats in the Mariana archipelago as threatened (63 FR 14641). Should the proposed rule go final, the fruit bats on Guam, which are currently listed as endangered, will be downlisted to threatened and all of the fruit bats in the Marianas archipelago will be protected as a threatened species.

The Mariana fruit bat is highly colonial, forming colonies of a few to over 800 animals (Pierson and Rainey 1992, Wiles 1987a, Worthington and Taisacan 1995). The bats group themselves into harems (one male and two to 15 females) or bachelor groups (predominately males), or reside as single males on the edge of the colony (Wiles 1987a). Reproduction is believed to occur throughout the year on Guam, with no apparent peak in births (Wiles 1987a). Female bats of this family generally have one young per year, resulting in a slow recovery rate when populations are reduced in numbers (Pierson and Rainey 1992). Length of gestation and age of sexual maturity are unknown for the Mariana fruit bat, but other related bats have a gestation period of approximately 4.6 to 6.3 months (Pierson and Rainey 1992). Female Mariana fruit bats on Guam may be able to breed as soon as at 6 to 18 months of age (USFWS 1990b), but sexual maturity in Pteropodid bats usually does not occur until the bats are 18 to 24 months old (Pierson and Rainey 1992).

Native forest is the primary habitat required by the Mariana fruit bat, although some introduced plant species can provide roosting and feeding resources. Fruit bats are important in tropical forests because they naturally disperse plant seeds and thereby help maintain forest diversity and contribute to plant recovery after typhoons and other catastrophic events (Cox *et al.* 1992). Mariana fruit bats forage and roost primarily in native forest, and occasionally in coconut groves and strand vegetation (Wiles 1987b, Worthington and Taisacan 1996). At least 22 plant species are used as food sources by the Mariana fruit bat, including fruits of 17 species of plants, the flowers of seven, and leaf stems and twig tips of *Artocarpus* spp. (USFWS 1990b, Wiles 1987a).

Although the status of the Mariana fruit bat prior to the 20th century is unknown, it likely occurred throughout the Mariana Islands and was probably common on the larger southern islands in the archipelago. Currently, there are estimated to be between 200 and 750 animals on Guam (Wiles 1996, Wiles *et al.* 1995), 25 to 125 animals on each of the islands of

Aguiguan, Saipan, and Tinian (Lemke 1984, Marshall *et al.* 1995b, Wiles 1996, Worthington and Taisacan 1996), 1,000 on Rota (Worthington and Taisacan 1996), and a minimum of 7,450 bats on the smaller islands north of Saipan (Anonymous 1984, Wiles *et al.* 1989). Bats may be uncommon on some of the smaller islands such as Maug, Uracas, and FDM, but are known to occur on all of them (USFWS 1998a). Based on these figures, the total population for the Mariana Islands is estimated to be at least 8,725 animals, although this figure is based on rough estimates from the northern Mariana Islands. Evidence indicates that bats move regularly between the larger southern islands and at least annually between the more remote northern islands (Wiles and Glass 1990, Wiles *et al.* 1989, Worthington and Taisacan 1996).

Fruit bat populations on Guam have been reduced possibly due to poaching, particularly since the introduction of firearms (Coultas 1931), and predation by the brown tree snake (Wiles 1996, Wiles *et al.* 1995). Loss of habitat through the effects of typhoons, development projects, and the introduction of feral rats, pigs, and goats has also contributed to the decline of this species throughout the Marianas (Kessler 1997, Marshall *et al.* 1995, USFWS 1998). Throughout both the inhabited southern and uninhabited northern islands, poaching continues to be one of the most important factors in the decline of the Mariana fruit bat (Glass and Taisacan 1988, Lemke 1992, Marshall *et al.* 1995b, USFWS 1990b, USFWS 1998a, Worthington and Taisacan 1996).

Fruit bats are known to occur within the action area. Aerial bombardment, gunnery training, naval gunfire, and small arms gunfire exercises conducted on FDM are likely to adversely affect the Mariana fruit bat.

Micronesian megapode (*Megapodius laperouse*)

The Micronesian megapode (known locally as *sasangat* or *sasangal*) is a pigeon-sized bird with dark gray-brown to black body plumage, an ash-gray head with a slightly darker, short, rough crest, a yellow bill, very sparse or absent feathers around the eye, ear, and throat revealing red skin and a red throat patch, and heavily built yellow legs and feet (Baker 1951, Pratt *et al.* 1987, USFWS 1998b). The U.S. Fish and Wildlife Service (Service) listed the Micronesian megapode as endangered in 1970 (35 FR 8491-8498). Two subspecies of the Micronesian megapode are found in Micronesia, *M. l. laperouse* in the Mariana Archipelago, and *M. l. senex* in Palau (USFWS 1998b). Critical habitat has not been designated for this species.

The Megapodiidae are part of a family within the order Galliformes (chicken-like birds) found only in the Australasian region. The family comprises seven genera found in Australasia, Australia, New Guinea and surrounding islands, eastern Indonesia, the Nicobar Islands, the Philippines, Micronesia, Vanuatu, and Niuafo'ou of the Tonga Islands (USFWS 1998b). Megapodes are ground-dwelling birds, but, in spite of their terrestrial habits, megapodes fly well and apparently cross large bodies of water easily (Olson 1980, Pratt *et*

al. 1980).

The Micronesian megapode is generally a bird of the forest. On the southern Mariana Islands they are primarily restricted to native limestone forest (USFWS 1998b). On Sarigan, megapodes are often seen in coconut forest as well as native vegetation, and on Guguan and Maug megapodes seem to prefer forest but are also seen in scrubby and even barren areas (USFWS 1998b). Megapodes encountered in fields of grass and vines are mostly juveniles rather than territorial pairs, suggesting that this is less preferred habitat (Glass and Aldan 1988, Rice and Stinson 1992). The Micronesian megapode seems to be an omnivore taking a variety of plant and animal foods available on the forest floor, including seeds, beetles, ants, other insects, and plant matter (Baker 1951, Glass and Aldan 1988, Stinson 1993a).

Megapodes are sometimes called "incubator birds" because they rely on solar energy, volcanic activity, or microbial decomposition as a heat source for incubation (Clark 1964). They are also characterized by laying large eggs without an air chamber and chicks that lack an egg tooth at hatching and kick their way out of the egg (Clark 1964, Dekker and Brom 1992). Megapode chicks are precocial (feathered, able to walk, and able to regulate their body temperature) at hatching and the adults do not care for the young (Jones *et al.* 1995). There is no information on the number of eggs laid per season by the Micronesian megapode (USFWS 1998b). Apparently one egg is laid at a time but the interval between egg laying is unknown (USFWS 1998). Nicobar megapodes (*M. nicobariensis abbotti*) have an interval of nine days between each egg that is layed (Dekker 1992) while the laying interval is 9 to 20 days (average 13 $\pm$ 4 days) for the orange-footed megapode (*M. reinwardt*) (Crome and Brown 1979). The Polynesian megapode (*M. pritchardii*) may lay 10 to 12 eggs per year (Todd 1983) and one orange-footed megapode laid 12 or 13 eggs over a 4.5-month breeding season (Crome and Brown 1979).

Micronesian megapodes are known to give at least three types of calls, including two calls that are different for males and females and that may be given in a duet. Duetting in birds is correlated with year-round territorial behavior and life-long pair bonds. The existence of duetting in the Micronesian megapode supports the report of Glass and Aldan (1988) that on Saipan megapodes seem to remain together throughout the year in territories that are advertised and defended at least part of the year. It is not known how, or if, territoriality functions at or near heavily used communal nesting areas like the one on Guguan (USFWS 1998b). Seasonality in vocalizations, particularly duetting, is believed to be indicative of seasonal changes in breeding activity, but no clear pattern has thus far emerged for the Micronesian megapode (USFWS 1998b). Chicks were reported to leave nests from January or February to June (Oustalet 1896). Chicks of all sizes have been seen in May and June on Guguan (Glass and Aldan 1988, Rice and Stinson 1992; R.B. Clapp *in litt.* 1983) and in September on Sarigan (Rice *et al.* 1990). Megapodes have been observed digging nest burrows on Maug in late March and early June and on Guguan in May, August, and September (Glass and Villagomez 1986, Reichel *et al.* 1988, Rice and Stinson 1992).

A serious potential threat to megapode populations is the establishment of the brown treesnake from Guam to other islands in the Marianas archipelago (USFWS 1998b). The brown treesnake was accidentally introduced to Guam shortly after World War II and has systematically spread throughout the island, causing the loss of nearly all of the avifauna (birds) and many of the other native vertebrate and invertebrate species of Guam (USFWS 1996c). It is of great concern that there have been recent (1991) sightings of brown treesnakes in cargo from Guam on Rota, Tinian, and Saipan. Should this predatory snake become established on any island where megapodes remain, the bird's populations on these islands would be expected to decrease rapidly within a relatively short period of time.

Megapodes are known to occur within the action area. Proposed military training activities on Tinian and FDM are likely to adversely affect Micronesian megapodes.

Tinian monarch (*Monarcha takatsukasae*)

The Tinian monarch, locally known as *Chichirikan Tinian*, is a small (15 cm [6 in]) flycatcher (Dicuridae: Monarchinae) with light rufous underparts, olive-brown upper parts, dark brown wings and tail, and white rump and undertail coverts (Baker 1951). The monarch is endemic to the island of Tinian, CNMI.

The Tinian monarch was originally listed as endangered in 1970 (35 FR 8491) under the authority of the Endangered Species Conservation Act of 1969 (16 U.S.C. 668cc). Critical habitat was not designated for the Tinian monarch. The endangered status of the monarch was continued under the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended. The decision to list the monarch as endangered was based upon an estimate by Gleize (1945) of 40-50 monarchs on Tinian after WW II (52 FR 10890), although it is not clear if his report was an estimate of the number of birds he saw, or an estimate of the entire population. About the same time as Gleize, Downs (1946) reported that monarchs were restricted in distribution to distinct locations on the island, while Marshall (1949) considered the monarch to be abundant.

In the late 1970s, Pratt *et al.* (1979) estimated monarchs to number in the tens of thousands. In 1982, the U.S. Fish and Wildlife Service (Service) conducted forest bird surveys of the southern islands in the Mariana archipelago. They found the monarch to be the second most abundant species on Tinian with a population estimate of 40,000, ubiquitously distributed throughout the island and across all forested habitat types (Engbring *et al.* 1986). Engbring *et al.* (1986) recommended the reassessment of the monarch's endangered status. This reassessment led to the reclassification of the Tinian monarch from endangered to threatened in 1987 (52 FR 10890).

Between 1994 and 1995 the Service conducted a life history study of the Tinian monarch and reported a population estimate of 52,904 monarchs. The Service found that the monarch was

Nesting on some islands may occur year-round and breeding seasonality may differ between islands depending on the source of heat for incubation (USFWS 1998b). There is no information on the nesting success or the age of sexual maturity for the Micronesian megapode.

The Micronesian megapode was historically widespread throughout the Mariana Island chain and has been recorded on all the islands, with the possible exception of Uracus (USFWS 1998b). But numbers declined on all of the southern Mariana Islands (Guam, Rota, Aguiguan, Tinian, and Saipan) in the 19th and early 20th centuries. It is doubtful if the species has ever been abundant during the last century. Definitive population surveys have not been undertaken, but observations indicate that the bird exists in small, but relatively stable, numbers, particularly on the northern islands. The megapode was extirpated on Guam and Rota, and small, remnant populations persist on Aguiguan and Tinian (fewer than 10), along with a very small (possibly reintroduced) population on Saipan (10-25 birds). Megapodes have been consistently found in small numbers (10-15) on Aguiguan during this century (Craig *et al.* 1992, Engbring *et al.* 1986, Lusk 1993, Owen 1974, Stinson 1993a, Takatsukasa 1932-1938, USFWS 1998b). A total of four megapodes were observed on Farallon de Medinilla in November 1996 (Lusk and Kessler 1996). The total island population is estimated to be less than ten birds (USFWS 1998b). The megapode remains in relatively large numbers only on the smaller, mostly uninhabited northern islands. Megapodes were not recorded on Anatahan until 1971 (Falanruw 1975) but current estimates are 200-300 birds (Reichel and Glass 1988a, USFWS 1998b). A recent forest bird survey on Sarigan estimated the population at 545-810 birds (Fancy *et al.* In review). Guguan probably supports the largest megapode population in the Marianas of around 500 birds (Rice and Stinson 1992). Megapode numbers on Guguan are believed to have declined for unknown reasons since estimates were made in 1986 of 1,200 to 2,200 birds (Glass and Villagomez 1986, USFWS 1998b). Fewer than 30 birds are reported on Alamagan, 50 to 100 on Pagan, an unknown number on Agrihan, fewer than 25 on Asuncion, 50 to 100 on Maug (on three islands), and none on Uracus (USFWS 1998b).

Current population estimates of the megapode total about 1,440 to 1,975 birds in the island chain (USFWS 1998b). The megapode was listed as endangered due to historical extirpations on Guam, Rota, Tinian, and possibly Saipan. The decline in numbers is thought to have resulted from intense exploitation by humans (hunting of adults and collection of eggs) and habitat loss (USFWS 1998b). Agriculture and overgrazing by feral goats, cattle and pigs have had a profound effect on the vegetation of the islands and are of concern for megapode (and other native forest species) populations in the northern islands (USFWS 1998b). Loss of habitat through volcanism is also known to have caused serious declines (USFWS 1998b). In addition to possible direct human predation, megapodes are known to be preyed upon by introduced monitor lizards and may also be preyed upon by feral dogs, cats, and pigs (Dekker 1989, Ludwig 1979).

successfully foraging and breeding in secondary and tangantangan forests throughout the island and recommended that the threatened status of the monarch be reassessed (USFWS 1996c).

Subsequently, a survey of the avifauna of Tinian was conducted in 1996 by the Service following the methodology of the 1982 surveys for comparative purposes. The 1996 survey estimated the monarch population at 55,721 birds, significantly higher than the 1982 estimates (Lusk *et al.* 1997). The 1996 survey also found that vegetation density had significantly increased from 1982 levels. This may be related to a marked decrease in grazing pressure in recent years (Lusk *et al.* 1997). It is hypothesized that the increase in the Tinian monarch population is related to the increase in density of both native and introduced forest habitat types, which may represent an increase in monarch habitat quality (Lusk *et al.* 1997). Currently, the Service is considering removal of the Tinian monarch from the list of endangered and threatened species.

Tinian monarchs inhabit a variety of forest types on Tinian, including native limestone forest (dominated by such species as *Ficus* spp., *Elaeocarpus joga, Mammea odorata, Guamia mariannae, Cynometra ramiflora, Aglaia mariannensis, Premna obtusifolia, Pisonia grandis, Ochrosia mariannensis, Neisosperma oppositifolia, Intsia bijuga, Melanolepis multiglandulosa, Eugenia* spp., *Pandanus* spp., *Artocarpus* spp., and *Hernandia* spp.), secondary vegetation (consisting primarily of *Acacia confusa, Albizia lebbeck, Casuarina equisetifolia, Cocos nucifera*, and *Delonix regia* mixed with native species), and almost pure stands of introduced *Leucaena leucocephala* (tangantangan) (Engbring *et al.* 1986, USFWS 1996c).

Currently, the vegetation on Tinian is highly disturbed, with the single most predominant habitat type on Tinian being tangantangan thickets (Engbring *et al.* 1986, Falanruw *et al.* 1989, Fosberg 1960). According to Engbring *et al.* (1986), 38 percent of Tinian is dominated by tangantangan, while Falanruw *et al.* (1989) estimated 54 percent of the island to be covered in secondary vegetation, which in her definition included tangantangan thickets. Only five to seven percent of the island is estimated to remain in native forest (Engbring *et al.* 1986, Falanruw *et al.* 1989), which is restricted to steep limestone escarpments (Falanruw *et al.* 1989).

During the study conducted by the Service between 1994 and 1995, information was obtained on the abundance, distribution, and breeding ecology of several species found on Tinian such as the Tinian monarch (USFWS 1996c). It was found that the native limestone forest may be preferred by monarchs over secondary and tangantangan forest types, based on the following: 1) monarch home range sizes were found to be four to five times smaller in native limestone forest than in secondary and tangantangan forests (home range sizes in limestone forest averaged 1,221 square m [1,334 square yards(yds)]), while home range sizes in secondary and tangantangan forest types averaged 5,196 and 6,385 square m (5,679 and

6,979 square yds), respectively, indicating that native forest is higher quality monarch habitat because smaller areas are able to support a monarch home range; 2) 64 percent of all monarch nests were constructed in native tree species; 3) of 114 monarch nests, 62 were found in native forest while only 52 were found in the secondary and tangantangan forest types combined, indicating that monarchs have higher nest densities in native forest; 4) nesting success in native limestone forest was greater than in secondary and tangantangan forest types (of 19 nests that produced nestlings, 13 were in native limestone forest and only 6 were in secondary forest and tangantangan forests combined); and 5) based on resightings of banded birds, monarch densities were found to be four to five times higher in limestone forest than in either secondary or tangantangan forest (30.7 birds/hectare (ha)(76.7 acre), 7.7 birds/ha (19.3 acre), and 6.0 birds/ha (15.0 acre), respectively).

Other information provided by the previously mentioned study has described the Tinian monarch as a forager of the mid-level forest. It perches on relatively slender branches beneath the forest canopy and gleans invertebrates (*e.g.*, moths, butterflies, ants, caterpillars, and several species of long-legged insect(s) from leaf and bark surfaces. Foraging habits of the Tinian monarch are similar in all three different forest habitats (*i.e.*, limestone forest, secondary forest, and tangantangan).

The Tinian monarch likely breeds year-round. However, peak nesting periods for the Tinian monarch appear to be associated with periods of increased rainfall, which, during the time of the Service's 1994-95 study (USFWS 1996c), occurred during the months of January, May, and September. Tinian monarchs have been observed nesting in three different forest habitats (*i.e.*, native limestone, secondary, and tangantangan). Mean clutch size for the Tinian monarch is two eggs, with an occasional occurrence of one or three eggs (USFWS 1996c).

Likely predators on monarchs and their eggs and nestlings are collared kingfishers (*Halcyon chloris*), Micronesian starlings (*Aplonis opaca*), feral cats (*Felis domesticus*), and the roof rat (*Rattus rattus*) (USFWS 1996c). There is one observation of a monitor lizard (*Varanus indicus*) crawling in a tree with an egg inside its mouth that matched the size and color of a monarch or rufous fantail egg. Another cause of mortality is inclement weather, which has been known to cause a nestling and its nest to fall to the ground when the nest was hit by a large falling branch.

Tinian monarchs are known to occur throughout the action area on Tinian. Therefore, it is likely that the proposed project will adversely affect the Tinian monarch.

III. Environmental Baseline

The environmental baseline describes the status of the species and factors affecting the environment of the species or critical habitat in the proposed action area contemporaneous with the consultation

in process. The baseline usually includes State, local, and private actions that affect a species at the time the consultation begins. Unrelated Federal actions that have already undergone formal or informal consultation are also a part of the environmental baseline. Federal actions within the action area that may benefit listed species or critical habitat are also included in the environmental baseline.

A. Status of the species within the action area

Green sea turtle

Guam: There is some regular low-level nesting of green turtles on Guam (NMFS 1998a). Green sea turtles have been known to nest at Tarague Beach (Wiles *et al.* 1995).

Tinian: Green sea turtles have been observed nesting at Unai Babui, Unai Dankulo, and Unai Chulu (USFWS 1996). There are also records of sea turtles nesting at Kammer Beach in the past (USFWS 1996).

FDM: The action area is the entire island of FDM, which includes two small beaches (both approximately 50 m long by 10 m wide), one on the southwestern corner and one on the northeastern corner of the main body of the island. Following a visit to FDM in 1997, Service biologist Michael Molina determined that the two beaches on FDM likely do not represent suitable nesting habitat for sea turtles, due to the extremely shallow nature of the beaches, the fact that the beaches are entirely or almost entirely overwashed during periods of high tide or swell, and the rocky nature of much of their substrate (BO 1-2-97-F-08). However, according to Gerald Davis of Guam DAWR, two green sea turtle nests were found during surveys of FDM in 1982. Based on this information, the Service has determined that green sea turtles may, in fact, presently nest on FDM.

Hawksbill sea turtle

Guam: Gerald Davis (Guam Department of Wildlife Resources) discovered a hawksbill nesting on Guam in November 1991 (NMFS 1998b) at Sumay Cove Marina. Hawksbill nesting on Guam is rare, although nesting hawksbills leave minimal crawl traces and not all beaches on the island are properly surveyed for nesting sea turtles (NMFS 1998b).

There are no records of hawksbills nesting in the CNMI (NMFS 1998b). This is due to: 1) beaches being scarce on the remote islands in the north of the Mariana Archipelago, 2) the long history of occupation on the more southern islands, and 3) almost no hawksbill nesting surveys of small pocket beaches have been conducted in remote areas of the CNMI. However, the lack of evidence doesn't rule out the possibility of hawksbills nesting at low levels at unknown locations (NMFS 1998b).

Mariana Fruit Bat

Guam: Almost all of the Mariana fruit bats that remain on Guam occur on Andersen AFB at Pati Point and between Ritidian Point to the northern rim of Tarague Basin (Wiles *et al.*

1995) In March 1997, between 300 to 350 bats were observed on Guam (G. Wiles, personal communication 1997). Bats are also known to occur in the limestone forest areas between Mount Almagasa and East Tower and in the western portion of the Ordnance Annex (Belt Collins 1998).

Rota: There are a total of 1,000 bats on Rota (Worthington and Taisacan 1996). Probably no bats are found in the proposed action area.

Tinian: Between 25 to 125 Mariana fruit bats have been observed on Tinian (Lemke 1984; Wiles 1996, Worthington and Taisacan 1996), but its residence status on Tinian is uncertain (Marshall *et al.* 1995b). The Mariana fruit bat has been observed roosting in large trees surrounding Lake Hagoi and along the cliffines and forest plateau south of Lake Hagoi, near Mount Lasso (Belt Collins 1998). Bats have also been seen near the West Tinian Airport and the Carolinas Ridge (Belt Collins 1998).

FDM: Two fruit bats were observed roosting in low shrubs on FDM by Tim Sutterfield, Fish and Wildlife Biologist for the Navy, during a site visit in December 1996 (Sutterfield *in lit.* 1997). These two bats probably do not represent a permanent roosting or breeding colony. Although some of the vegetation on the island may provide forage for bats, the low, shrubby nature of the vegetation makes it unlikely that bats utilize FDM for more than a temporary roosting site during travel between larger islands. No roosting or flying bats have been reported from FDM during other site visits or during pre- or post-training helicopter surveys, as would be expected if large numbers of bats were utilizing FDM on a regular basis. The two bats observed on FDM represent a small fraction of the total population for the Mariana islands. Exact take of any fruit bats on the island as the result of aerial and naval bombardment have been indeterminate due to an inability to visit the island.

Micronesian Megapode

Tinian: It is estimated that the remnant population of megapodes on Tinian consists of 10 or fewer individuals (USFWS 1998b). Three confirmed sightings of megapodes were recorded during surveys conducted in 1995, all of which occurred within the Military Leaseback Area (MLA) of Tinian (USFWS 1996c). It is estimated that approximately one-half (5 individuals) to one-third (8 individuals) of the known individuals of megapodes are located within the MLA, which represents less than 1% of the total estimated population within the Marianas archipelago.

FDM: A total of four megapodes were discovered on FDM during a site visit on November 4, 1996 (Lusk and Kessler 1996). Two megapodes were found on the island during a Navy site visit on December 17, 1996 (Figure 2) (Sutterfield *in lit.* 1997). The size of the island, 0.7 km^2, led the Service to estimate that at the time of the 1996 site visit there were likely no more than ten megapodes on the island. This number represents less than 1% of the total estimated population within the Marianas archipelago. Aerial and naval bombardment of the

island since the 1996 site visit has likely decreased the numbers of megapodes on the island, but exact loss of megapodes is indeterminate due to an inability to visit the island. Megapodes may have emigrated to FDM since 1996, or reproduction on the island may have occurred since then, but recruitment levels through either of these avenues has not been determined. With regard to immigration, the island nearest FDM with a substantial megapode population, Anatahan, is approximately 50 miles away. No nesting has been recorded on FDM, but the possibility does exist.

Tinian Monarch
As previously mentioned, the current estimate of the Tinian monarch population is 55,721 birds. Within the action area on Tinian, there are approximately 45,600 monarchs, which represents approximately 82% of the total population.

The northern third of Tinian is used exclusively by the military for training purposes. The central third of Tinian is classified as the Military Lease Area which may be used for military training, but has been leased back to the CNMI government for compatible economic agriculture use and the expansion of the West Tinian Airport. These areas contain three habitat types, native limestone, secondary forest and tangantangan, that support Tinian monarchs.

B. Factors affecting species environment within the action area

Guam
Within the action area on the island of Guam, past and present Federal, State, private, and other human activities that may affect the hawksbill sea turtle, and green sea turtle include military training activities and surveys and habitat improvement projects for the above mentioned species as well as other species. Military activities within the action area on the island of Guam are ongoing. The Service has prepared five previous BOs (1-2-90-F-003, 1-2-92-F-07, 1-2-93-F-14, 1-2-94-F-05, and 1-2-94-F-06) regarding these military activities and their potential to adversely effect the green sea turtle, hawksbill sea turtle, and other listed species. The consultations covered military activities, such as helicopter training, VRC-50 flight squadron field carrier landing practice (FCLP), and the permanent relocation of the VRC-50 Squadron, aircraft training.

No incidental take was anticipated or authorized for the green sea turtle and hawksbill sea turtle for activities on Guam.

A 24-hectare wild game exclosure surrounded by a chain-link fence was constructed by Andersen Air Force Base at Area 50 of Northwest Field to exclude deer and pigs. A bulge barrier has been retrofitted to the fence to prevent brown treesnakes from entering the enclosed area. The intent at this location is to remove all, or nearly all, brown treesnakes from within the plot, and to introduce rare species (*e.g.*, the federally endangered Guam rail)

into the area.

In 1990, Guam Department of Aquatic and Wildlife Resources (GDAWR) began annual crow surveys in northern Guam (*e.g.*, AAFB) to monitor their status (Aguon 1997). Also, efforts to reverse the decline of the Mariana crow began in 1986 with attempts to protect active crow nests from brown treesnake predation. Steel sleeves and an adhesive resin were placed around trunks of active nest trees to act as a snake barrier and snake trapping was begun. Increased nest protection was achieved with the development of electrical barriers and effective snake trapping during the early 1990's. GDAWR also conducts annual monitoring of the Mariana fruit bat colony at Pati Point.

Rota
There have been no activities on Rota that have undergone section 7 consultation that anticipated the incidental take of federally listed species.

Tinian
Within the action area on the island of Tinian, past and present Federal, State, private, and other human activities that may affect the Tinian monarch include military training activities, agricultural and grazing activities, and the expansion of the West Tinian Airport. The Navy has consulted four times (BO's 1-2-84-F-26, 1-2-84-F-44, 1-2-90-F-003, and 1-2-90-F-024) regarding its training activities (*e.g.*, loading and unloading of personnel, supplies, and equipment from C-130 aircraft, clearing of vegetation for establishing bivouac camps, setting up a perimeter defense around camps, firing of weapons at the firing range, and tactical airdrops) within the action area. The consultations resulted in the anticipated incidental take (harassment) of 79 monarchs and loss (harm) of 19 nests (including eggs and young). Also, incidental take was permitted for the harassment of monarchs for ongoing activities such as the Navy's "Kennel Bear" exercises, which occurs twice a year for one to two weeks each time and Marine Corps training, which occurs three times a year for four weeks at a time.

Three other consultations have been conducted with the U.S. Army Corps of Engineers and the U.S. Information Agency for the Tinian Voice of America (VOA) project and the Federal Aviation Administration (FAA) for the expansion of the West Tinian Airport. These consultations anticipated the incidental take for the harm and harassment of 812 Tinian monarchs and the loss (harm) of 681 nests (with young and eggs). The FAA and the CNMI Commonwealth Ports Authority are working with the Tinian Legislature, CNMI DFW, the U.S. Navy, and the Service to set-aside approximately 379 hectares (ha) (937 acres (ac)) of land located to the north of West Tinian Airport to preserve into perpetuity habitat for the Tinian monarch as well as other wildlife and plant species.

FDM
The Navy has consulted five times for aerial bombardment, gunnery training, naval gunfire, and small arms gunfire exercises conducted on FDM (BO's 1-2-97-F-01, 1-2-97-F-05, 1-2-

97-F-08, 1-2-98-F-02, and 1-2-98-F-03). The consultations resulted in the anticipated incidental take of all Micronesian megapodes on the island, three adult green sea turtles and three adult hawksbill sea turtles, 12 active turtle nests, and an indeterminable number of Mariana fruit bats.

The Navy has funded the removal of feral ungulates from the island of Sarigan for the purpose of improving habitat for the Micronesian megapode and Mariana fruit bat.

IV. Effects of the Action

Green Sea Turtle & Hawksbill Sea Turtle
The primary concerns of the Service with regard to the effects of military activities on green sea turtles are (1) direct death of sea turtles on nesting beaches, (2) the destruction of active turtle nests, (3) harassment of sea turtles on nesting beaches, and (4) destruction of nesting habitat.

Mariana Fruit Bat
FDM: The primary concerns of the Service with regard to the effects of ongoing aerial bombardment and small arms gunfire practice on the Mariana fruit bat on FDM are (1) direct death of fruit bats, (2) abandonment of juvenile fruit bats by mothers, and (3) destruction of required foraging and roosting habitat. Although fruit bats are strong fliers and likely to abandon the island once bombardment begins, there remains the probability of death or injury to roosting bats from training activities.

The impact areas for aerial bombardment, naval gunfire, and small arms gunfire cover the entire area of FDM. Therefore, the Service anticipates the possible direct death or injury of fruit bats occurring on the island during the future years of training as proposed.

Micronesian Megapode
Tinian: If megapodes nest on Tinian and either build mounds or burrow between the roots of trees as incubation strategies, there is a potential that troop movements (of up to 2,000 personnel) through limestone forest or adjacent non-native secondary forests could directly affect the megapode by trampling nests that are not seen by personnel.

FDM: The primary concerns of the Service with regard to the effects of ongoing aerial bombardment and small arms gunfire practice on the Micronesian megapode on FDM are (1) direct death of megapodes, (2) destruction or abandonment of active megapode nests, and (3) destruction of required foraging, roosting, and/or nesting habitat. The potential for all of these effects was apparent when on August 2, 1997, the Navy conducted post-bombardment surveys of FDM in accordance with the terms and conditions set forth in the Service's May 16, 1997, biological opinion. As detailed in the Navy's August 21, 1997, memorandum, 25 to 50 new bomb craters were observed and a large section of the central northern portion of

the island, an area believed to represent megapode habitat, was "burned to bare earth" (Kaku *in lit.* 1997). The Service believes the August 2, 1997, survey to be representative of the type of damage that can occur during aerial bombardment, naval gunfire, and/or from small arms fire such as grenade launchers or anti-tank rockets.

The impact areas for aerial bombardment, naval gunfire, and small arms gunfire cover the entire area of FDM. Therefore the Service anticipates the possible direct death of any remaining megapodes and destruction of their nests occurring on the island during the future years of training on FDM.

Tinian Monarch
Ongoing and proposed field maneuver training on Tinian ranges from basic land navigation and cross-country movement skills for individuals (use of a map, compass, and Global Positioning System (GPS)) through exercises for up to 1,000 or more participants combining many offensive and defensive maneuvers and logistics support. Large-scale activities will occur a maximum of three times per year, for up to three weeks each time, whereas training for individuals may occur daily, weekly, or on a monthly basis. These activities can occur in areas that contain limestone forest, secondary forest, and tangantangan forest, all of which support Tinian monarchs.

Tinian monarchs are known to nest throughout the action area. Due to the number of people that will be traveling though the area during the day or night and the fact that Tinian monarch nests are found mid-level in trees, there is potential for soldiers moving through the area to directly affect monarchs by knocking nests out of trees.

V. Cumulative Effects

Cumulative effects include the effects of future State, local, or private actions that are reasonably certain to occur in the area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. There are no known future State, local, or private actions that are reasonably certain to occur in the action area.

VI. Conclusion

After reviewing the current status of the green sea turtle, hawksbill sea turtle, Micronesian megapode, and the Tinian monarch, the environmental baseline of these species in the action area, and the effects of the proposed action, including cumulative effects, it is the Service's biological opinion that the proposed military training activities are not likely to jeopardize the continued existence of these species. No critical habitat has been designated for these species; therefore, none will be affected.

After reviewing the current status of the Mariana fruit bat (within the CNMI), the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's conference opinion that these military training activities, as proposed, is not likely to jeopardize the continued existence of the proposed Mariana fruit bat. No critical habitat has been proposed, therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Department of Defense so that they become binding conditions of any grant or permit issued, as appropriate, for the exemption in section 7(o)(2) to apply. The Department of Defense has a continuing duty to regulate the activity covered by this incidental take statement. If the Department of Defense (1) fails to assume and implement the terms and conditions or (2) fails to require adherence to the terms and conditions of the incidental take statement through enforceable terms that are added to a permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Department of Defense or (applicant) must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement (50 CFR 402.14(I)(3)).

Amount or extent of take anticipated for listed species

Guam

Hawksbill sea turtle: The Service has determined that hawksbill sea turtles may be incidentally taken during amphibious landing training (*e.g*, AAV and LCU) near Sumay Cove, if such training is conducted during the nesting period, which could occur year round (NMFS 1998b). Specifically, incubating eggs may be inundated with water from wind and wave action from amphibious vehicles landing on the boat ramp at the Sumay Cove Mariana. The incidental take is expected to be in the

form of the loss of one turtle nest (eggs and associated hatchlings) per year.

Tinian

Green sea turtle: The Service has determined that green sea turtles may be incidentally taken during the amphibious landing training (*e.g.*, LCAC, AAV, and LCU) proposed at Unai Chulu, Unai Dankulo, and Unai Babui if such training occurs during the nesting season. Specifically, incubating eggs may be crushed by the landing craft or by off-loaded vehicles; vehicle tracks in the sand may prevent hatchlings from reaching the ocean; and activities on or near the beach may prevent turtles from nesting on the beach. The incidental take is expected to be in the form of the loss of one turtle nest (eggs and associated hatchlings) per nesting season.

The Service is concerned that if a nest is not found prior to a landing that it could be crushed and any eggs or hatchlings within or near the nest could be affected.

Tinian monarch: The Service has determined that Tinian monarchs may be incidentally taken during troop movements of 10 or more personnel occurring within monarch habitat during peak nesting periods, which is during the months of January, May, and September as associated with periods of increased rainfall (USFWS 1996a). The Service estimates that 1% of the troops moving through the forest, especially at night, could inadvertently knock a monarch nest out of the nest tree and result in the take of a egg or a chick. The incidental take is expected to be in the form of the loss of a combination of 60 eggs or chicks per year.

Micronesian megapode: The Service's primary concern is that troops moving through the forest, especially at night, may inadvertently step on and crush a megapode nest. The incidental take is expected to be in the form of the loss of one megapode nest, and any associated eggs per year.

FDM

Green sea turtle: Military training activities on FDM from the year 2001 and into the future are anticipated to result in the take of green sea turtles. The incidental take is expected to be in form of the loss of one nest per year from bombing and gunnery practice on FDM.

Micronesian megapode: The Service believes that the two military exercises, which occurred from July 21 to August 1, 1997, and from September 12 to 13, 1997, may have resulted in the taking of all megapodes that occurred on FDM at the time of the bombing and gunnery practice. Such taking likely took the form of direct death or injury, harm and harassment. We therefore believe that the levels of incidental take authorized in biological opinion #1-2-97-F-05 and biological opinion #1-2-97-F-08 have likely been met. The military exercise covered under the December 30, 1997, biological opinion (#1-2-98-F-02) was not conducted. We anticipate that any megapodes still present on FDM, or that may colonize the island prior to the onset of any of the military exercises covered under biological opinion #1-2-98-F-03, which covers the time period of May 1, 1998 to May

1, 2001, may also be incidentally taken.

Under this consultation, military training activities on FDM from the year 2001 and into the future are anticipated to result in the take of Micronesian megapodes. The incidental take is expected to be in form of the death of one megapode per year from bombing and gunnery practice on FDM.

Amount or extent of take anticipated for proposed species

FDM

Mariana fruit bat: For previous consultations for military training activities on FDM, it was anticipated that any bats present on the island at the time of commencement of military activities covered under the above timeline would also be incidentally taken. Under this consultation, military training activities on FDM from the year 2001 and into the future are anticipated to result in the take of Mariana fruit bats. The Service is concerned that if fruit bats are present on FDM, they will be hit by the ammunition used for training. The incidental take is expected to be in form of the death or injury of one adult or juvenile Mariana fruit bat per year from bombing and gunnery practice on FDM.

Effect of the take

In the accompanying biological opinion/conference report, the Service determined that this level of anticipated take is not likely to result in jeopardy to the green sea turtle, hawksbill sea turtle, Micronesian megapode, Mariana fruit bat, and Tinian monarch or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures for Listed Species

The Service believes the following reasonable and prudent measure(s) are necessary and appropriate to minimize impacts of incidental take of green sea turtles, hawksbill sea turtles, Micronesian megapodes, and Tinian monarchs.

1. Minimize the loss of nests, eggs, and hatchlings of green sea turtles on the islands of Tinian and FDM.

2. Minimize the loss of nests, eggs, and hatchlings of hawksbill sea turtles at Sumay Cove, Guam.

3. Minimize the loss of eggs of megapodes on Tinian and adult and juvenile megapodes and any nests on FDM.

5. Minimize the loss of eggs and chicks of Tinian monarchs on Tinian.

Terms and Conditions for Listed Species

In order to be exempt from the prohibitions of section 9 of the Act, the Department of Defense must comply with the following terms and conditions, which implement the reasonable and prudent

measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

In order to address reasonable and prudent measure #1, the following terms and conditions apply:

1a) Minimize amphibious landing exercises on Tinian and aerial bombardment, gunnery training, naval gunfire, and small arms gunfire exercises conducted on FDM during the green sea turtle nesting period (January to October);

1b) Report to the Service within one month of the completion of amphibious vehicle landings on known turtle nesting beaches on Tinian the amount or extent of take of green sea turtles that has occurred as a result of implementation of the proposed action; and

1c) Report to the Service within one month of the completion of aerial bombardment, gunnery training, naval gunfire, and small arms gunfire exercises on FDM the amount or extent of take of green sea turtles or their nests that has occurred as a result of implementation of the proposed action.

In order to address reasonable and prudent measure #2, the following terms and conditions apply:

2a) For AAV and LCU landings at Sumay Cove, Guam, conduct the mitigation/minimization measures as stated in the project description section of the BO for amphibious landing exercises.

2b) Temporarily cease amphibious landing exercises will be temporarily ceased at any given time that there is a sea turtle or nest present within Sumay Cove, Guam until the turtle or nest is not in harm's way;

2c) Minimize amphibious landing exercises at Sumay Cove, Guam, during the hawksbill sea turtle nesting period; and

2d) Report to the Service within one month of the completion of amphibious vehicle landings at Sumay Cove, Guam, the amount or extent of take of hawksbill sea turtles that has occurred as a result of implementation of the proposed action.

In order to address reasonable and prudent measure #3 the following terms and conditions apply:

3a) On FDM, the military shall restrict its impact zone to the central interior portion and/or southern tip of the island and western cliff faces, to the extent possible;

3b) The use of cluster bombs shall be prohibited in training on FDM; and

3c) The Department of Defense shall report within one month of completion each time military training activities have taken place on FDM on the amount or extent of take of megapodes and fruit bats that has occurred as a result of implementation of the proposed action.

In order to address reasonable and prudent measure #4 the following terms and conditions apply:

4a) On Tinian, limit the amount of troop movements occurring at night through Tinian monarch habitat during peak breeding season, which is during the months of January, May, and September as associated with periods of increased rainfall (USFWS 1996a), and through limestone forest and adjacent secondary forest during the Micronesian megapode nesting season;

4b) Avoid conducting troop movements within monarch nesting habitat during the peak nesting season for monarchs; and

4c) Report to the Service on an annual basis (by December 31) regarding troop movements on Tinian and the amount or extent of take of Tinian monarchs or Micronesian megapodes that has occurred as a result of implementation of the proposed action. The reports should be sent to the Pacific Islands Manager, U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, Room 3-122, Box 50088, Honolulu, Hawaii, 96850.

The following term and condition applies to each species in which incidental take has been permitted:

5) Any injured or dead listed birds, mammals or reptiles found during any of the proposed and ongoing military training activities in the Mariana Archipelago should be reported to the Service's Law Enforcement Office in Guam, Guam Department of Aquatic and Wildlife Resources (GDAWR), and the CNMI DFW. Care instructions will be provided regarding any sick or injured listed species. If dead individuals are found, the Service's Law Enforcement Office in Guam should be notified within one working day. Dead listed species should be wrapped in aluminum foil and refrigerated (dead birds should not be wrapped in plastic or placed in a freezer) and then given to the Service's staff for disposition. The Service's Law Enforcement Office will provide further instructions on the proper disposal of the animals, including shipping requirements to facilities to determine cause of death, if the cause is not known. The Service's Law Enforcement Office in Guam (U.S. Fish and Wildlife Service, P.O. Box 23774, GMF, Barrigada, Guam, 96921; telephone: 671/472-7151), the Pacific Islands Ecological Services Office in Honolulu (U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, Room 3-122, Box 50088, Honolulu, Hawaii, 96850; telephone: 808/541-3441), GDAWR (192 Dairy Road, Mangilao, GU 96923, 671/735-3957),and the CNMI DFW (P.O. Box 10007, Saipan, MP, 96950; telephone: 670/322-9628) should be provided with a written report describing the events surrounding the demise or

injury of the species, if known, and measures must be taken to prevent further injuries or deaths.

Reasonable and Prudent Measures for Proposed Species

The prohibitions against taking the species found in section 9 of the Act do not apply until the species is listed. However, the Service advises the Department of Defense to consider implementing the following reasonable and prudent measures. If this conference report is adopted as a biological opinion following a listing or designation, these measures, with their implementing terms and conditions, will not be discretionary.

1. Minimize the loss of adult and juvenile Mariana fruit bats on FDM.

Terms and Conditions for Proposed Species

In order to be exempt from the prohibitions of section 9 of the Act, the Department of Defense must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

In order to address reasonable and prudent measure #1 the following terms and conditions apply:

1a) On FDM, the military shall restrict its impact zone to the central interior portion and/or southern tip of the island and western cliff faces, to the extent possible;

1b) The use of cluster bombs shall be prohibited in training on FDM; and

1c) The Department of Defense shall report within one month of completion each time military training activities have taken place on FDM on the amount or extent of take of megapodes and fruit bats that has occurred as a result of implementation of the proposed action.

In summary, the Service anticipates that no more than two nests of green sea turtles per nesting season (one nest on Tinian and one nest on FDM), one hawksbill sea turtle nest per year on Guam, 60 eggs or chicks per year of Tinian monarchs, one Micronesian megapode egg per year on Tinian, one megapode per year on FDM, and one Marina fruit bat per year on FDM will be incidentally taken as a result of the proposed action. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Brown Treesnake Control/Interdiction Plan for Military Training Exercises (BTS Plan) and the U.S. Department of Agriculture, Wildlife Services (WS), Brown Treesnake Control Procedures In Support of Scheduled Military Training Exercises, are located in Appendices E-1 and E-2 respectively of the DEIS. These documents describe various proposed measures to prevent the export of the brown treesnake from Guam to other Mariana and Pacific islands and the U.S. Mainland. However, the plans are several years old and some of the protocols in them have become outdated. The Service recommends that the BTS Plan be updated by consolidating the most effective protocols regarding prevention and control of the brown treesnake in order to avoid any confusion by those carrying out the measures. Comments regarding the design and implementation of the revised BTS Plan should be solicited from WS, DFW, the Biological Resources Division of the U.S. Geological Survey (BRD), and the Service. Also, the effectiveness of the BTS Plan should be assessed periodically by involving external expertise on snake control techniques and strategies. As new information and techniques become available, the BTS Plan should be updated.

The Service recommends that the DOD consider funding the following conservation and recovery projects for threatened and endangered species found within the Mariana Islands: (1) efforts to eradicate feral ungulates on uninhabited northern islands, (2) surveys to assess status, distribution, and nesting/roosting areas of threatened or endangered species, (3) basic research into the life history and demography of threatened or endangered species, and (4) rat (*Rattus* spp.) eradication on uninhabited northern islands.

In addition to FDM providing habitat for the green sea turtle, Micronesian megapode, and Mariana fruit bat, FDM also supports colonies of breeding seabirds, including masked boobies (*Sula dactylatra*), brown boobies (*Sula leucogaster*), red-footed boobies (*Sula sula*), great frigatebirds (*Fregata minor*), common noddies (*Anous stolidus*), black noddies (*Anous minutus*), and white terns (*Gygis alba*). FDM is particularly important for great frigatebirds as it is one of only two small breeding colonies known to exist in the Mariana island chain, and for masked boobies because it represents the largest known nesting site for this species in the Mariana or Caroline islands. Although none of these birds are listed under the Act, they are protected under the Migratory Bird Treaty Act of 1918 [16 U.S.C. 703-712; 40 Stat. 755], as amended. The Service recommends that the Navy concentrate impacts within the interior portion of the island to lessen harm to nesting and roosting seabirds and that bombing activities be limited to low periods in the seabird breeding season. Also, the Navy should establish a long-term monitoring program to evaluate the effects of aerial bombing and naval gunnery on seabird populations.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

Conclusion

The Service has determined the military activities carried out by the Department of Defense on Guam, Rota, FDM, and Tinian, as described in the DEIS are not likely to jeopardize the continued existence of the green sea turtle, hawksbill sea turtle, Mariana fruit bat, Micronesian megapode, and the Tinian monarch.

This concludes formal consultation and conference on the actions outlined in the request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

You may ask the Service to confirm the conference report as a biological opinion issued through formal consultation if the Marianas fruit bat is listed within the CNMI. The request must be in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm the conference report as the biological opinion of the project and no further section 7 consultation will be necessary.

After listing of the Mariana fruit bat in the CNMI as endangered/threatened and/or designation of critical habitat for the Mariana fruit bat and any subsequent adoption of this conference report, the Federal agency shall request reinitiation of consultation if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect the species or critical habitat in a manner or to an extent not considered in this conference report; (3) the agency action is subsequently modified in a manner that causes an effect to the species or critical habitat that was not considered in this conference report; or (4) a new species is listed or critical habitat designated that may be affected by the action.

The incidental take statement provided in this conference report does not become effective until the species is listed and the conference report is adopted as the biological opinion issued through formal consultation. At that time, the project will be reviewed to determine whether any take of the Mariana fruit bat within the CNMI has occurred. Modifications of the report and incidental take statement

may be appropriate to reelect that take. No take of the Mariana fruit bat in the CNMI may occur between the listing of the species and the adoption of the conference report through formal consultation, or the completion of a subsequent formal consultation.

This BO and formal conference report satisfies section 7 requirements of the Act. However, it does not cover requirements pertaining to wildlife and plant species under local territorial or commonwealth laws and regulations.

If you have any questions concerning this biological opinion or conference report, please contact Assistant Field Supervisor Karen Rosa or Fish and Wildlife Biologists Leila Gibson (telephone: 808/541-3441; facsimile: 808/541-3470).

Sincerely,

Robert P. Smith

Robert P. Smith
Pacific Islands Manager

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PROGRAMMATIC AGREEMENT AMONG THE COMMANDER IN CHIEF, U.S. PACIFIC COMMAND REPRESENTATIVE GUAM AND THE COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS (USCINCPAC REP GUAM/CNMI), THE ADVISORY COUNCIL ON HISTORIC PRESERVATION AND THE CNMI HISTORIC PRESERVATION OFFICER REGARDING IMPLEMENTATION OF MILITARY TRAINING ON TINIAN

WHEREAS, The U.S. Department of Defense (DoD) has leased 16,554 acres on the island of Tinian and near shore areas from the Commonwealth of the Northern Mariana Islands (CNMI) for military purposes; and

WHEREAS, under the lease agreement, DoD is granted full possession of approximately 7510 acres of an Exclusive Military Use Area at the north end of the island; and

WHEREAS, the Commander in Chief, Pacific Command Representative, Commander U.S. Naval Forces Marianas (USCINCPAC REP), is the administrative agent for DoD in the Mariana Islands; and

WHEREAS, USCINCPAC REP has assigned Pacific Division, Naval Facilities Engineering Command (PACNAVFACENGCOM) as coordinating agency to prepare an Environmental Impact Statement (EIS) under the National Environmental Policy Act of 1969, as amended (P.L. 91-190) and review proposed military training exercises under Section 106 of the National Historic Preservation Act of 1969, as amended (16 U.S.C. 470f) hereinafter Section 106 and Section 110 of the same Act (16 U.S.C. 470h-2(f)); and

WHEREAS, USCINCPAC REP has conducted an inventory survey of the majority of Exclusive Military Use Area (EMUA) to identify and evaluate historic properties; and

WHEREAS, the USCINCPAC REP has determined that the military training program may have an effect upon the North Field National Historic Landmark and other historic properties determined eligible for inclusion in the National Register of Historic Places (NRHP), as identified in the reports *Archaeological Inventory Survey in Conjunction with EIS for Training Exercises on Tinian Island* and *Military Exercises and Historic Sites in Military Training Areas on the Island of Tinian: An Archaeological Assessment*, and has consulted with the Advisory Council on Historic Preservation (ACHP) and the CNMI Historic Preservation Officer (HPO) pursuant to 36 CFR Part 800.13, implementing Section 106; and

WHEREAS, the public has been notified of the proposed military training program and views were solicited through the EIS scoping meetings and Draft EIS public hearings held on the islands of Tinian, Saipan, Rota and Guam; and

WHEREAS, National Park Service, through its Western Regional Office Division, and the Historic Preservation Coordinator of the Municipality of Tinian and Aguigan (Tinian HPC) have participated in the consultation; and

NOW, THEREFORE, USCINCPAC REP, the Council, and the CNMI HPO agree that military training program shall be administered in accordance with the following stipulations to satisfy USCINCPAC REP Section 106 responsibility for all individual undertakings of the military exercises on Tinian and near shore areas.

STIPULATIONS

USCINCPAC REP will ensure that the following measures are carried out:

I. IDENTIFICATION OF HISTORIC PROPERTIES.

A. USCINCPAC REP has completed an archaeological inventory survey of about 6,000 acres in the EMUA to identify historic properties, with findings presented in the report *Archaeological Inventory Survey in Conjunction with EIS for Training Exercises on Tinian Island.* Review copies of this report have been provided to the CNMI HPO and the Tinian HPC.

B. USCINCPAC REP will inventory the remaining 1,600 acres in the EMUA and about 10,000 leaseback lands in two separate on-going inventory surveys and evaluation of historic properties to be completed in 2000.

C. USCINCPAC REP will provide copies of the reports from the on-going surveys to the signatories of this PA for their review and comment on the National Register eligibility of identified historic properties. If comments are not received within 30 days of receiving the reports, USCINCPAC REP will assume concurrence from the CNMI HPO on the National Register eligibility determinations.

II. CONSTRAINED AREAS.

A. USCINCPAC REP will ensure that introduction of forces and other military training exercises will make all attempts and make every effort to avoid affecting any historical remains associated with the North Field National Landmark and archaeological sites associated with ancient Chamorro occupation or the historic period that are eligible for listing on the NRHP. Restrictions on training exercises will be accomplished by defining constrained areas on maps (Attachment 1) as No Training (NT) or No Cultural Resource Damage (NCRD) areas.

1. NT means complete avoidance with no training exercises.

2. NCRD means no vehicular travel off-road, no pyrotechnic, no demolition, and no digging without prior written approval from USCINCPAC REP. Military training activities can be carried out in NCRD areas on a limited basis without affecting historic properties. Access on designated roadways limits traffic to pedestrians and rubber-tired vehicles up to 1 1/4-ton trucks.

B. USCINCPAC REP will update the constraints maps as new information, gathered during inventory survey and other investigations of federally controlled land on Tinian, concerning the location and status of historic properties, becomes available that changes the status of NT or NCRD areas to eliminate, reduce or expand authorized training activities.

III. INSTRUCTION OF TRAINING PARTICIPANTS.

A. USCINCPAC REP shall instruct all personnel participating in military training exercises on the following prior to the exercises, to assure compliance with Stipulation II.A.

1. Tinian's historic significance and the significance of archaeological, historic, and cultural properties including Chamorro, pre-World War II, and World War II resources.

2. Location and definition of NT and NCRD and areas limited to pedestrian and rubber-tired vehicle traffic.

IV. FIELD MITIGATION AND MONITORING.

USCINCPAC REP shall ensure that all mitigation and monitoring carried out pursuant to this agreement is carried out by or under the direct supervision of a person or persons assigned by DoD that meet or exceed Professional Qualification Standards as stated in the Department of the Interior Regulations 36 CFR Part 61 Appendix A.

A. Japanese Air Command Post

1. The DoD qualified person will oversee the placement of temporary targets and bullet traps that are designed to stop the trajectory and ricochet of bullets to mitigate and avoid potential adverse effect to the Japanese Naval Air Command Post during Training in an Urban Environment (TRUE) exercises. The DoD qualified person will ensure that shell casings are removed and the site is restored to its condition prior to the exercise.

2. The DoD qualified person will photo-document the structure before and after each TRUE exercise and examine the photographs to ensure the targets and bullet traps successfully mitigate the potential adverse affect. Based upon the Criteria of Adverse

Effect at 36 CFR Part 800.9(b), the DoD qualified person, in consultation with the CNMI HPO, will determine whether the TRUE exercise has had an adverse effect on the Command Post. The TRUE training will be allowed to continue as long as no adverse effects are recorded. If there are adverse effects, USCINCPAC REP will consult with the CNMI HPO on how to mitigate the adverse effects such as modifications to the TRUE exercise or placement of temporary targets and bullet traps.

B. Unai Chulu and Unai Dankulo

USCINCPAC REP shall monitor introduction of forces for military training exercises by Air Cushioned Landing Craft (LCAC) at Unai Chulu and Unai Dankulo to ensure vehicles and pedestrians remain on designated ingress and egress paths and comply with NT and NDCR constraints.

C. Site TN-073

Site TN-073 will be protected by specifications agreed to and stated in Attachment (2) of this document to allow Tinian residents use with recreational vehicles and military use by pedestrians and rubber-tired vehicles.

V. ARTIFACT STORAGE.

USCINCPAC REP will turn all artifacts and cultural materials that are inadvertently discovered or displaced during training over to CNMI HPO for proper storage and curation.

VI. TRAINING PROGRAM REVISIONS.

USCINCPAC REP will notify and coordinate with CNMI HPO and Tinian HPC on a case by case basis for introduction of forces and maneuvers on any location not previously described in this document or the EIS on Tinian and near shore areas to establish constraints and mitigation measures.

VII. PUBLIC OBJECTIONS.

At any time during implementation of the measures stipulated in this PA, should an objection to any such measure or its manner of implementation be raised by a member of the public, USCINCPAC REP shall take the objection into account and consult as needed with the objecting party, the SHPO, or the ACHP to resolve the objection.

VIII. REPORTING REQUIREMENTS.

A. Schedule: USCINCPAC REP shall provide the CNMI HPO and the ACHP with a report that summarizes its activities under this PA within four (4) months after each Tandem Thrust or a similar type of training exercise that this PA is in effect.

B. Contents: These reports will, at a minimum, include the following information:

1. Photographs as described in Stipulation IV.B.2 that document the Japanese Air Command before and after each TRUE exercise, including an assessment or any other relevant information regarding the effect of each TRUE exercise.

2. Summaries of all other actions carried out under Stipulations IV, V, and VI.

3. Any recommendations to amend this PA or improve communications among parties.

C. Review by CNMI HPO and ACHP: The CNMI HPO and ACHP will review each report and provide USCINCPAC REP with comments. The CNMI HPO or ACHP may request additional documentation or further explanations from USCINCPAC REP.

IX. MONITORING

The ACHP and the CNMI HPO may review activities carried out pursuant to this PA and will review such activities if so requested. USCINCPAC REP will cooperate with the ACHP and the CNMI HPO in carrying out their review responsibilities.

X. AMENDMENT.

Any party to this PA may request that it be amended, whereupon the parties will consult in accordance with 36 CFR Part 800.13 to consider such amendment. In particular, the parties will consider the information developed in USCINCPAC REP's reports under Stipulation VIII to determine if USCINCPAC REP's military training program can be more effectively or efficiently managed through revisions to this PA. No amendment shall take effect until it has been executed by all consulting parties to this PA.

XI. DURATION.

It is anticipated that a Tandem Thrust training exercise or other military training exercises of similar scale are carried out on Tinian every two years. Other smaller scale military training exercises such as the TRUE exercises are carried out on an irregular basis. This PA is in effect until terminated during the entire period that DoD uses its leased lands on Tinian to carry out its military training program.

XII. TERMINATION.

Any party to this PA may terminate it by providing thirty (30) days notice to the other parties. The parties will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, USCINCPAC REP will comply with 36 CFR Part 800.4 through 800.6 with regard to individual undertakings covered by this PA.

XIII. FAILURE TO CARRY OUT AGREEMENT.

In the event USCINCPAC REP does not carry out the terms of this PA, USCINPAC REP will comply with 36 CFR Part 800.4 through 800.6 with regard to individual undertakings covered by this PA.

EXECUTION AND IMPLEMENTATION of this Programmatic Agreement evidences that USCINCPAC REP has satisfied its Section 106 responsibilities for all individual undertakings of the military training program on Tinian and near shore areas.

COMMANDER IN CHIEF U.S. PACIFIC COMMAND REPRESENTATIVE GUAM AND THE COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS (USCINPACREP GUAM/CNMI)

By: Jonathan Greenert Date: 7 Jun 1999
Rear Admiral Jonathan Greenert

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS HISTORIC PRESERVATION OFFICER

By: Date: 6/04/99

ADVISORY COUNCIL ON HISTORIC PRESERVATION

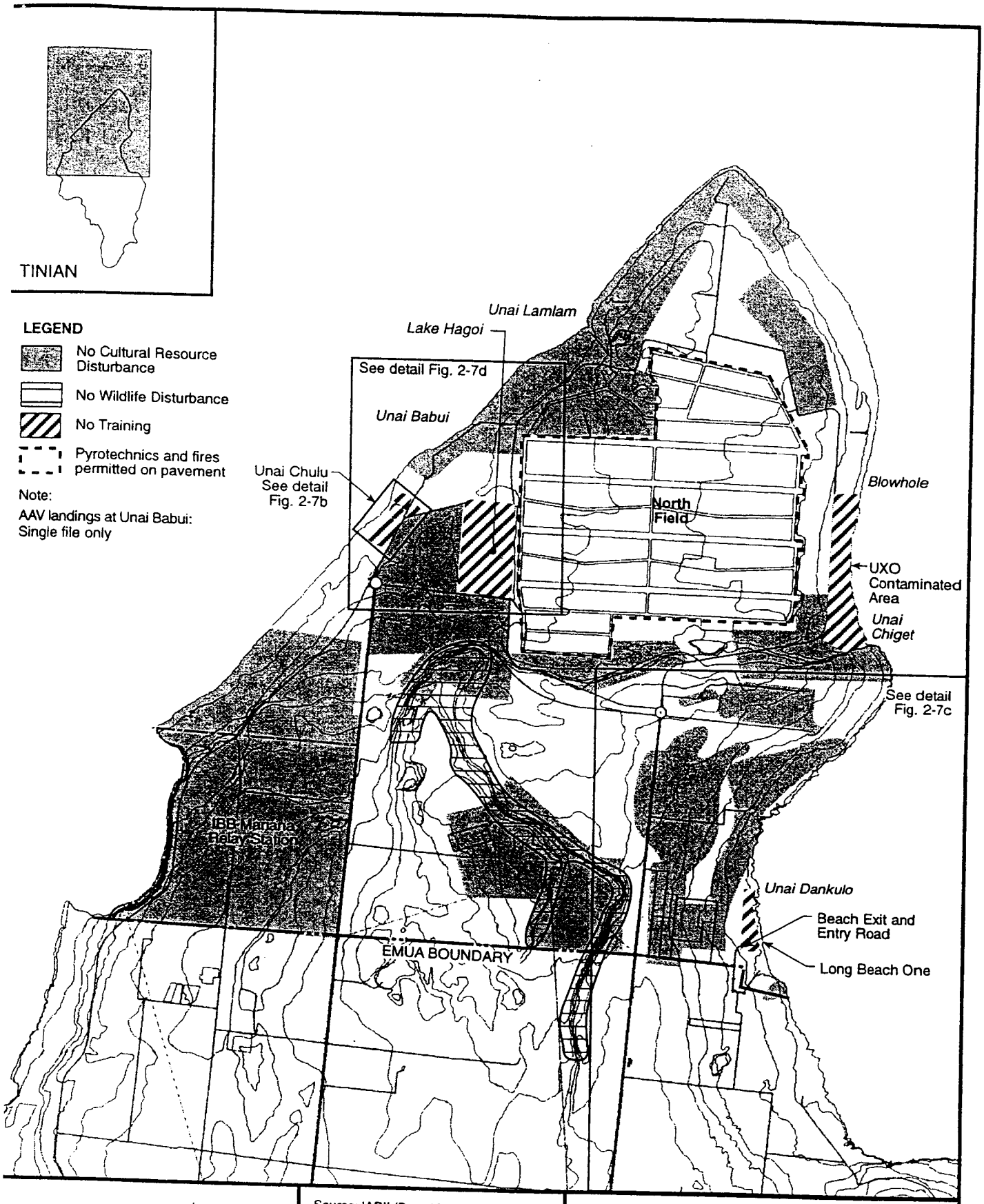
By: John M. Fowler Date: 6/18/99

ATTACHMENT 1

ATTACHMENT 1a
TINIAN CONSTRAINED AREAS

ATTACHMENT 1b

ATTACHMENT 1c
DETAILED CONSTRAINTS AT UNAI DANKULO

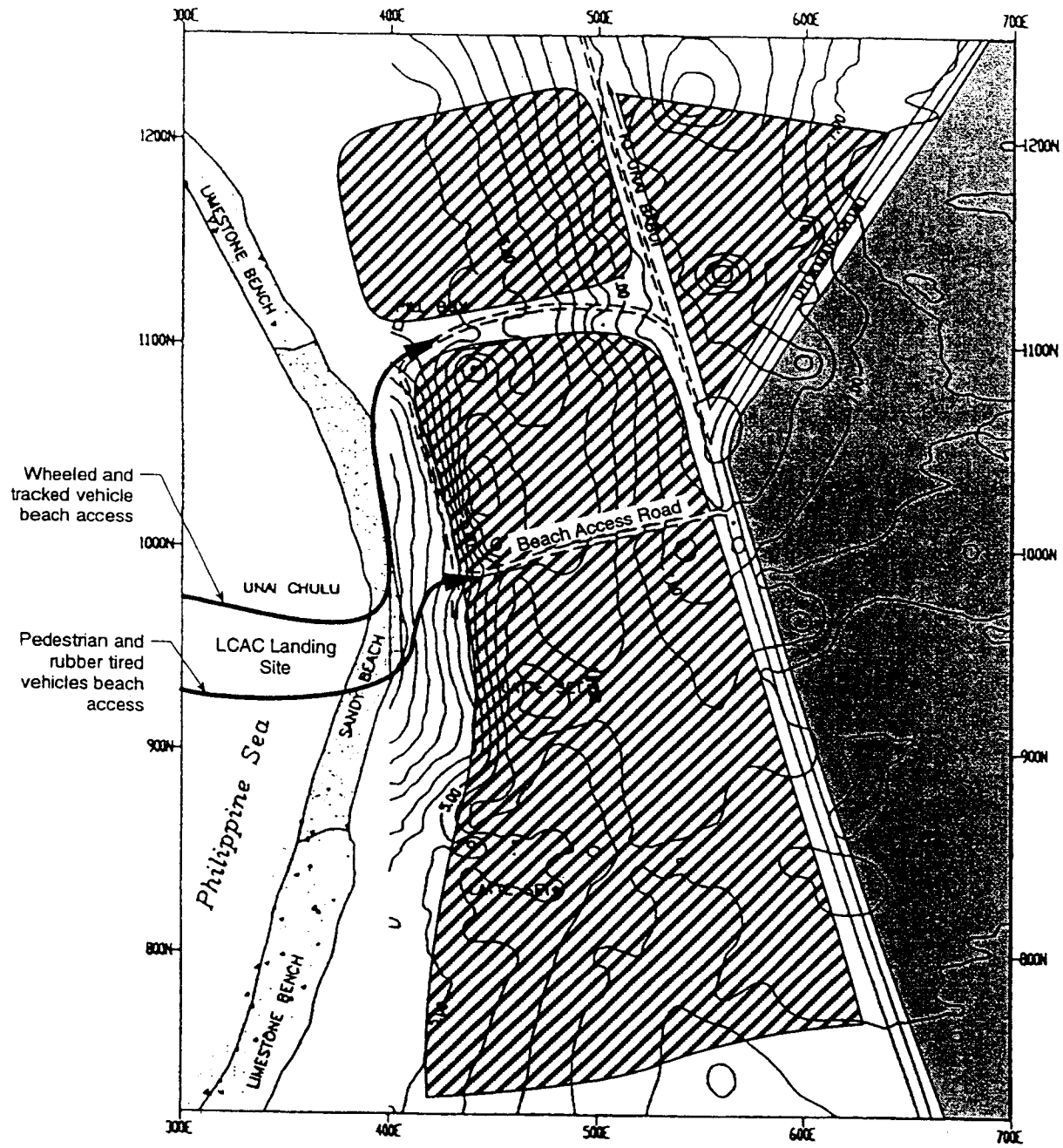


Source: IARII (Dec. 1998) Military Exercises and Historic Sites in the Military Lease Area of the Island of Tinian, CNMI: An Archaeological Assessment, (Figure 6).

Figure 2-7a
TINIAN CONSTRAINED AREAS

FEIS: Military Training in the Marianas
Belt Collins Hawaii, May 1999

ATTACHMENT 1a



LEGEND

- Permissible vehicle traffic areas
- No Cultural Resource Disturbance
- No Training

Source: IARII (Dec. 1998) *Final Military Exercises and Historic Sites in the Military Lease Area of the Island of Tinian, CNMI: An Archaeological Assessment*

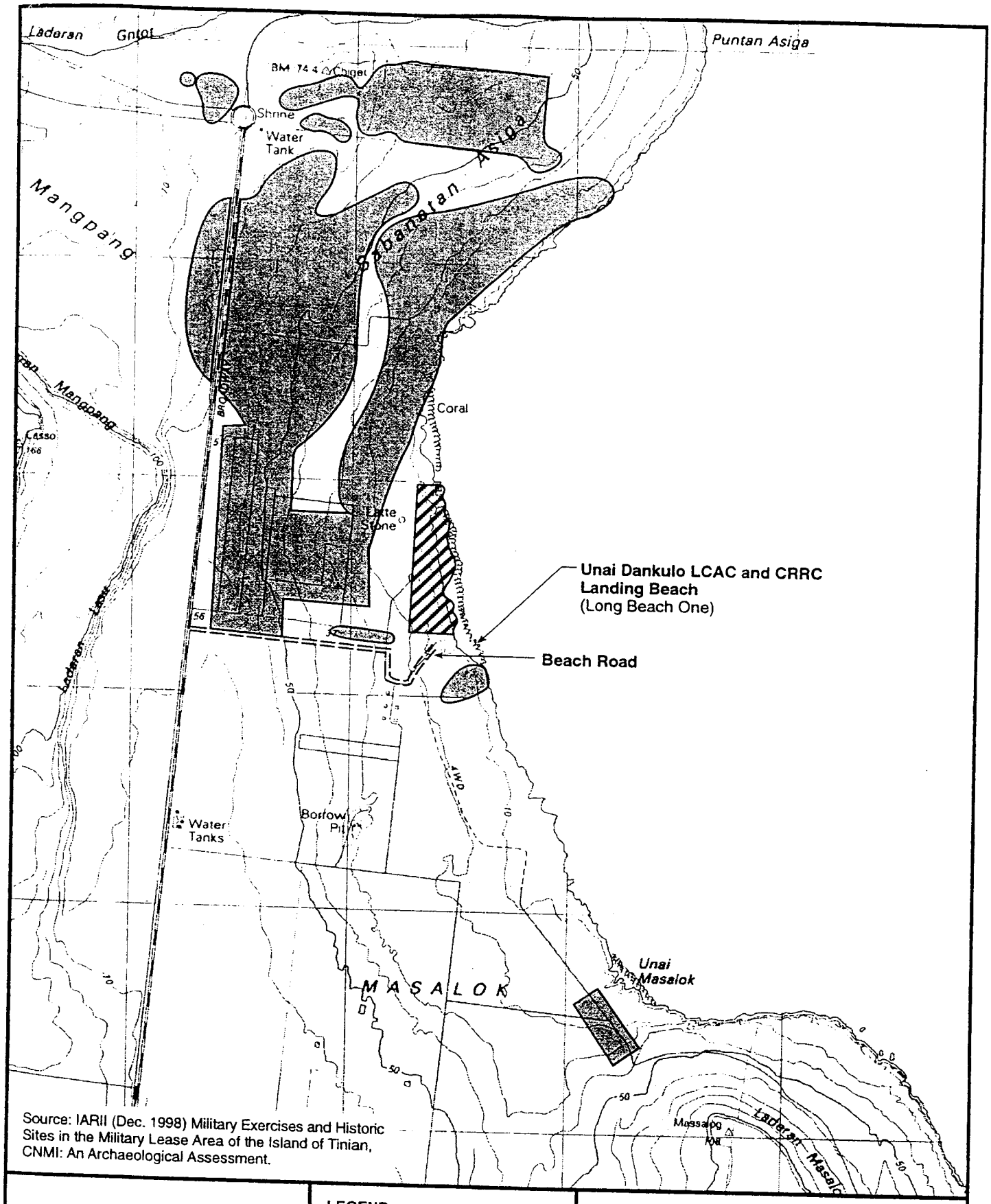
Note: Contour lines at 0.5m intervals.

NORTH

0 25 50 75 100 (Meters)

0 100 200 300 (Feet)

Figure 2-7b
DETAILED CONSTRAINTS AT UNAI CHULU
FEIS: Military Training in the Marianas
Belt Collins Hawaii, May 1999



Source: IARII (Dec. 1998) Military Exercises and Historic Sites in the Military Lease Area of the Island of Tinian, CNMI: An Archaeological Assessment.

NORTH

0 200 400 600 (Meters)

0 1000 2000 (Feet)

LEGEND

- No Cultural Resource Disturbance
- No Training

Figure 2-7c
DETAILED CONSTRAINTS AT UNAI DANKULO
FEIS: Military Training in the Marianas
Belt Collins Hawaii, May 1999

ATTACHMENT 2

PRESERVATION PLAN, SITE TN-73, TINIAN ISLAND, CNMI
UNAI CHULU

I. BACKGROUND

Beginning on 24 July 1944, with the invasion by the 2nd and 4th U.S. Marine Divisions, Chulu Beach (Unai Chulu) has been the site of military activity and has continued with the recent Tandem Thrust 99 military training exercise. Unai Chulu is also the site of a large prehistoric village, which has been assessed as "highly significant for information content and cultural value", Prefinal Report Archaeological Investigations at Unai Chulu, Paul H. Rosendahl, Inc. (1996). The archaeological investigations were carried out in 1995 as a result of an unauthorized road clearing activities through the site. This study has determined that about 1.0m below the present surface has been previously disturbed. The origin and date of the current access road that bisects the site (see Attachment 1) is uncertain. For the past two or three years since the road clearing, Tinian residents have been using this road to access the beach.

The road follows a low area, and joins the beach through a natural cut in the dune line caused by typhoon surge. The shape of the beachline at Unai Chulu focuses storm surge waters directly at the point where the road crosses the low dune line to the beach.

II. BEACH LANDING AT UNAI CHULU

During the recent Tandem Thrust 99 (TT 99) military training exercise, Unai Chulu was selected for Landing Craft Air Cushioned (LCAC) landings. This involved two separate landings by two craft. Each LCAC carried military vehicles, which were off-loaded at the beach. Ten vehicles were off-loaded, and quickly exited using the center access road. Two of these vehicles were five-ton trucks, all with rubber tires.

The beach landing and use of the center access road through Site TN-73 was monitored by a qualified archaeologist from USCINCPAC REP. Photographs of the center access road were taken before and after the LCAC landings. After the landings, the road surface was inspected very closely to determine to extent of disturbance. Except for the fresh rubber-tire marks, no appreciable impact was done to the road.

III. FUTURE TRAINING ON TINIAN

Tandem Thrust training exercises will require the use of Unai Chulu. The center road in Unai Chulu is needed to provide a direct access for vehicles to and from the beach during landings. As previously observed during TT99, the use of the center access over the site by rubber-tired military vehicles did not result in any disturbance to Site TN-73. Nevertheless, to ensure protection and preservation of Site TN-73 for continued use of the center access road for training, as well as for Tinian residents, USCINCPAC REP will implement this preservation plan prior to the next Tandem Thrust exercise.

IV. PRESERVATION PLAN

The National Park Service. Archaeological Assistance Program, Technical Brief #5 (September 1989, Revised 1991) demonstrates the procedures, and reasons for purposeful site burial. This technical brief entitled, "INTENTIONAL SITE BURIAL: A Technique to Protect Against Natural or Mechanical Loss," is the basis for and provides guidance to the development of this plan. As stated in this publication, "The burial or intentional covering of archaeological properties has been used as a means of protecting resources from natural or mechanical loss".

A. Center Access Road Cap: The entire length and width of the current center access road will be capped with a layer of crushed coral. The crushed coral cap will be no less than 20cm thick and 3 meters wide. It will cover the access road from the Dyckman Road intersection to the intersection with the existing beach access road that parallels the beach.

B. Road Fencing: To keep vehicles remain on the capped access road, fencing will be installed running parallel to the road on both shoulders for the entire length of the road. Double strand round wire with metal fence poles will be used. The archaeological testing of Site TN-73 has determined that the upper one-meter of the area has been severely impacted. Therefore, the fence poles will be set no deeper than 50cm, and set in concrete for stability.

C. Monitoring: USCINCPAC REP will ensure that a qualified archaeologist will monitor the road capping and installation of the fence.

D. Maintenance: USCINCPAC REP will periodically monitor the condition of the capped road and fence. Any deterioration of the road surface or the fence will be repaired immediately.

It has been determined that for future military training in the Mariana Islands, Unai Chulu will continue to play an important role for beach landings. It was determined during the recent Tandem Thrust 99 exercise that no significant impact occurred to the center access road at Unai Chulu. However, because of the importance of Site TN-73 it is necessary, in order to prevent future impact to the site, that preservation and protection measures be implemented.

DEPARTMENT OF THE NAVY
U.S. PACIFIC FLEET
COMMANDER U.S. NAVAL FORCES MARIANAS
FPO AP 96536-0051

Requires Update 15 Jan 07

IN REPLY REFER TO:

COMNAVMARIANASINST 5440.1D
N3 18 NOV 1996

FOR OFFICIAL USE ONLY

COMNAVMARIANAS INSTRUCTION 5440.1D

Subj: INSTRUCTIONS TO MILITARY COMMANDERS OF TINIAN DEPLOYED UNITS

Ref: (a) CINCPACFLT Pearl Harbor HI 0501472Z Nov 83 (NOTAL)
(b) COMNAVMARIANASINST 5090.1B — N45
(c) COMNAVMARIANASINST 3500.3~~2~~1d
(d) Environmental Assessment, Military Exercise, Island of Tinian: TANDEM THRUST 95 of Nov 94 N45 — MTH
(e) 32CFR775.6(c) FJAG?

INSERT MTH.

Encl: (1) Political Development/Situation N5
(2) Visits by Local Government Officials/Citizens N5
(3) Military Training Area/Leased Area N3
(4) Map of Tinian Exclusive Military Use Area/Leased Area N3
(5) Historical — (~~5~~)6 ~~Map of~~ Tinian Constrained Areas N3 — Insert (5) Tinian Historic Sites
(4) Constrained
(~~6~~)7 Request Requirements N3
(~~7~~)8 Safety N3
(~~8~~)9 Environmental/Historical/Archaeological N45
(~~9~~)10 Fire Prevention and Suppression N?
(~~10~~)11 Troop Brief N45/5
(~~11~~)12 Liberty Policy N5
(~~12~~)13 Administrative/Logistic ? N3
(~~13~~)14 Entry Requirements N5/N4
(~~14~~)15 Medical Information N5
(~~15~~)16 Medical Evacuation (MEDEVAC) N3
(~~16~~)17 Search and Rescue (SAR) N3
Delete — (17) Communications — DELETE
(18) Incident Reporting - N5
(19) Weapons/Ammunition - N3, N4
(20) Explosives/Explosive Ordnance Disposal (EOD) - N3
(21) Civic Action Project (CAP) - N5
(22) Timeline - Exercise Planning N3
Repl (23) Initial Request Format N3
(24) Sample Format Assignment N3
(~~25~~)20 Training Plan Format
Repl (~~26~~)25 After Action Report Message Format
(~~27~~)26 Public Affairs

1. Purpose. To provide background information and guidance to Military Commanders using the Tinian Military Training Area.

2. Cancellation. COMNAVMARIANASINST 5440.1C.

3. Background

a. Tinian. Tinian is one of the islands in the Commonwealth of the Northern Mariana Islands (CNMI) which shares a commonwealth relationship with the United States (see enclosure (1)). The Commonwealth was established effective 3 November 1986. Residents are United States citizens.

b. Lease Agreement. A Covenant between the CNMI and the United States provides for a lease of two-thirds of Tinian, the entire island of Farallon De Medinilla, and 177 acres on Saipan. The 50-year lease was signed in 1983, with a 50-year renewal option exercised at signature.

R) c. Plant Account Responsibility. In reference (a), Commander in Chief, U.S. Pacific Fleet (CINCPACFLT) assigned Commander U.S. Naval Forces Marianas (COMNAVMARIANAS) full management and plant account responsibility for leased lands on Saipan, Tinian and Farallon De Medinilla. The leased lands are considered U.S. soil and require full compliance with all U.S. laws including environmental regulations.

A) d. Environmental and Natural Resources Protection. Reference (b) covers reporting alleged noncompliance, site inspections, community programs and environmental permits.

A) e. Training Services, Areas, Facilities, Joint Utilization and Deconflicting Exercises. In reference (c), COMNAVMARIANAS promulgated information concerning training services, areas and facilities available in the Marianas area for military training. Prescribed requesting procedures, specified responsibility for coordination of joint service utilization of training areas and facilities, as well as deconflicting exercises are also contained in reference (c).

Add 3. f.

4. Applicability. This instruction and enclosures are applicable to all military or DoD units or representatives of DoD using Tinian.

R) 5. Action. Each Commanding Officer (CO)/Officer in Charge (OIC) deploying to Tinian shall be thoroughly familiar with this instruction and reference (d), and will ensure compliance with all regulations regarding training on Tinian.

Mary M. Humphreys-Sprague
MARY M. HUMPHREYS-SPRAGUE
Chief of Staff

Distribution:
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POLITICAL DEVELOPMENT/SITUATION

1. The people of the CNMI desire to remain politically aligned with the United States, as witnessed by the fact that the Commonwealth Government is a "mirror image" of the U.S. Federal Government. The three branches of government are the executive, headed by a Governor; the bicameral legislature; and the judicial branch. Elected officials are members of the Democratic and Republican parties in the United States, although party platforms are more local and limited and seldom embrace national party platform elements.

2. Island government positions on Tinian are:

   a. Mayor (elected),

   b. Director of Public Works,

   c. Director of Natural Resources,

   d. Director of Public Health Services,

   e. Director of Finance and Accounting,

   f. Director of Community and Cultural Affairs,

   g. Director of Public Safety,

   h. Mayor's Office Staff:

      (1) Administrative Services,

      (2) Special Assistant to the Mayor,

      (3) Public Relations Officer,

      (4) Principal of School.

3. Tinian citizens elect four legislators (three senators and one representative) to the CNMI Senate and House of Representatives on Saipan. Collectively, this group is referred to as the Tinian Delegation. Since they normally work on Saipan, their influence with the CNMI Government is significant.

4. All contact with Tinian Government officials should be conducted through the Mayor's Office. The Mayor may (or may not)

appoint a representative to coordinate with a deployed military unit. The Mayor, or his representative, must be kept informed of all military activities performed <u>outside</u> the Military Training Area as described by enclosure (3), paragraph (4).

VISITS BY LOCAL GOVERNMENT OFFICIALS/CITIZENS

1. Prior approval by COMNAVMARIANAS is required before any contact is made with officials at the Mayor's Office or the CNMI Government. However, once authorized, COMNAVMARIANAS encourages close coordination and cooperation with local officials during Tinian military deployments. The support of these officials is often helpful in our civic action programs and in general community relations. (R

2. Commanders of Tinian deployed units are encouraged to offer local officials tours of the Military Training Area and the camp site. COMNAVMARIANAS may desire to visit the deployed unit when local officials are hosted and should be notified of such visits whenever possible.

3. Scheduled visits to the camp site by local citizenry can stimulate interest of young adults to seek recruitment in the military and, therefore, such activities are encouraged. Advance liaison with the Mayor's Office and the school principals, as appropriate, is necessary to schedule such an event.

MILITARY TRAINING AREA/LEASED AREA

1. Military Leased Area. Illustrated in enclosure (4), and narratively described as a line crossing Tinian from west to east, starting north of the West Field Commercial Airport, crossing Broadway and then east-northeast across the cattle ranch. (R

2. Military Training Area. Illustrated in enclosure (4), and narratively described as the area north of a line crossing Tinian west from Puntan Lamanibot Sanpapa to the east coast crossing 8th Avenue and Broadway. (R

3. The distinction between the Military Training Area and the Military Leased Area is clearly illustrated in enclosure (4). Although the Military Training Area is available for military training exercises there are some constrained areas due to the existence of endangered species or historically significant sites (see enclosure (5), (6)). The remainder of the leased area is reserved for future base development. Since no base development is currently planned, that area has been made available for lease-back to the Commonwealth and is not normally available for use, but may be used on a case-by-case basis. (R

Future application MTH Ch. 3

4. Per Article 12b of the Lease Agreement, public access to the Military Training Area may be restricted in the interest of safety and security. However, prior notification must be given to the CNMI Military Liaison Office and the Tinian Mayor's Office to ensure seven days public notice can be given. COMNAVMARIANAS (N5) is responsible for providing this notice.

5. Although military operations are not normally conducted outside the Military Training Area, if desire to accomplish specific training objectives arises, a request may be submitted in conjunction with the training plan for consideration.

6. Weapons shall not be transported outside the Military Training Area, except as approved by COMNAVMARIANAS. (R

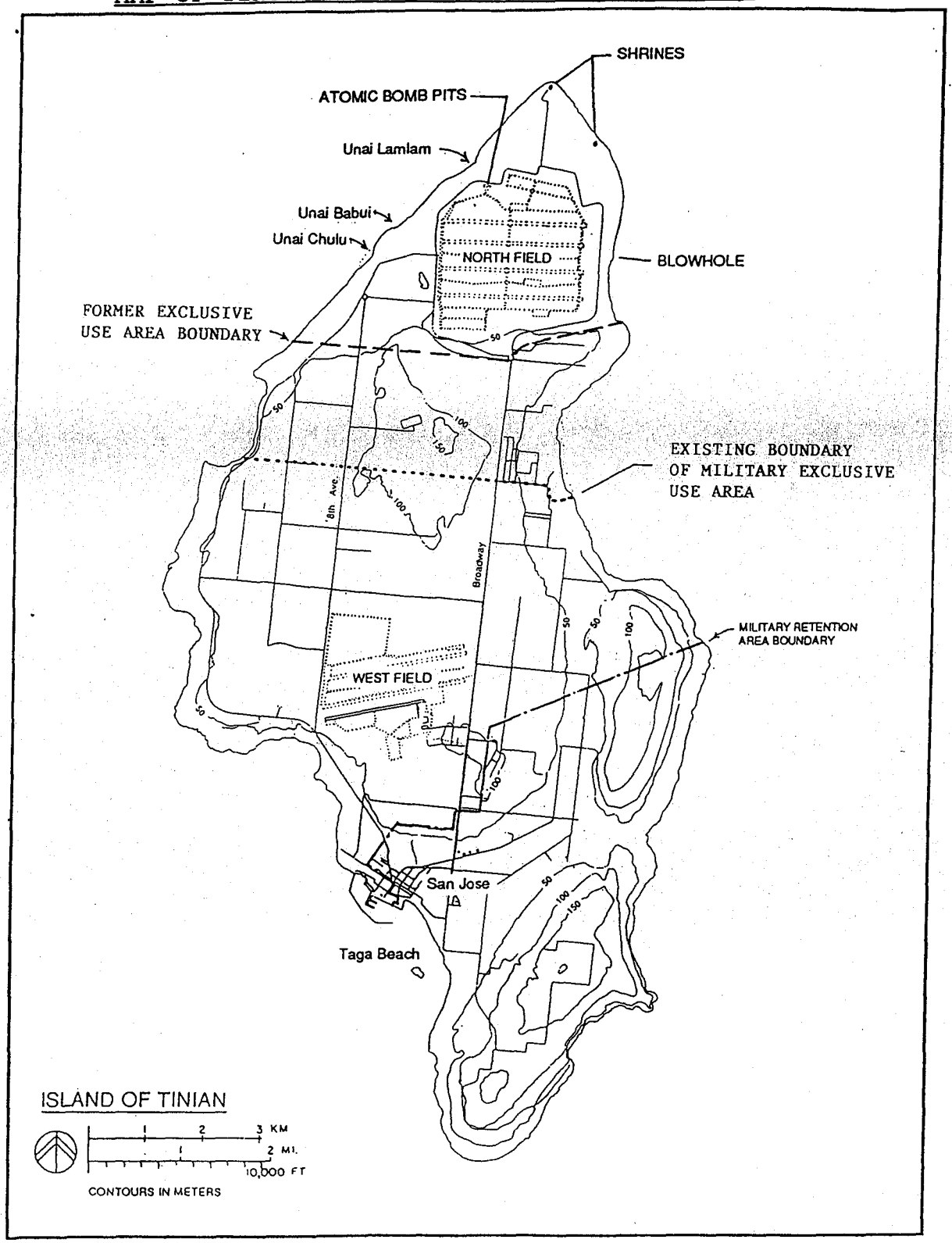
- Enclosure 4 replaced with Figure 3-4 MTH.
- Enclosure 5 changed to Enclosure 5 & 6, [illegible]

new Encl (5) - Fig 3-1 MTH
new Encl (6) - Fig 3-5 MTH

M3

Replace with MTH, Fig 2-4

MAP OF TINIAN EXCLUSIVE MILITARY USE AREA/LEASED AREA

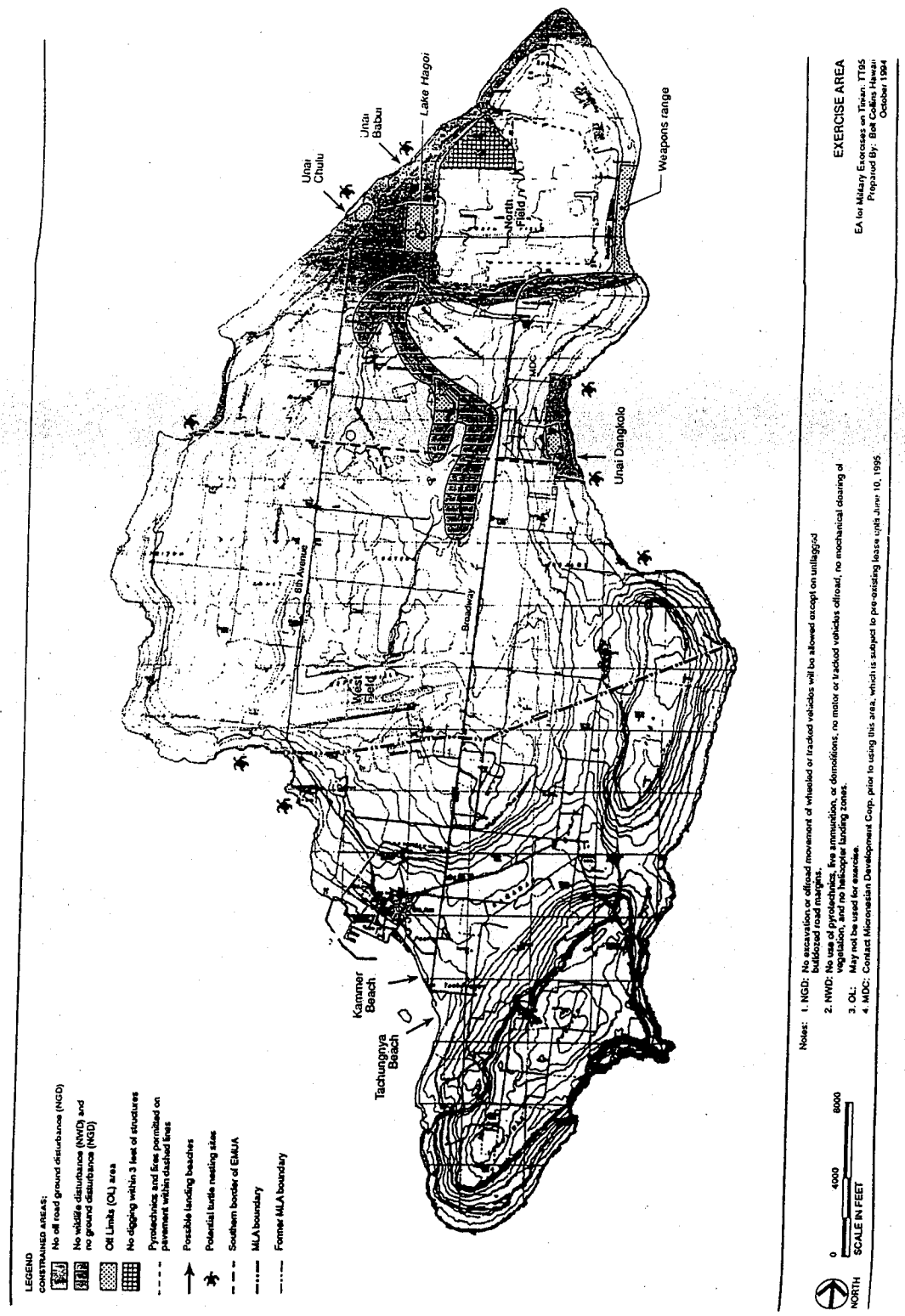


N3

Replace with Encl.(5) and Encl (6)

Encl(5) MTH Fig 3-1 ; Encl(6) MTH Fig 3-5

MAP OF TINIAN CONSTRAINED AREAS



N3

REQUEST REQUIREMENTS

Requests for use of the Tinian Military Training Area . . .

1. Each unit desiring training on Tinian will submit a training request per enclosure (23) to COMNAVMARIANAS (N3). Upon receipt, COMNAVMARIANAS (N3) will issue a formal assignment (see enclosure (24)). A detailed training plan, providing as a minimum the information contained in enclosure (25), will be submitted to COMNAVMARIANAS (N5) for review and approval. COMNAVMARIANAS (N4) will conduct an Environmental Assessment (EA), in accordance with reference (b), for each operation (see enclosure (8)). COMNAVMARIANAS (N5) will provide official notification to the CNMI/Tinian Government as appropriate. Following execution of the exercise, an After Action Report will be submitted to COMNAVMARIANAS (N3) [a] This report is ~~normally~~ required within ten working days of the completion of training. [(see enclosure ( ))] (A

2. Each Commanding Officer of a unit deploying to Tinian will be briefed by the COMNAVMARIANAS Staff (N3, N4 ~~or~~ and N5) regarding the use of Tinian. These briefings will be conducted prior to actual deployment to Tinian.

3. Approval shall be obtained from COMNAVMARIANAS prior to making contact or entering into any agreement with any CNMI or Tinian Government official. All contact with Tinian Government officials should be conducted through the Mayor's Office. The Mayor may (or may not) appoint a representative to coordinate with a deployed military unit. The Mayor, or his representative, must be kept informed of all military activities performed outside the Military Training Area (per enclosure (3), paragraph 4).

- Replace Enclosure 23 w/ Attached msg.

N3/N5

SAFETY

1. Units training on Tinian must ensure the utmost consideration is given to safety. (A

2. The Mayor's Office and local commercial operators regularly conduct tours of the numerous historical sites inside the training area. Additionally, individual tourists and local residents visit the area on a daily basis. Tinian often requests organized tour groups be permitted to visit historic sites in the Military Training Area. Military Commanders are to be aware there will often be other individuals within the training area when training is being conducted and are encouraged to allow such visits at a mutually convenient time. These visits should not sacrifice the safety of participants or non-participants. Restricting access will only be done with prior coordination by COMNAVMARIANAS and the Tinian Mayor's Office, or when overriding safety or security issues are involved.

3. Prior to commencing any exercise involving aircraft landings, parachute jumps, or other potentially hazardous operations, the CO/OIC will ensure the Military Training Area is clear of all unauthorized civilian personnel. The entire area will be cordoned off, with control points at the entrance to the Military Training Area on both 8th and Broadway Avenues (the two main North-South roads). As an alternative, the control points may be set at the two traffic circles if the entire Military Training Area is not required. The unit must have positive control of the Military Training Area for safety purposes during air operations. Small-scale exercises which are limited in area may require a modification to this, but must be cleared with COMNAVMARIANAS prior to deploying.

ENVIRONMENTAL/HISTORICAL/ARCHAEOLOGICAL

1. Reference (d) is an Environmental Assessment (EA) of various training exercises on Tinian and describes required mitigation measures to reduce environmental impacts. If proposed training exercises are included and addressed in reference (d) and COMNAVMARIANAS does not anticipate any substantial environmental degradation resulting from continuing the training actions, then the proposed action will not require any further environmental documentation. Under these circumstances the proposed action would not be considered a major federal action as defined in reference (e). The action proponent will document this determination in a memo-for-record with an additional signature block for COMNAVMARIANAS (N4).

2. If the proposed action is considered a major federal action, then an EA per reference (b) shall be completed on the effects the training activities may have on the cultural, archaeological and ecological environment. The EA should be coordinated through COMNAVMARIANAS (N4). Reference (b) provides additional information on environmental matters.

3. Historic United States, Chamorro and Japanese sites exist within the Military Training Area. These structures portray the history and culture of Tinian. Willful destruction of these historic sites is a violation of CNMI and U.S. Federal laws, and the Uniform Code of Military Justice. Although these sites are not typically part of any training area, requests for use of these sites will be addressed on a case-by-case basis. The runways within the Military Training Area are considered historic sites and require protection. Use of stakes, nails, or other destructive methods must be avoided unless approved by COMNAVMARIANAS (N4).

4. A continuing effort shall be made to keep the Military Leased Area clear of all trash and other discarded materials. Upon completion of the Tinian deployment, the Unit Commander will survey the training area and ensure trash, waste or hazardous material is properly removed. Upon departure, each unit must ensure the area is as clean or cleaner than it was upon arrival. Additionally, the Tinian dump is <u>not</u> authorized for the disposal of military generated trash, hazardous waste or debris. Units will make arrangements to have such items backhauled to Guam or the unit's home base for proper disposal. Burning of trash is <u>not</u> authorized.

5. Due to numerous environmental and archaeological issues involved in training on Tinian, the CO/OIC of each unit deploying to Tinian will provide a briefing to all troops prior to deploying to Tinian (see enclosure (10)).

6. COMNAVMARIANAS (N4) should be consulted on any activity addressed in the training plan which might have adverse impact to the environment. The following guidance is provided:

a. Hazardous waste/used oil must be removed from Tinian. Each unit will have a spill contingency plan with personnel and equipment to immediately respond to a spill of hazardous materials or fuel. In the event of a spill, the COMNAVMARIANAS Staff Duty Officer at (671) 349-5235/6, will be immediately notified of the location, size, substance spilled and clean-up measures undertaken.

b. There are no toilets in the Military Training Area. Units can utilize Civic Action Team (CAT) holes/slit trenches for limited numbers. Portable toilets should be contracted (via U.S. Fleet and Industrial Supply Center (FISC), Guam) for larger groups or long duration exercises.

c. There are federal and locally listed endangered species in and around the Military Training Area. Do not kill, disturb, harass or eat any wildlife or their nests. Specifically: cows, forest birds, water birds, crabs, sea turtles and bats should be left alone.

d. Solid waste. Remove trash as outlined in reference (b) and paragraph 4 above.

FIRE PREVENTION AND SUPPRESSION

1. Due to the possibility of out of control wildfires during peak dry periods and the remoteness of the training area, units must be prepared to respond to fires in the Military Training Area. (A

a. Background. There are two major fires of concern for military operations on Tinian: aircraft crash, fire and grass/brush fires. Units need to be especially aware of existing conditions on Tinian, such as the time of year (the dry season is approximately December through June), actual moisture content of the vegetation and the ground, and any factors which would increase the likelihood of an unplanned fire.

b. Prevention. In order to minimize the chance of grass and brush fires, open fires and pyrotechnics are limited to the hard surfaced areas at North Field. Their existing runways and taxiways can act as fire breaks and fire access roads, and the vegetation is predominantly tangantangan. The only exception is the use of red smoke and flares to signal an actual emergency.

c. Available Assets. If aircraft crash and fire assets are required, individual units must obtain these services. The 36th Logistics Group, Andersen AFB (36LG AAFB) may be contacted for a P19 crash and fire crew, if available. For other types of fires, Helicopter Combat Support Squadron FIVE (HC-5) may be able to support units with airborne fire bucket capability. Additionally, one 300 and one 750-gallon pump truck belonging to the Tinian Fire Department may provide a back-up fire response, when available. All coordination and costs of these assets are the responsibility of the individual unit. For non-military resources, the unit can expect to be billed by the CNMI Government at an overtime rate.

d. Communications. CO/OICs need to include fire fighting in their communications plan. This includes, but is not limited to, frequencies to be used and radio inoperability, i.e., all players need to be able to communicate on the same frequency.

2. Fire suppression and organization tasking needs to be developed in accordance with the scope of training, the available assets, and the unit's chain of command.

a. Responsibility. In general, the CO/OIC will be responsible for fire prevention and suppression and will act as the on-scene fire operations commander.

b. Notification. All forces on Tinian, via their chain of command, will immediately notify the on-scene fire operations commander. The on-scene fire operations commander will ensure notification of COMNAVMARIANAS and the Tinian Mayor's Office, and coordinate the fire suppression effort. COMNAVMARIANAS will coordinate with the CNMI Government, HC-5 for helo support (if required), Federal Aviation Administration (FAA), Guam Center Radar Approach Control (CERAP) and AAFB for Notices to Airmen (NOTAMs)/Airmen Advisories, as required.

c. Requesting Airborne Fire Fighting. The following should be considered when requesting airborne fire fighting support: ground crews' accessibility to the fire, safety of ground personnel, potential for ground crews to lose control, potential damage to private property/collateral damage, and time of day (HC-5 fire fighting is limited to daylight only).

TROOP BRIEF

1. Do not kill or disturb any wildlife, nest or eggs. Forest birds, water birds, bats, crabs and sea turtles are endangered species. (A

2. Be very careful with fire. Use pyrotechnics only on hard surfaces; a brush fire would destroy animal habitat and historic remains. There is very limited fire fighting capability on the island.

3. We are legally excluded from using the local dump. Remove all trash generated on the island including hazardous waste, construction debris and domestic garbage.

4. Do not collect any historic artifacts; this includes WWII trash or ordnance. Do not mar or disturb any shrine or structure. Do not clear any native vegetation or dig near any structure. Report to COMNAVMARIANAS any previously undiscovered item or structure of possible historic significance.

5. Be very careful not to destroy coral reefs.

6. All fueling and vehicle maintenance activities will be conducted in the village of San Jose. Report any spills of fuel, oil or hazardous materials. Contain as much of spill as possible.

LIBERTY POLICY

1. Liberty may be granted at the discretion of the CO/OIC, and is encouraged.

2. The senior officer present on Tinian is authorized to establish the number of personnel who may be on liberty and the hours within the guidance provided below.

a. Shore Patrol assignment: Recommend assign two Shore Patrol for each 50 persons on liberty.

b. Liberty hours:

Weekdays (M-Th)	1800-2400
Fridays	1800-0200 (maximum)*
Saturdays	1800-0200 (maximum)*
Sundays	1000-2400

* Note: All bars and nightclubs on Tinian are required to secure at 0200.

c. Maximum number in liberty party:

Weekdays (M-Th)	200
Weekends/holidays	400

d. The unit CO/OIC will inform the Mayor's Office of the liberty schedule/policy on the familiarization visit, if possible, so the business community can make appropriate preparations.

e. Shore Patrol shall promptly secure the liberty of any intoxicated personnel and remove them from the village.

f. Shore Patrol will accompany local Public Safety Officers on patrols. Units may be asked to provide gasoline for police vehicles to cover the unprogrammed expense of the greater-than-normal numbers of patrols.

g. Personnel on liberty should be cautioned to avoid trespassing on private property. This is a particularly sensitive issue on Tinian.

h. For information, marijuana is plentiful and local youths have been known to swap marijuana (sometimes counterfeit) for camouflage uniform items, knives, canteens, hats, meals ready to eat (MRE's), etc.

i. After dark, liberty will be restricted to the village area. (A

3. Organized recreational beach parties planned outside the Military Training Area must be coordinated with the Mayor's Office. Unless concurrence of the Mayor's Office is obtained, parties must be restricted to the Military Training Area. (A

N3 / N5

ADMINISTRATIVE/LOGISTIC

1. Units should coordinate all contracting support requests through ~~FISC Guam~~ or the 36LG AAFB. (A
COMNAVMARIANAS SUPPLY DEPT (N8)

2. Paydays. Military pay facilities do not exist on Saipan or Tinian. ~~Two banks on Tinian are open several days a week and arrangements may be made for check cashing; however, a service charge of approximately $1.50 per check can be expected. If checks can be issued to military members, commercial aviation transportation is available to take military personnel to Saipan where signed checks and ID can be presented for payment.~~

3. Haircuts. There are no facilities to provide haircuts on Tinian. Deployed units should be prepared to provide their own barbers.

4. Photo Copying Services. Photo copying facilities are not readily available. When a photo copier is available, there is normally a fee for its use.

5. Food. Seasonal fruits and vegetables may be available and include cantaloupe, watermelon, eggplant, tomatoes and green beans. U.S. Department of Agriculture (USDA) inspected meat is available from the Micronesian Development Corporation (MDC) and the Bar K Ranch. Also, milk and some other dairy products may be available. Merchants in San Jose Village can often arrange for regular availability if notified in advance.

6. Beer and Soft Drinks. These items are extremely expensive when purchased by the case. Deploying units should purchase these items at point of embarkation and ship them to Tinian.

7. Fuel. Fuel (gas (MOGAS), aviation gas (AVGAS), and diesel (LSADO)) is available on Tinian in sufficient quantity through the local Mobil distributor. Prior arrangements (60 days in advance) for purchase must be made with FISC Guam. Prior to departure, deploying units should provide FISC Guam ~~(copy to COMNAVMARIANAS)~~ accounting data to prepare a purchase order for fuel. The deployed unit will maintain a daily record of purchases which must be reconciled with the Mobil representative prior to departure from Tinian.

8. Lubricants. All anticipated requirements should be included in the loadout. These items are generally not available on Guam or Tinian. Shipment schedules to Tinian may not meet emergent requirements and military cargo transportation to Tinian is not readily available.

9. Vehicle Parts. Parts for most vehicles and equipment are not normally available on Guam; most requisitions must be forwarded to Okinawa. Experience has shown that parts ordered from Okinawa will not reach the deployed unit until after departure from Tinian. Prior arrangements for a Marine deployed logistics flight originating in Okinawa during the second or third week of the deployment may prove helpful. (R

10. Mail. Mail cannot be sent directly to Tinian deployed units. Mail should be sent to Guam for subsequent delivery via available military aircraft. Close coordination between the deployed unit and COMNAVMARIANAS (N3) is required. Outgoing mail, stamps and money orders are available at the U.S. Post Office on Tinian.

11. Local Payment. In general, any purchase on the local market on Tinian requires cash or traveler's checks. (A

12. COMNAVMARIANAS (N3) is the point of contact for support while deployed on Tinian. ~~Contact can be made as described in enclosure (17). The CNMI Government radio, 8025 KHZ (Channel 4) at the Tinian Dispensary radio is a secondary method of contacting COMNAVMARIANAS if prior arrangements are made.~~ (R
If separate POC's have not been established, N3 can be reached at (671) 339-4286/4187/6399/8054.

ENTRY REQUIREMENTS

1. The Government of the CNMI operates three agencies which control entry of personnel and material into the area. (A

a. CNMI Customs Service. Concerned with the entry of unauthorized materials. No military items should be left on Tinian (sold or traded) without the express written consent of COMNAVMARIANAS. The CNMI is especially sensitive regarding weapons, ammunition and explosives.

b. Quarantine Branch. Concerned no communicable diseases or agricultural pests inadvertently enter the CNMI.

c. Immigration Service. Responsible to ensure no illegal aliens are permitted entry into the CNMI.

2. Historically, most of the checks/inspections have been perfunctory. It is, however, within the agencies' authority to conduct complete and thorough searches, which could become burdensome. Maximum cooperation is essential. (Prior coordination with COMNAVMARIANAS (N3) is recommended.)

3. The above listed authorities have requested the following:

a. Advance notification of arrivals.

b. An officer appointed as liaison/point of contact who will provide/arrange for:

(1) Two copies of vehicle/equipment manifest for items being off-loaded.

(2) A general declaration for any aircraft or ship arriving. (COMNAVMARIANAS can assist with arrival formalities.)

(3) Snake inspection of aircraft and contents prior to departure from Guam. A snake inspection sticker must be applied on all cargo and equipment inspected. The sticker and inspection may be obtained through coordination with the USDA, Animal Damage Control at 635-4400.

4. While no crew list or personnel manifest is required per the provisions of a 1989 Memorandum of Understanding (MOU) on customs and immigration matters, a list of all non-U.S. citizens must be provided to CNMI Immigration officials. Such individuals must be prepared to present a valid passport or U.S. Armed Forces Identification Card. All personnel who disembark may be required to submit a Customs Declaration and may be subject to an

appropriate inspection by Customs officials. It should be noted that local Customs and Immigration officials will not board a vessel or aircraft to perform their duties. A designated crew-member, however, may be required to certify the conditions within the interior of the vessel or aircraft are in compliance with CNMI customs standards or immigration laws.

5. Agriculture (Quarantine) inspectors normally enforce standard USDA regulations which include the following:

a. Garbage may not be imported into Tinian. All box lunch debris or garbage must be disposed of prior to arrival or retained onboard the aircraft or vessel. The Tinian dump is <u>not</u> authorized for disposal of military generated garbage, waste or debris.

b. Fresh food products (meat, vegetables, fruits) may not normally be imported into Tinian without a certificate of origin which proves they are exclusively from U.S. sources. This will normally prohibit food from being removed from a ship for a picnic ashore. The Quarantine Inspector must be contacted and provide his/her concurrence prior to any foodstuffs being taken ashore.

c. Dirt on vehicles and equipment must be removed prior to arrival on Tinian. Additionally, any vehicle or equipment departing Guam for Tinian shall have an inspection by the USDA Animal Damage Control to ensure it is free of brown tree snakes.

6. Failure to comply with the above will result in the immediate termination of the exercise. CNMI Customs officials will be present during exercise commencement to ensure compliance with regulations in paragraph 5 above.

MEDICAL INFORMATION

1. The weather on Tinian is usually moderate with temperatures in the 80's both day and night. Severe sunburn is a constant threat. Deploying commands should take adequate precautions against sunburn, heat stroke and heat exhaustion.

2. Potable water should be chemically treated in accordance with appropriate directives.

3. The dispensary on Tinian is normally available to deployed military units and should be coordinated upon arrival by contacting local medical authorities (MEDEX). A MEDEX is roughly equivalent to a physician's assistant. A civilian medical doctor is only occasionally assigned to Tinian by the CNMI Government.

4. The deployed medical officer may be assigned to the Tinian Dispensary to assist the local MEDEX as a Civic Action Project (CAP). The medical officer should (tactfully) ensure his actions serve to train and enhance the stature of the local civilian medical personnel.

5. The Tinian Dispensary has a limited stock of medicines, books and supplies. Donations of medicines, dressings and other supplies may be made; the medical personnel and people of Tinian will be very appreciative. These donations can be made directly to the Tinian Dispensary after notification to, and concurrence of, the Mayor's Office.

MEDICAL EVACUATION (MEDEVAC)

1. It is highly recommended all units operating on Tinian take (R
their own medical personnel and supplies as support on Tinian and Saipan is extremely limited and may not be up to U.S. standards. Careful consideration should be given prior to having individuals treated at either medical facility. In the event of an accident or other medical emergency, you will need to be able to stabilize an injured person so they may be transported to U.S. Naval Hospital (NAVHOSP), Guam.

2. The on-scene commander will need to be prepared to decide what is the best course of action in the case of a medical emergency. Very limited quick reaction assets for air evacuation are stationed on Guam. Response times could be a minimum of 1 hour 30 minutes. HC-5 stands a Search and Rescue (SAR) alert with 15-minute launch times during normal working hours (0700-1630) and one-hour launch times on weekends, holidays, and after hours. During time-critical situations, consideration should be given to commercial air transportation available at Tinian airport. All commercial transportation costs will be born by the individual command.

3. In the event of a medical emergency, units are encouraged to use the following as an order for contact:

a. COMNAVMARIANAS

b. Commander Coast Guard Marianas Section Guam (COMCOGARD MARSEC GU)

c. HC-5

d. NAVHOSP Guam

SEARCH AND RESCUE (SAR)

1. COMCOGARD MARSEC Guam is the local expert for SAR coordination and execution. As such, U.S. Navy resources in the Marianas support the U.S. Coast Guard in SAR efforts. While individual units have the primary responsibility for SAR of their own forces, it is recognized COMCOGARD MARSEC Guam has the expertise and resources to effectively coordinate SAR activities in the local area. (A

2. If SAR support is required for operations on Tinian and individual units do not have the organic assets for support, COMNAVMARIANAS, as overall SAR coordinator for the Area of Responsibility (AOR), will rely on COMCOGARD MARSEC Guam for SAR mission coordination and execution. If SAR support is required, units will contact COMNAVMARIANAS or COMCOGARD MARSEC Guam for support. If it is not possible to make contact expeditiously, then HC-5 or NAVHOSP Guam may be contacted for coordination.

3. Points of Contact

a. COMNAVMARIANAS:

(1) Security and General Emergency (SAGE) Radio (0600(K)-2200(K) daily) - 4815.0/4014.5KHZ (PRI/SEC).

(2) ~~Command Center~~ QUARTERDECK Telephone (24 Hours) - (671) ~~349-5235/6~~. 339-7133

(3) Operations Department (0730(K)-1700(K) M-F) - (671) ~~349-5231/5232/5233~~. 339-6399/8054/4286

b. COMCOGARD MARSEC Guam, Joint Rescue Sub-Center:

(1) Marine Radio Telephone (24 Hours) - Ch 16 (156.8MHZ).

(2) HF (24 Hours) - 2182KHZ.

(3) HF (2100(Z)-0900(Z)/0900(Z)-2100(Z) daily) - 12242KHZ/6200KHZ.

(4) Command and Rescue Center Telephone (24 Hours) - (671) 339-6100/7100. GOOD.

(5) Administration and Operations (24 Hours) - (671) 339-2001, ext. 115. GOOD.

c. USCGC BASSWOOD and USCGC GALVESTON ISLAND, when underway, monitor same frequencies as COMCOGARD MARSEC Guam and can come up on 243.0 and 381.8MHZ.

d. HC-5:

(1) Duty Radio (0600(K)-2200(K) M-F) and during flight operations - 305.0MHZ.

(2) Duty Phone (24 Hours) - (671) 366-6412.

(3) Operations Department (0730(K)-1700(K) M-F) - (671) 366-~~6423~~. 6419/6422

e. NAVHOSP Guam:

(1) Emergency Room (24 Hours) - (671) 344-~~9232~~. 9314/9340

(2) Search and Rescue Doctor (SARDOC) Beeper (24 Hours) - (671) 472-1290.

Delete

?

COMMUNICATIONS

1. Communications to and from Tinian should normally use military assets and be in accordance with pre-arranged plans. Frequency clearance may be obtained through the Joint Frequency Management Office (JFMO) (N35) at NCTAMS ~~WEST~~PAC, phone (671) 355-5260. DSN 453-0760

2. Communications from Tinian to COMNAVMARIANAS may be accomplished through the various means described below (in order of preference). COMNAVMARIANAS is limited to two tuneable HF transceivers which can be simultaneously monitored.

a. HF Nets. Coordinated through NCTAMS WESTPAC on request. Deploying units should provide a Guam-based liaison for communications and logistics matters.

b. Telephone. Long-distance telephone service is available on Tinian. Deployed units desiring to contact parent commands may place "collect" calls. Occasionally, the local operator will not place collect calls to military numbers. In that event, the only option is to make a paid call using a local subscriber account number. Contact the Micronesian Telecommunications Corporation (MTC) representative on Tinian, who is available to place such a call. He/she will require reimbursement in cash upon completion. Personnel at the Tinian Center may also agree to a similar arrangement. N5?

c. The CNMI Government radio, located at the Tinian Dispensary, may be used if necessary. This transceiver is commercial, non-tuneable channelized equipment intended to be a CNMI administrative net. Stations monitoring this radio during working hours are:

(1) Governor's Office, Saipan.

(2) Governor's Office, Rota.

(3) Governor's Office, Tinian.

(4) COMNAVMARIANAS (if previously arranged).

d. The Channel 4 frequency is 8025 KHZ. Any transmission on this channel should be brief and should be used to pass emergency or other information which will assist in establishing communications on another frequency.

Delete

Delete

e. The Dairy Micronesia Development Corporation (MDC) operates an HF radio with stations on Tinian, Saipan and Guam. In the event no other means exists, then use of this circuit/ equipment may be requested from the General Manager. It should only be used for brief messages as described above.

f. Should it become necessary to hand carry messages or small packages to Guam, contact COMNAVMARIANAS at (671) 349-5235/6 for assistance.

INCIDENT REPORTING

1. This instruction in no way replaces or modifies reporting requirements of higher authority. It does, however, require timely notification of incidents or events which may detract from continuing warm relations with the CNMI.

2. In view of the political sensitivity of the developing Micronesian nations, report to COMNAVMARIANAS when any of the following situations occur:

a. Any incident which indicates a basic conflict exists between the Government of Tinian or the CNMI and the military unit, the U.S. Navy, the military in general or the United States.

b. Any liberty party incident involving any physical contact between military and civilian personnel.

c. Any incident/event resulting in damage to/loss of property owned by the Tinian Government or private citizens.

d. Any injury to military personnel requiring off-island assistance.

e. Any injury/serious illness to civilian personnel while engaged in or resulting from military supervised activities.

f. Any incident which is likely to result in a claim against the U.S. Government for loss, damage or injury.

g. Any incident/event significantly altering or affecting the usefulness of the areas, such as damage caused by fire, earthquake, vandalism, etc.

h. Any spill of fuel or hazardous materials on the ground or in the water. (A

N3/N4

WEAPONS/AMMUNITION

1. Currently no live fire of weapons or demolition is permitted on Tinian. (R

2. Pyrotechnics may be used in the training area, however, their use is restricted to hard paved or cleared areas where the danger of fire to brush areas has been eliminated.

3. Blanks may be used, but units must ensure the areas where they are used are thoroughly picked-up upon completion of the exercise.

4. Refer to reference (l), MTH, Chapters 3 and 4 for amplification.

EXPLOSIVES/EXPLOSIVE ORDNANCE DISPOSAL (EOD)

1. The Navy Explosive Ordnance Disposal Detachment, Guam (EODMU 5 Det) has primary authority and responsibility for the disposal of explosive ordnance in the CNMI. Any discovery of unexploded ordnance should be reported to COMNAVMARIANAS (N3), located on a map, and arrangements made for disposal. In view of the need and the training benefits derived, qualified EOD teams are authorized to dispose of unexploded ordnance when requested and approved by COMNAVMARIANAS. (R

2. Explosives necessary to accomplish EOD tasks should be obtained through respective service sources and transported with the team to Tinian. Explosive material issues from U.S. Naval Activities, Guam are stringently controlled. Issues to Marine units from local stocks require approval of Fleet Marine Force Pacific (FMFPAC) and CINCPACFLT. Assistance of the Guam-based Navy EOD team may be requested through COMNAVMARIANAS (N3).

3. <u>There will be no blasting</u> exercises in any area without prior approval of COMNAVMARIANAS. (R

CIVIC ACTION PROJECT (CAP)

1. Within manpower and operational constraints, exercise units may be tasked to accomplish CAPs requested by the Tinian Government and approved by COMNAVMARIANAS.

2. COMNAVMARIANAS (N4/N5) will coordinate CAPs based on input from the local government and the capabilities of visiting units. Support from the CNMI Government is primarily limited to providing construction materials and obtaining local and environmental permits. To obtain any significant government or commercial material support on Tinian, and to ensure an adequate EA is made, requests must be made several months in advance. If a significant project is to be undertaken, approximately 90 to 120 working days are needed to establish a list of logistic and other necessary support. Deployed units working a CAP will maintain close liaison with cognizant local officials and provide timely status reports to COMNAVMARIANAS.

3. A typical sequence of events leading to CAP completion follows:

a. Exercise units provide COMNAVMARIANAS with a priority listing of training desired (e.g., heavy equipment, electrical, welding, etc.).

b. COMNAVMARIANAS (N4/N5) will work with Tinian officials to develop a prioritized list of projects to be accomplished during the deployment.

c. Representatives from COMNAVMARIANAS and the deploying unit will visit Tinian to review the scope of projects and determine which projects can be accomplished. Tinian officials will be informed of support required of the local government. Representatives of the deploying unit will advise COMNAVMARIANAS (N4) of the materials and equipment they can provide.

d. Projects commence with frequent updates being provided to the Mayor's Office/Director of Public Works/COMNAVMARIANAS. Do not change the scope or intent of the project without prior approval from COMNAVMARIANAS. (R

e. When a project is completed, an After Action Report will be made to COMNAVMARIANAS (N4). (R

f. The Mayor's Office is responsible for obtaining all local building and environmental permits. Units should not start work on projects prior to verification of approved permits by COMNAVMARIANAS. (A

N3

TIMELINE - EXERCISE PLANNING

1. The following is a recommended timeline for exercises involving a company or more. Smaller exercises must have a minimum of 4 weeks notice to COMNAVMARIANAS in order to provide adequate support and coordination. (R

X-120 Deploying units submit CAP proposals to COMNAVMARIANAS (N4/N5) for coordination with CNMI officials.

X-90 Prepare and submit a training scenario for approval by COMNAVMARIANAS. Prepare and submit an EA for approval (enclosures (6) and (8) and reference (b)). PACNAVFACENGCOM requires 60 days to get approval for non-controversial training scenarios. A general EA can be developed and approved in advance. For routine training it is important to ensure these general pre-approved EA's are broad enough to encompass all desired activities. (R

X-60 Develop logistic support requests. FISC Guam Sub Area Petroleum Office requires 60 days ~~notice to ensure~~ fuels are available.

X-30 Briefing by COMNAVMARIANAS Staff in Guam. Discuss training plans for exercise, with emphasis on subjects in enclosure 26.

~~X-30 Finalize training plans for exercise. Require an unclassified version giving times, dates, activities and areas for notification of local officials (see enclosure (24)).~~ Delete (R

X-10 COMNAVMARIANAS (N5) will notify the CNMI Military Liaison Office and the Tinian Mayor's Office of intent to exercise on Tinian.

X-3 Reconfirm Final Operational/Environmental brief with COMNAVMARIANAS (N3/N4). (A

X Hold exercise on Tinian.

X + 10 After Action Report. (R

INSERT X-14: Provide COMNAVMARIANAS (N3) with an unclassified training plan incorporating the subjects in enclosure (24).

N3

INITIAL REQUEST FORMAT

1. The following is the format for an initial training request. (A
The initial submission may be either by letter (on official letterhead), FAX or preferably (AUTODIN message.) – GENADMIN message

a. Unit. Requesting unit.

b. Dates. Inclusive dates to train on Tinian.

c. Objectives. A brief statement outlining the overall objectives of the training.

d. Operations Overview. A brief statement addressing the planned operations.

e. Weapons/Ammunition/Explosives/Pyrotechnics. In general terms, explain what is to be used and how.

f. Personnel. Provide approximate number of personnel going to Tinian.

Replace with Attached form

N3

SAMPLE FORMAL ASSIGNMENT

UNCLAS//N03500// (A

EXER//(NAME)//

MSGID/GENADMIN/COMNAVMARIANAS//

SUBJ/OPAREA ASSIGNMENT - TINIAN//

REF/A/CON/CNM/(DATE)//

REF/B/DOC/CNM N3/(DATE)//

REF/C/DOC/CNM N3/(DATE)//

NARR/REF A IS (EXERCISE NAME) FPC HELD AT COMNAVMARIANAS (CNM) (DATES). REF B IS COMNAVMARIANASINST 3500.3L, SUBJECT: FLEET OPERATING AREAS AND TRAINING FACILITIES MARIANAS AREA. REF C IS COMNAVMARIANASINST 5440.1D, SUBJECT: INSTRUCTIONS TO MILITARY COMMANDERS OF TINIAN DEPLOYED UNITS.//

POC/(COMNAVMAR REP)/N3/-/TEL:DSN 349-5057/TEL:24HRS DSN 349-5235//

RMKS/1. AS DISCUSSED IN REF A, THE TINIAN NORTH FIELD TRAINING AREA IS ASSIGNED FOR YOUR USE, (DATE OF EXERCISE). IAW REFS A, B AND C, A DETAILED TRAINING PLAN MUST BE SUBMITTED TO CNM//N3~~2~~1//. NLT (TWO WEEKS PRIOR TO EXERCISE). A FINAL OPERATIONAL/ ENVIRONMENTAL BRIEFING MUST BE CONDUCTED WITH CNM//N3~~2~~1/N45// PRIOR TO DEPLOYING TO TINIAN.

2. ENSURE ALL PERSONNEL DEPLOYING TO TINIAN ARE THOROUGHLY BRIEFED ON ENVIRONMENTAL/ARCHAEOLOGICAL SENSITIVITIES.

3. GUIDANCE FOR THE CDRS OF TINIAN DEPLOYED UNITS IS CONTAINED IN REF B AND FURTHER AMPLIFIED IN REF C. YOU REVIEW REFS B AND C TO ENSURE COMPLIANCE. ADDITIONALLY, DETAILED CARGO INSPECTION FOR VEHICLES GOING FROM GUAM TO TINIAN BY ANIMAL DAMAGE CONTROL WORKING DOGS IS REQUIRED TO ENSURE BROWN TREE SNAKES ARE NOT TRANSPORTED TO TINIAN.

4. IAW REF C, UPON COMPLETION OF TRAINING, SUBMIT AFTER ACTION REPORT TO COMNAVMARIANAS//N3// NLT 10 WORKING DAYS OF COMPLETION OF TRAINING.//
BT

N3
N4

TRAINING PLAN FORMAT

1. Requesting Unit. Provide complete description of unit and chain of command. (A

2. Planned Operations. Include all activities planned in the Military Training Area with times, dates and location within the area.

3. Weapons, Ammunition and Explosives. Provide statements acknowledging the range rules, including direction of fire, range safety and security for personnel, vehicles and aircraft; pyrotechnics usage; and fire hazard mitigation.

4. Personnel. Provide a list of personnel participating in the exercise including name, rank, rate (or MOS) and position held in unit (i.e., CO, XO, Medical Officer).

5. Aircraft and Drop Zone/Airfield Usage. Provide type of aircraft, activity and flight patterns, times and dates, airfield use, fire fighting requirements and other airfield requirements.

6. Equipment. List all vehicles, heavy equipment, boats and/or fuel burning activities. Identify usage, fuel requirement, routine and emergency maintenance procedures. Address CAPs and permits.

7. Communications. List radios, frequency, call signs and key telephone numbers in training area and at home base.

8. MEDEVAC. Provide real world MEDEVAC and foul weather plan.

9. Logistics. Provide food, water, bed down and resupply plan. Clearance of military customs and anti-snake plan, local coordination.

10. Environmental. Show understanding of environmental concerns within training area: Haul out all trash -- Do not use or allow local residents to put military trash in Tinian dump, acknowledge off-limits areas/historic sites, sewage (CAT holes or portable toilets), protection of reef and wildlife, acknowledge briefing to troops (enclosure (~~10~~) (11)), and handling of hazardous materials.

N3

AFTER ACTION REPORT MESSAGE FORMAT

(A

1. THE FOLLOWING INFO IS SUBMITTED:

   A. DATE(S) OF EXERCISE.

   B. UNITS PARTICIPATING/NUMBER OF PERSONNEL.

   C. AREAS USED.

   D. AIRFIELD USAGE - TYPES OF A/C, NUMBER OF SORTIES.

   E. ORDNANCE EXPENDED.

   F. USE OF CIVILIAN ASSETS/PROPERTY.

   G. SNAKE INSPECTION/CONTROL PROCEDURES USED AND INFO ON SNAKES DETECTED (DATE, TIME, LOCATION, SIZE, SEX AND DISPOSITION).

   H. PROBLEMS ENCOUNTERED.

   I. SUGGESTIONS FOR IMPROVEMENT.//

DECL/(IF APPLICABLE)//
BT

Replace w/ Attached Encl (25)

N3

PUBLIC AFFAIRS

All Public Affairs activities and media inquiries shall be coordinated with COMNAVMARIANAS (~~Code 07~~) at (671) ~~349-5209.~~
Code N01PA 339-2115

DEPARTMENT OF THE NAVY
COMMANDER U.S. NAVAL FORCES, MARIANAS
PSC 489
FPO AP 96536-0051

IN REPLY REFER TO:
COMNAVMARIANASINST 3500.3M
N3

18 AUG 1998

COMNAVMARIANAS INSTRUCTION 3500.3M

Subj: FLEET OPERATING AREAS AND TRAINING FACILITIES - MARIANAS AREA

Ref: (a) COMNAVMARIANASINST 5440.1D
(b) CINCPACFLTINST 3624.1F

Encl: (1) COMNAVMARIANAS Surface/Air Operating Areas
(2) COMNAVMARIANAS Fleet Training Facilities
(3) Farallon De Medinilla Target Complex
(4) Map of Tinian Exclusive Military Use Area/Leased Area
(5) Map of Tinian Constrained Areas
(6) Orote Point Training Area
(7) COMNAVMARIANAS Fleet Training Services
(8) OPAREAS and/or Services Request Format
(9) Farallon De Medinilla Utilization Request Form
(10) Tinian Military Training Area After Action Report Format
(11) Operations at Northwest Field

1. Purpose. To promulgate information concerning training services, areas and facilities available in the Marianas area for military training and to prescribe requesting procedures.

2. Cancellation. COMNAVMARIANASINST 3500.3L. This instruction has been revised in its entirety.

3. Background. COMNAVMARIANAS is the controlling and scheduling authority for Navy controlled training areas and services available in the Marianas area and will coordinate fleet unit requests for use of Air Force training assets as may be available. COMNAVMARIANAS, as Commander in Chief U.S. Pacific Command Representative Guam/Commonwealth of the Northern Mariana Islands/Federated States of Micronesia/Republic of Palau (USCINCPAC REP GUAM/CNMI/FSM/ROP), also coordinates joint service utilization of training areas and facilities as well as de-conflicting exercises in the planning phase prior to such execution in Micronesia.

4. Discussion/Action

a. Facilities. COMNAVMARIANAS maintains a shore bombardment range, submarine and Anti-Submarine Warfare (ASW) operating areas and military land maneuver training areas on Guam and certain islands of the CNMI. Enclosures (1) through (6) provide details/ maps on these areas.

b. Services. Ground unit deployment, electronic counter measure training, shore bombardment, torpedo firing, aircraft radar services and laser operations can be accommodated. A complete listing of services are provided in enclosures (2) and (7), and the format for obtaining services is provided in enclosure (8).

c. Safety

(1) All exercises are to be conducted under applicable Fleet Exercise Procedures (FXP), STAR's or service directives. The pre-exercise briefing will include safety precautions appropriate to the scheduled exercises and the specific area limitations.

(2) The Officer-in-Charge of the Exercise (OCE) is responsible for the safety of exercise units and will ensure non-exercise traffic transiting the area is well clear during firing exercises.

(3) Units will remain within their assigned areas to provide maximum safety and preclude interference with other units. Surface Ship Safety Lanes (SSSL) 1 through 5 have been established for the safe transit of operating areas by surface ships (see Marianas Air and Surface Training Areas Charts, DMA 81025).

(4) Units requesting a gunnery exercise area will be assigned a specific area within Airspace Warning Area (W-517) or the entire Airspace Restricted Area (R-7201), as appropriate, to preclude interference with other surface units and civilian or military aircraft.

(5) COMNAVMARIANAS will initiate requests for the issuance of Airman Advisories, Notices to Airman (NOTAM), Marine Safety Broadcasts and Notices to Mariners (HYDROPACS), as required.

(6) Small fishing boats frequently fish the waters around Farallon De Medinilla (FDM) Target Island. Surface units will circumnavigate the island prior to commencing gunnery exercises and aviation units will conduct a clearing pass at or below 1000 feet above ground level (FT AGL) prior to commencing firing/ bombing operations.

d. Non-Combatant Evacuation Operations (NEO) and Hostage Recovery Training Support. NEO exercises are frequently carried out on Guam in conjunction with other special/unconventional warfare exercises. These exercises frequently request player personnel support from Guam area commands for simulated evacuees. The following procedures will be followed for all NEO training in the COMNAVMARIANAS Area of Responsibility (AOR):

(1) All personnel will be volunteers. Area commands will not draft personnel to meet desired number of player personnel for evacuation.

(2) NEO exercises will be scheduled to allow for adequate organizing and briefing of volunteers. Short notice exercises may be held, but expect reduced number of volunteer personnel.

(3) All players will be briefed completely on the exercise scenario. The briefing will include force levels to be used and levels of resistance the players may use in return.

(4) Use of force and physical contact will be held to a minimum consistent with safety, goals of exercises and common sense.

(5) Participants may drop out of the exercise at any time.

(6) COMNAVMARIANAS will be briefed in detail prior to approving NEO exercises in the COMNAVMARIANAS AOR. A formal debriefing is also mandatory.

(7) An officer controller will be present at and during all evolutions involving volunteers.

e. Reports/Requests

(1) Requests for Operating Areas (OPAREAS) or services should be submitted no later than 45 days prior to the desired time to allow preparation of NOTAMS and HYDROPACS, as applicable. Enclosure (8) provides request format.

(2) Requests for use of the Tinian Military Training Area must be submitted to COMNAVMARIANAS a minimum of 90 days in advance of an exercise per reference (a). A training scenario must accompany the request. Contact COMNAVMARIANAS ACOS Facilities/Environment (N4) for assistance with environmental assessment requirements.

(3) Exercise units will advise COMNAVMARIANAS of exercise cancellation by the most rapid/expeditious means available. Telephonic advisement will be followed by a message or letter. The reason for exercise cancellation will be included if Operating Security (OPSEC) permits.

(4) Exercise units will submit a "Farallon De Medinilla Utilization Report" upon completion of operations to COMNAVMARIANAS ACOS Operations (N3) per reference (b). Enclosure (9) provides format for request.

(5) Upon completion of exercises involving either the Tinian Military Training Area or Orote Point Training Area, exercise units will submit an After Action/Lessons Learned Report to COMNAVMARIANAS N3. Enclosure (10) provides format for both areas.

(6) COMNAVMARIANAS will be kept informed of all exercises to be conducted in the training areas assigned.

(7) Units planning operations in the Northwest Field area must comply with the environmental restrictions outlined in enclosure (11).

(8) Special Unconventional Warfare Exercises and Training. COMNAVMARIANAS will be briefed as to concept, methods of employment, local support desired, rules of engagement and safety requirements prior to approval of special warfare exercises to be conducted in COMNAVMARIANAS AOR.

(9) Report control symbol for all reports cited herein is assigned in CINCPACFLT 3624-1.

B. B. SCOTT
Chief of Staff

Distribution:
USCINCPAC REP GUAM/CNMI/FSM/
ROP//COMNAVMARIANASINST 5216.1R
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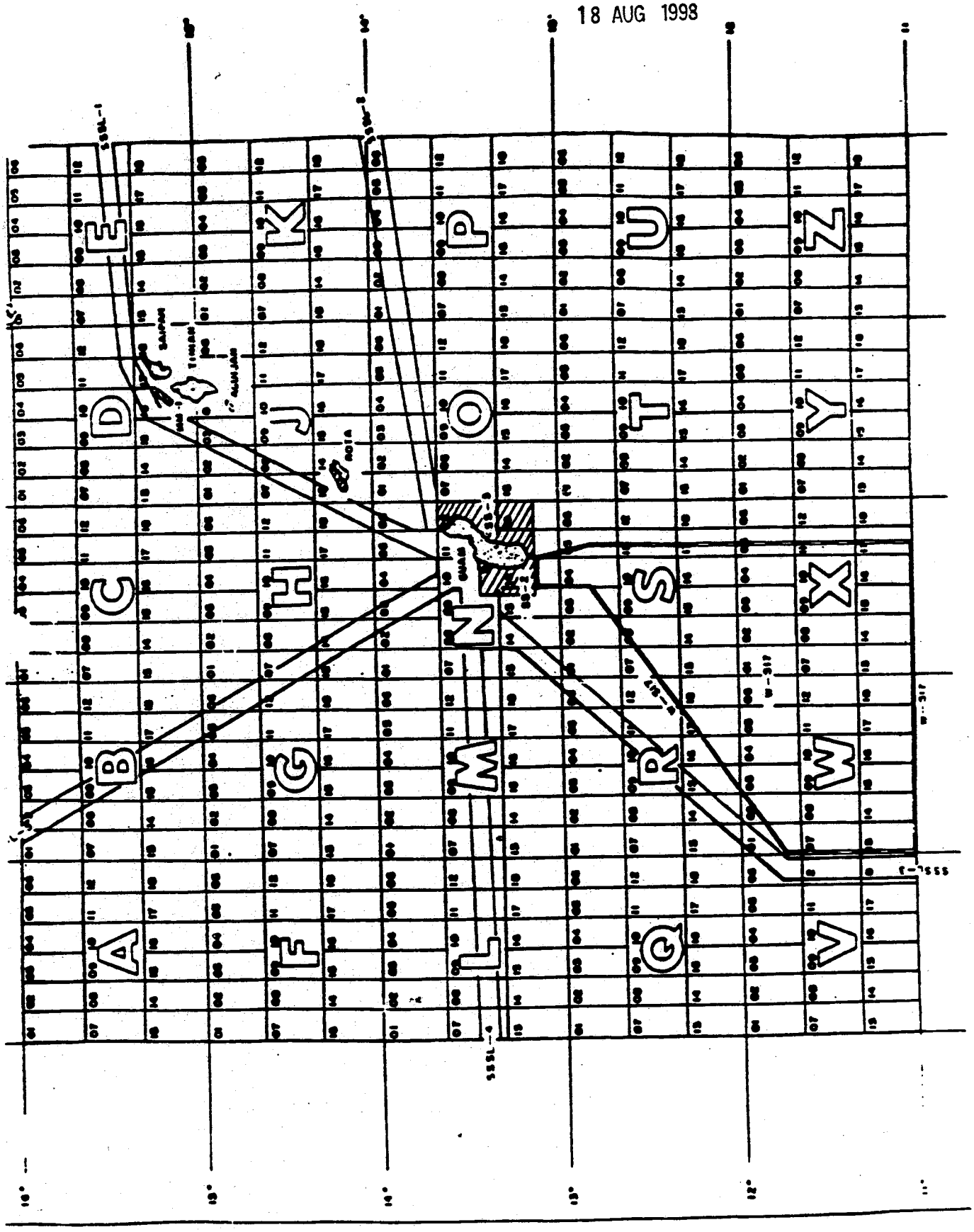
COMNAVMARIANAS SURFACE/AIR OPERATING AREAS



COMNAVMARIANAS FLEET TRAINING FACILITIES

1. Shore Bombardment, Strafing, Aerial Bombing Area. The Shore Bombardment, Strafing and Aerial Bombing range is enclosed within Airspace Restricted Area R-7201 which is a three nautical mile radius circle around the island of Farallon De Medinilla located at 16-01N 146-04.5E. This area is available for all surface, shore, aerial strategic and tactical bombardment support exercises. No ordnance, live or inert, will be delivered within an area 400 meters from the north end of FDM, this area is a no fire safe zone.

2. Special Subsurface Areas. The areas within the following coordinates are available for subsurface operations.

a. SS-1: 14-07N 145-07.5E, 14-08N 145-07E, 14-09.5N 145-07E, 14-13.5N 145-13E, 14-13.5N 145-15.8E, 14-11.9N 145-15.8E, thence southwest along the western coast of Rota to point of commencement.

b. SS-2: From a point where longitude 114-45E intersects the northern coast of Guam, north to latitude 13-40N, then east to longitude 145E, south to latitude 13-10N, west to longitude 144-45E, north to intersect the southern coast of Guam, thence along the eastern coast of Guam to the point of origin.

c. SS-3: From a point where longitude 144-51.5E intersects the northern coast of Guam, north to latitude 13-40N, then east to longitude 144-5E, north to intersect the southern coast of Guam, thence along the eastern coast of Guam to the point of origin.

3. Air to Air, Surface to Surface, Air to Surface and Surface to Air Gunnery/Missile Exercise Area. Surface and aerial gunnery/missile exercises may be conducted within Airspace Warning Area W-517 which is contained within the following coordinates: 13-10N 144-30E, 13-10N 144-42E, 12-50N 144-45E, 11N 144-45E, 11N 143E, 11-45N 143E, 12-50N 144-30E.

4. Small Arms Firing Range. COMNAVMARIANAS maintains an armory, small arms firing range and a Small Arms Marksmanship Instructor (SAMI) available to fleet units.

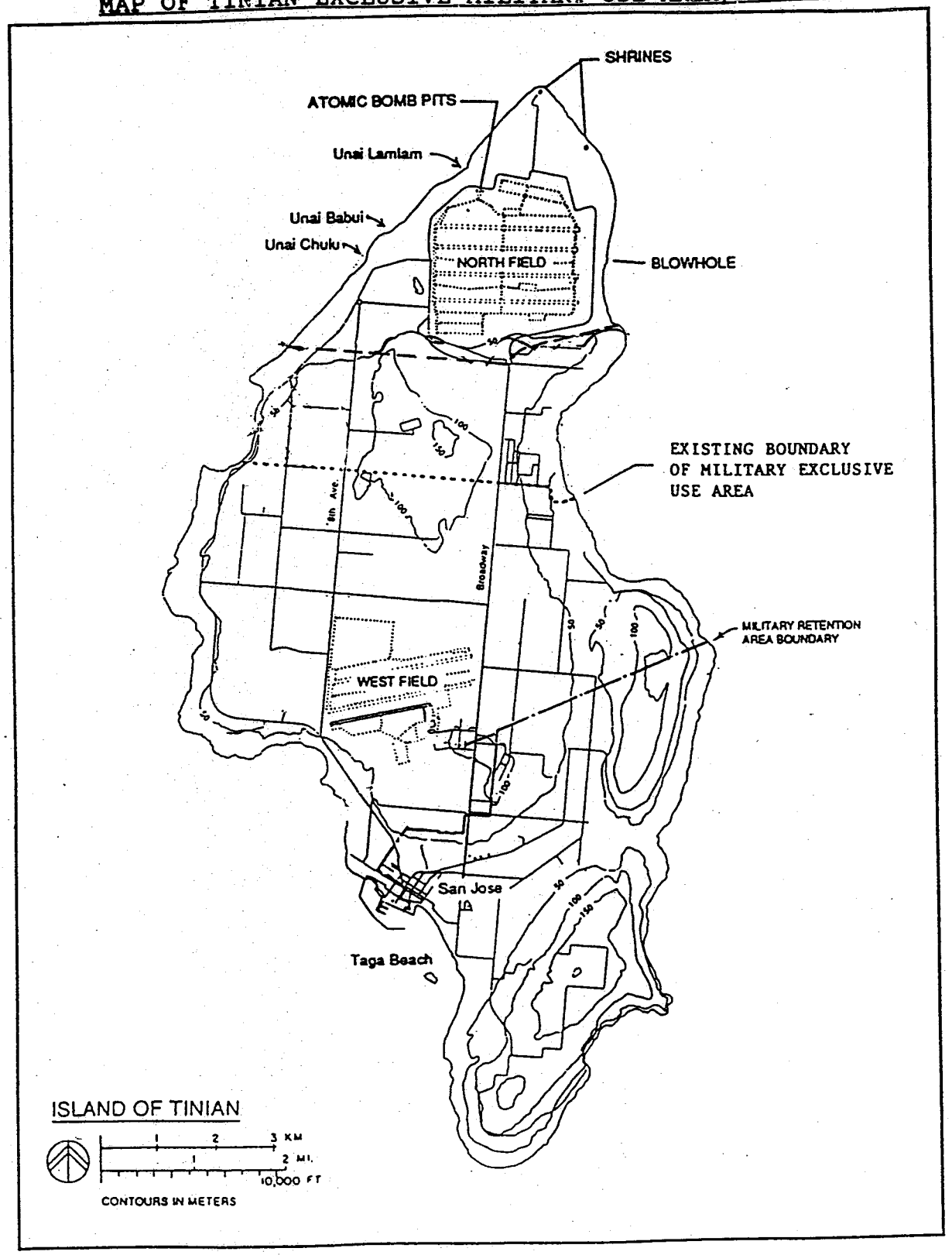
5. Military Training Area. A military training area is located on the northern end of the island of Tinian. The area primarily consists of an abandoned airfield with several historic Japanese structures from World War II. Most of the area is flat with heavy growth of underbrush; however, training sites and drop zone should require only minimal clearing. Runway 1 (northern most 8500' runway), although listed as closed, is cleared periodically

and has been used during past training evolutions for C-130 JA/ATT operations. Roads and tarmac areas are overgrown in some areas but permit ready access to most of the training area. Lake Hagoi, located west of the runways, and all structures are off limits to exercise activity and must not be disturbed. Reference (a) contains instructions to Military Commanders for use of this area. Maps of the island of Tinian are available through the Federal Mapping Agency, stock number W94ZXTINIAN, and through the U.S. Department of Interior.

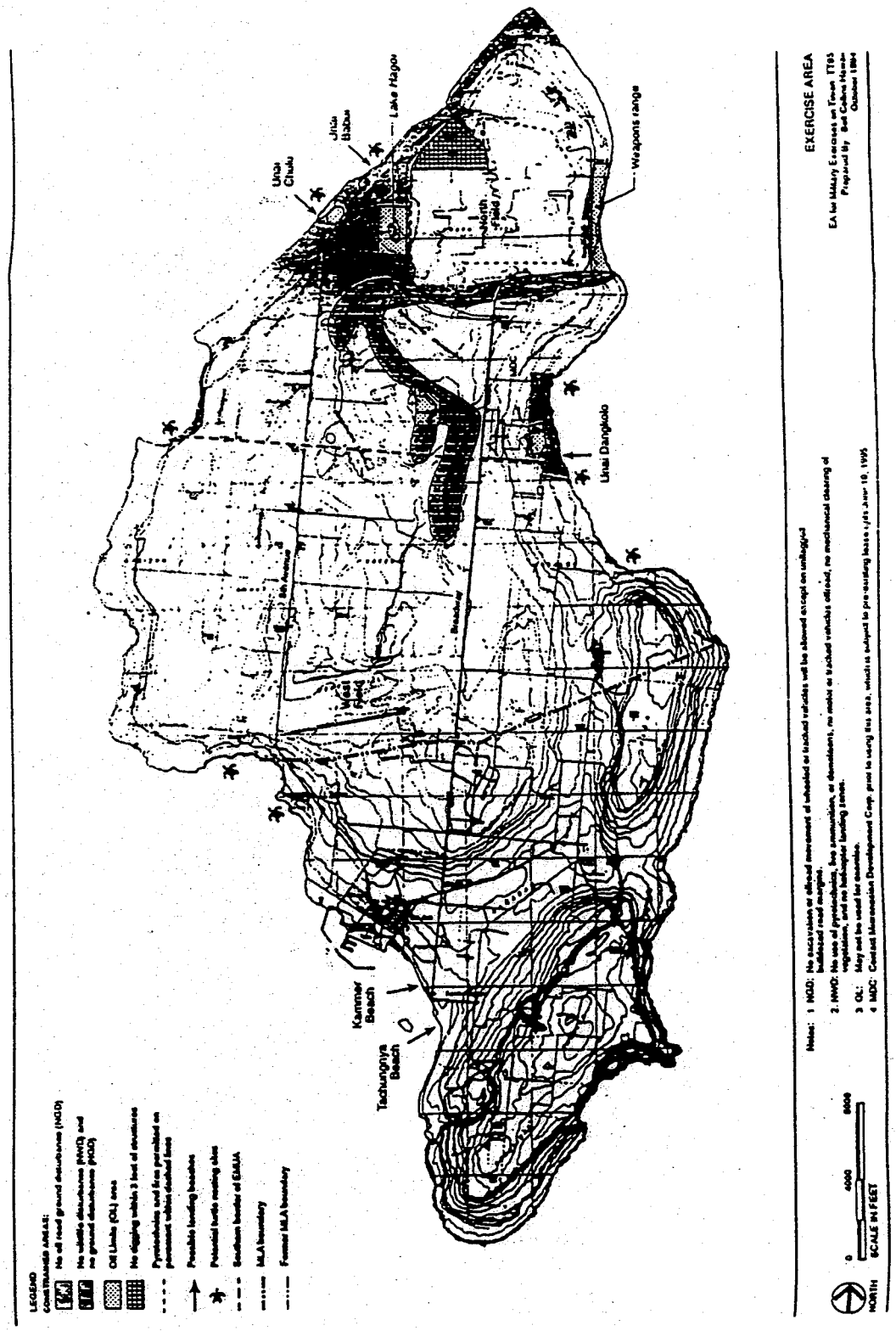
FARALLON DE MEDINILLA TARGET COMPLEX

TARGET NUMBER	GRID POST (SEE PG 3)	HEIGHT (IN METERS)	DESCRIPTION	TARGET USE/PURPOSE	ORDNANCE RESTRICTION
1	98296951	3	Rock Outcropping, Southern	NGFS Point Target	None
2	98506974 to 98617003	40	Truck Convoy #1	CAS; strafing	None (Aircraft only)
3	98537029	10	Rock Outcropping	NGFS Point Target	None
4	98737037 to 98847039	50	POL Storage (Connex; dumpster)	CAS; strafing	None (Aircraft only)
5	98867041 to 99167075	50 to 65	Airstrip (1500 x 150')	CAS	None
6	98797049	Zero	Beach staging area	NGFS Point Target	None
7	98837063 98997059	45 to 60	Vehicle Park	CAS	Inert Ordnance (Aircraft only)
8	99187068	70	Bunker (Connex Box)	NGFS Point Target	NGFS only
9	99157088	60	Bunker (Connex Box)	NGFS Point Target	NGFS only
10	99047088 99127104	15 to 40	Truck Convoy #2	CAS; strafing	Inert Ordnance (Aircraft only)
11	98897089 99187068 99387097	5 to 50	400 yard square	NGFS Area Target	NGFS only
12	99327108 (Center)	50 (Center)	Bullseye marked by large microwave antenna(Aircraft only)	CAS	Inert Ordnance (Aircraft only)
13	99317	2	Bunker in Cove (Rock)	NGFS Counterbattery	

MAP OF TINIAN EXCLUSIVE MILITARY USE AREA/LEASED AREA



MAP OF TINIAN CONSTRAINED AREAS



Encl (5)

OROTE POINT TRAINING AREA

1. Description. The Orote Point Training Area is located on the western end of Orote Peninsula, Guam (see map) and extends from the west end of the Orote airfield (closed) to the tip of the peninsula. The south side of the peninsula is an ecological reserve (see below for boundaries) and is not part of the training area. A number of historic sites also exist (see map) that are not part of the training area.

2. Orote Peninsula Ecological Reserve Area (ERA). An ERA is defined as a biological or physical area in which current natural conditions are maintained insofar as possible. Their conditions are ordinarily achieved by allowing natural physical and biological processes to prevail without human intervention.

a. The Orote Peninsula ERA consists of approximately 163 acres covering both land and water areas along the Southern cliffs.

b. The Territorial Unit (TU), from the upper edge of the cliff edge to the mean low water line, is approximately 30 acres. The TU supports scattered stands of remnant native limestone forest. The TU consists of the cliff face only. Climbing is allowed so long as the cliff face is not disturbed.

c. The Marine Unit (MU), from the mean low water line to the 20 fathom contour, covers approximately 133 acres of submerged area. The MU supports a relatively undisturbed coral reef supporting healthy and diverse populations of reef community fish and invertebrates. Boating and swimming are allowed so long as the reef is not disturbed.

d. Boundaries. 13-26-41.25N/144-37-00.05E. Follows along the top of the cliff line in a southeasterly direction to the next point at 13-25-41.00N/144-38-10.80E. Then from the top of the cliff to the bottom of the cliff, to a water depth of 20 fathoms (120 ft) on a line to 13-25-36.80N/144-38-05.00E. Then follows along the 20 fathom contour to 13-26-42.50N/144-36-53.00E. Then to the bottom of the cliff line at water edge at 13-26-42.35N/144-37-00.00E. Then from the bottom of the cliff to the top of the cliff at the beginning point.

3. Historic Sites. (See Chart 81054, enclosures (4) and (5)). The following historic small sites are located on the western end, Apra Harbor side, of Orote peninsula. These four sites are off-limits for exercise play. They will not be damaged or disturbed in any way, nor will anything be removed from them.

a. Orote Point Archaeological Site. Adjacent to the ERA on the northeast side. This site consists of a cave rock shelter approximately six feet above sea level. It has no latte stones, but has an extensive midden around its east entrance.

b. Spanish Well. This shallow water well lies east of the archaeologic site and consists of a shallow well and surrounding rock wall. The well is approximately four feet deep (filled with debris) and 10 feet across.

c. Spanish Steps. Consisting of the hand carved steps up to the top of the cliff face.

d. Fort Santiago Site. Located near the ammunition wharf close to Adotgan Point. This site consists of the remains of the first Spanish fort built on Guam.

4. Helicopter Operations. Helicopters may land at any of the following sites:

a. In the large field in front on the Jungle Warfare Building.

b. At the Ammunition Wharf helo pad.

c. On the abandoned Orote Point runway complex. Area must be confirmed clear of obstructions, people and vehicles prior to use.

5. Orote Point Ammunition Wharf. The Ammunition Wharf and all support facilities are off-limits to exercise players. Ammunition loading/off-loading may, at times, require closing the training area for safety or security purposes.

6. Rifle and Pistol Range. A small rifle range and separate pistol range are available for use. (Use must be approved by COMNAVMARIANAS).

7. Scheduling and Control. The Orote Point Training Area is controlled by COMNAVMARIANAS. Scheduling is coordinated by COMNAVMARIANAS N3. Close coordination will be maintained by COMNAVMARIANAS N3 to ensure conflicts do not arise and training requirements are met.

COMNAVMARIANAS FLEET TRAINING SERVICES

1. Shore Bombardment, Strafing and Aerial Bombing. Farallon De Medinilla (FDM), Airspace Restricted Area R-7201, is available for strafing, aerial bombing, direct and indirect Naval Shore Fire Support (NSFS) training. When not manned, user assumes responsibility for on scene safety. COMNAVMARIANAS does not provide spotter services. The user must arrange and provide spotter services if desired. Access to FDM is only via helicopter.

2. Anti-Submarine Torpedo Firing. Anti-submarine torpedo firing is authorized within the COMNAVMARIANAS operating areas. However, a torpedo retriever (TR) is not available.

3. Small Arms Training. COMNAVMARIANAS maintains a small arms range and has a Small Arms Marksmanship Instructor available to fleet units. Thirty days lead time is desired for range/ instructor requests.

4. Tinian Military Training Area

a. The North Field area of Tinian is designed as a military training area for training involving the deployment of personnel and equipment. No utilities are available in the training area. Runway 1 (northern most runway) is listed as closed, but may be used during exercises at the discretion of the Exercise Commander with prior approval and coordination through COMNAVMARIANAS. Fire truck and crash crew to support North Field flight operations is not available on the island but may be requested through Andersen AFB. All Temporary Additional Duty (TAD) costs for crash crew services will be funded by the requesting activity.

b. The island has a civilian airfield (West Tinian) with a 5,333 feet runway located north of San Jose Village. Additional information may be obtained from the Flight Information Publication (FLIP) En Route Supplement.

OPAREAS AND/OR SERVICES REQUEST FORMAT

FM (REQUESTING UNIT)
TO COMNAVMARIANAS GU//N3//
(CLASSIFICATION) //N03500//
MSGID/GENADMIN/(REQUESTING UNIT)//
SUBJ/OPAREAS AND/OR SERVICES REQUEST//
REF/A/DOC/COMNAVMARIANASINST 3500.3M/18AUG98//
AMPN/REF A IS FLEET OPERATING AREAS AND TRAINING FACILITIES - MARIANAS AREA INSTRUCTION//
RMKS/1. PER REF A, REQ FOL OPAREA (OR SERVICES):
A. AREA (OR SERVICES) DESIRED
B. DATE/TIME DESIRED (INCLUDE ALTERNATE)
C. EXERCISE (IF APPLICABLE)
D. OCE AND UNIT PARTICIPATING
E. COMMENTS/REMARKS//
DECL (IF APPLICABLE)//

FARALLON DE MEDINILLA UTILIZATION REQUEST FORM

FM (EXERCISE UNIT)
TO COMNAVMARIANAS GU//N3//
(CLASSIFICATION) //N03500//
SUBJ/FDM UTILIZATION REPORT (RCS 3624)//
REF/A/DOC/COMNAVMARIANASINST 3500.3M/18AUG98//
AMPN/REF A IS FLEET OPERATING AREAS AND TRAINING FACILITIES - MARIANAS AREA INSTRUCTION.//
RMKS/1. PER REF A, FOL INFO IS SUBMITTED:
A. LOCATION - FARALLON DE MEDINILLA (FDM) (R-7201)
B. DATE(S)
C. HOURS SKED
D. HOURS UTILIZED
E. HOURS CNX
F. REASON CNX
G. COMMAND
H. UNIT
I. NUMBER/TYPE AIRCRAFT/SHIP
J. ORDNANCE EXPENDED
2. COMMENTS.//
DECL/IF APPLICABLE//

TINIAN MILITARY TRAINING AREA AFTER ACTION REPORT FORMAT

FM (EXERCISE UNIT)
TO COMNAVMARIANAS GU//N3//
INFO (AS REQUESTED)
UNCLAS //N03500//
SUBJ/TINIAN AFTER ACTION REPORT//
REF/A/DOC/COMNAVMARIANASINST 3500.3M/18AUG98//
AMPN/REF A IS FLEET OPERATING AREAS AND TRAINING FACILITIES - MARIANAS AREA INSTRUCTION.//
RMKS/1. PER REF A, FOL INFO IS SUBMITTED:
A. DATE(S) OF EXERCISE
B. UNITS PARTICIPATING/NUMBER OF PERSONNEL
C. AREAS USED
D. AIRFIELD USAGE - TYPES OF A/C, NUMBER OF SORTIES
E. ORDNANCE EXPENDED
F. USE OF CIVILIAN ASSETS/PROPERTY
G. PROBLEMS ENCOUNTERED
H. SUGGESTIONS FOR IMPROVEMENT//
DECL/(IF APPLICABLE)

OPERATIONS AT NORTHWEST FIELD

1. Flying operations involving overflights or landings by fixed wing or helicopter aircraft are prohibited on Northwest Field except on the south runway (06R/24L). Approaches/departures to the south runway at Northwest Field are restricted to straight in/straight out aligned on the runway centerline extended a minimum of W NM from the runway threshold. Overflights of Northwest Field land areas north of the south runway (06R/24L) below 1,500 feet MSL are prohibited. A map of the restricted area can be found on the next page. All flying (overflights, landings, etc.) and ground operations in the vicinity of Northwest Field will be coordinated/scheduled 60 days prior with 36 Air Base Wing Management who will in turn notify the Environmental Management Office (Natural Resources) for endangered species clearance.

2. Other limitations: Flying is prohibited in the vicinity (1 NM radius, 600' MSL) of the Detachment 5 Radar Facility.

DEPARTMENT OF THE NAVY
COMMANDER, U.S. NAVAL FORCES MARIANAS
PSC 455, BOX 152
FPO AP 96540-1000

IN REPLY REFER TO
COMNAVMARIANASINST 5090.10A
N45
14 FEB 2005

COMNAVMARIANAS INSTRUCTION 5090.10A

Subj: BROWN TREE SNAKE CONTROL AND INTERDICTION PLAN

Ref. (a) Executive Order 13112, Invasive Species
(b) OPNAVINST 5090.1B
(c) COMNAVMARIANASINST 3500.4

Encl: (1) Brown Tree Snake Control and Interdiction Plan

1. Purpose. To outline specific responsibilities and establish policy for coordination and procedures governing the control and interdiction of brown tree snakes on Navy installations on Guam and during military training within the Commander, U.S. Naval Forces Marianas (COMNAVMARIANAS) Area of Responsibility (AOR).

2. Cancellation. COMNAVMARIANASINST 5090.10. This instruction has been changed in its entirety.

3. Scope. This instruction provides guidance and direction to prevent the dispersal of brown tree snakes from Guam to other locales via military sea and air shipments of personnel, equipment, and cargo. Its provisions are applicable to all activities in the COMNAVMARIANAS AOR who directly or indirectly have responsibility for military sea and air shipments. This instruction issues a revised Brown Tree Snake Control and Interdiction Plan that is to be followed during the planning and execution of any movement of military sea and air shipments, including personnel. This instruction applies to Guam Installation Commanders, Major Exercise Commanders, Training Unit Commanders, and all military Flight Crews.

4. Background. Per reference (a), COMNAVMARIANAS is responsible for not causing or promoting the introduction or spread of invasive species in the United States or elsewhere. The brown tree snake is an alien species to the United States, including Guam, whose introduction has caused significant economic and environmental harm; consequently, it is classified as an invasive species. Per reference (b), the Navy is required to ensure military readiness and sustainability while complying with natural resources protection laws, and conserving and managing natural resources in the United States, its territories, and possessions. This dual dynamic of stewardship and readiness is essential for the long-term maintenance of

military and natural resources sustainability. Per reference (c), COMNAVMARIANAS is the controlling and scheduling authority for Navy-owned and controlled training areas and services in the Mariana Islands. The dispersal of brown tree snakes from Guam to other locales is a serious economic and environmental threat. Preventing dispersal of brown tree snakes in military sea and air cargo is a priority for COMNAVMARIANAS.

5. Action

a. The sponsoring office for this order, the Assistant Chief of Staff, Facilities and Environmental (ACOS N4) is responsible for environmental oversight of all actions, including military training, within the COMNAVMARIANAS AOR. The ACOS N4 is responsible for environmental evaluation of potential environmental impacts, determining the measures necessary to protect the environment and preserving the long-term maintenance of military and natural resources sustainability. The ACOS N4 will advise the Commander of any changes in the handling and movement of military sea and air shipment cargo, and any changes in military training constraints necessary to prevent the dispersal of brown tree snakes in military sea and air shipments. The ACOS N4 will work in close coordination with the Assistant Chief of Staff, Operations (ACOS N3).

b. The ACOS N3 is responsible for scheduling and oversight of supplies and port services and operations, and for the scheduling and oversight of training. The ACOS N3 will accomplish all specified requirements described herein.

c. The Assistant Chief of Staff, Ordnance Operations (ACOS N2) is responsible for preparing and staging munitions for shipment from Guam. The ACOS N2 will accomplish all specified requirements described herein.

d. Regional supported activities, including but not limited to, DRMO Guam, NMCB DET Guam, and MSCO Guam will:

(1) Review the Brown Tree Snake Control and Interdiction Plan and identify and incorporate into local plans all necessary control and interdiction measures, and fully cooperate with federal authorities during observations and inspections of equipment and cargo being prepared and staged for shipment from Guam.

(2) Ensure that personnel assigned to preparation and handling of equipment and cargo scheduled for shipment from Guam are knowledgeable and adhere to the information contained in the

Brown Tree Snake Control and Interdiction Plan and directives pertaining to inspection of outbound equipment and cargo.

(3) Comply with the mandatory regulations and direction contained in the Brown Tree Snake Control and Interdiction Plan when preparing equipment and cargo for shipment from Guam.

e. Commanding Officers/Officers-in-Charge of training units will:

(1) Review the Brown Tree Snake Control and Interdiction Plan and identify and incorporate into training plans all necessary control and interdiction measures, and fully cooperate with federal authorities during observations and inspections of equipment and cargo being prepared and staged for shipment from Guam.

(2) Ensure that personnel assigned to preparation and handling of equipment and cargo scheduled for shipment from Guam are knowledgeable and adhere to the information contained in the Brown Tree Snake Control and Interdiction Plan and directives pertaining to inspection of outbound equipment and cargo.

(3) Comply with the mandatory regulations and direction contained in the Brown Tree Snake Control and Interdiction Plan when preparing equipment and cargo for shipment from Guam.

6. Applicability. This order applies to all commands, organizations, units, and activities authorized use of Navy lands and facilities, training areas, and ranges controlled by COMNAVMARIANAS.

7. Certification. Reviewed and approved this date.

R. A. McNAUGHT
Chief of Staff

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1 4 FEB 2005

BROWN TREE SNAKE CONTROL AND INTERDICTION PLAN

Prepared by:
Commander U.S. Naval Forces Marianas
Facilities & Environment, N45

August 2004

1 4 FEB 200

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1 4 FEB 2005

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ACRONYMS and ABBREVIATIONS

AAFB	Andersen Air Force Base
AMSS	AAFB Mobility Support Squadron
APHIS	Animal and Plant Health Inspection Service
BTS	Brown Tree Snake
CECG	Combined Exercise Command Group
CESG	Combined Exercise Support Group
CNMI	Commonwealth of the Northern Mariana Islands
COMNAVMARIANAS	Commander, Naval Forces Marianas
GDAWR	Guam Division of Aquatic and Wildlife Resources
DLNR	Department of Land and Natural Resources
DOD	U.S. Department of Defense
DOI	U.S. Department of Interior
FISC	Fleet Industrial Supply Center
GovGuam	Government of Guam
HDOA	Hawaii Department of Agriculture
MI	Military Inspector
MILVAN	Military (cargo) Van
MOA	Memorandum of Agreement
PHNSY	Pearl Harbor Naval Shipyard
PM	Pest Management (USAF)
PMRF	Pacific Missile Range Facility
USAF	United States Air Force
USAG-HI	United States Army Garrison, Hawaii
USARPAC	United States Army, Pacific
USCOMPAC	Commander, U.S. Pacific Command
USCOMPAC REP	USCOMPAC Representative
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS/CSU	U.S. Geological Survey/Colorado State University, Brown Treesnake Project
USGS/RRT	U.S. Geological Survey, Rapid Response Team
WACSA	USDA-WS Approved Cargo Staging Area
WS	(USDA) Wildlife Services

BROWN TREE SNAKE
CONTROL AND INTERDICTION PLAN

I. INTRODUCTION

Purpose

Control and interdiction of the brown tree snake (*Boiga irregularis*), hereafter referred to as BTS, is absolutely essential to prevent the dispersal of BTS from Guam to other locales via military sea and air shipments of personnel, equipment and cargo. The control and interdiction protocols are practiced on a daily basis by military organizations permanently stationed in Guam. The purpose of this plan is to disseminate these procedures to resident and transient organizations, and to emphasize the threat and need to prevent BTS movement from Guam to other areas at risk during military training activities. These preventive practices are particularly crucial during shipments to the Commonwealth of the Northern Mariana Islands (CNMI), Hawaii, and other locations where the BTS has no natural population controls. Therefore, the primary objectives of BTS control and interdiction are to reduce the ongoing and potential threats to human health and safety, biological resources, and impacts to island economies.

The Brown Tree Snake Threat

The BTS is a native species of Indonesia, New Guinea, the Solomon Islands, and Australia that was inadvertently introduced in Guam sometime between the mid-1940s and early 1950s. Since its introduction, the population of BTS has expanded to encompass the entire island's rural and urban areas. The BTS has caused or has been a major factor in the extirpation of most of Guam's native terrestrial vertebrates, including lizards and 9 of 11 endemic/native forest and water birds. In addition, the BTS has caused more than a thousand power outages, preyed on poultry and household pets, and has bitten numerous children.

High densities of snakes occur throughout Guam, and in areas where cargo is loaded for transport by air and sea. BTS characteristics such as being able to survive for long periods of time without food, and habitually seeking out small dark places as refugia, work synergistically to give a higher probability for successfully transporting BTS to other islands/regions. Due to the possibility of sperm storage, a single female BTS can potentially start a population. The potential spread of BTS from Guam via cargo movements is a serious concern due to Guam's role as a trans-Pacific shipping hub and the delicate environments of islands that receive cargo.[1] BTS sightings have been recorded in locations ranging from - Oahu in Hawaii, Tinian, Rota, and Saipan in the CNMI, Marshall Islands, Okinawa, Diego Garcia, Wake Island, Spain, Alaska and Texas. There is no documentation supporting any established populations of BTS in any of these locations. However, detecting BTS populations at low densities is extremely difficult.

[1] USDA et al.1996. *Environmental Assessment for Brown Tree Snake Control Activities on Guam.*

1 4 FEB 2005

II. FEDERAL AUTHORITY AND DIRECTION

1990: Federal funding for BTS interdiction and control initiated.

1990: U.S. Congress incorporated specific direction into the Nonindigenous Aquatic Nuisance Prevention and Control Act regarding the control of BTS in coordination with regional, territorial, state, and local entities in Guam and other areas where the species is established outside of its historic range.

1993: A 5 year Memorandum of Agreement (MOA) between U.S. Department of Agriculture (USDA)[2], the U.S Department of the Interior (DOI), the U.S. Department of Defense (DOD), the Government of Guam (GovGuam) and the State of Hawaii to coordinate BTS research and establish the USDA Animal Damage Control program.

1996: The Commonwealth of the Northern Mariana Islands (CNMI) added to the 5 year MOA.

1999: Department of Transportation and the Department of Commerce added to 5 year MOA.

1999: President Clinton signed Executive Order 13112, "Invasive Species"[3]. The executive order directed federal agencies to (1) prevent, detect, and respond to control populations of invasive species; (2) to monitor invasive species populations; (3) to provide for restoration of native species and habitation in ecosystems that have been invaded; (4) to conduct research and develop technologies to prevent introduction and to control invasive species; and, (5) to promote public education on invasive species.

III. DOD BTS ACTIONS IN THE MARIANA ISLANDS

BTS contamination can occur during any cargo shipment or personnel scenario. COMNAVMARIANAS and Commanding Officer, 36th Air Base Wing, Andersen Air Force Base, are responsible for carrying out a viable plan to meet a full spectrum of potential BTS cargo contamination at Guam's military ports. COMNAVMARIANAS and 36th ABW are fully supported in these actions by the USDA Wildlife Services (WS).

Other cooperative agencies that support COMNAVMARIANAS and 36th ABW BTS control and interdiction efforts include DOI, U.S. Fish and Wildlife Service (USFWS), the U.S. Geological Survey/Colorado State University Brown Treesnake Project (USGS/CSU), the Guam Department of Agriculture's Division of Aquatic and Wildlife Resources (GDAWR), the CNMI Department of Land and Natural Resources (DLNR), and the State of Hawaii Department of Agriculture (HDOA).

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[2] In 1997, USDA Animal Damage Control (ADC) became the USDA Animal and Plant Health Inspection Services (APHIS) Wildlife Services (WS), and is the office presently responsible for integrated wildlife damage management.

[3] "Invasive species" means a species not native to an ecosystem that does or is likely to cause economic or environmental harm or harm to human health.

The COMNAVMARIANAS BTS Control and Interdiction Plan has been implemented and evaluated during major inter-island exercises, as well as numerous small scale operations and daily operations. The control and interdiction procedures were reevaluated as part of a Commander, U.S. Pacific Command (USCOMPAC) Final Environmental Impact Statement that assessed potential impacts of all military training exercises throughout the Mariana Islands. The lessons learned from these major exercises and the results of other environmental evaluations have been incorporated in this plan. COMNAVMARIANAS sponsors annual reviews of BTS control and interdiction protocols with federal, territorial and commonwealth agencies to evaluate additional lessons learned and new technologies that may be adopted in the Mariana Islands.

IV. RESPONSIBILITIES

The following categorized responsibilities provide a foundation for action by certain agencies or individuals involved with Guam military training exercises and BTS control/interdiction programs. Due to turnover experienced by all military units, the responsibilities relating to BTS threat awareness instruction will often be repetitious to ensure that all persons training in the Mariana Islands are fully knowledgeable of individual and command responsibilities.

A. Guam Installation Commanders

COMNAVMARIANAS and Commander, 36th Air Base Wing are responsible for the conduct of BTS control and interdiction on Navy and USAF installations, respectively, and supported daily by the Guam WS permanent staff assigned to COMNAVMARIANAS and Andersen Air Force Base. The installation commanders are responsible to keep WS informed of activities that will require their support. Specific command responsibilities are as follows:

1. Fully cooperate with WS to conduct measures necessary to reduce the BTS snake population at port and cargo facilities through an integrated approach consisting of technical assistance and lethal and non-lethal control methods such as exclusion, habitat modification, capture and prey base reduction.

2. Plan, direct, and coordinate all cargo handling procedures for cargo departing Guam with consideration for the on-going threat of the pan-Pacific spread of BTS.

3. Consult with WS to determine the necessity to establish USDA-WS approved cargo staging areas (WACSA).

4. Direct cargo handlers and/or managers to work closely with WS personnel to establish and maintain an effective cargo and equipment BTS inspection process.

5. Publish and distribute the BTS Emergency Response Protocol. Prominently display contact information and telephone numbers to report BTS sightings (see Table 1).

6. Conduct information briefings for both permanently assigned and transient personnel. Explain the potential for impacts if BTS were transported from Guam in military vehicles, cargo and equipment. Explain individual responsibilities if and when a BTS or any other snake species is sighted (kill/capture/immediately report to WS). Other snake species can be dangerous.

7. Clearly display BTS identification and information posters in tent cities, barracks and work sites. Use the BTS Awareness instructional videotapes and printed materials, requesting WS participation and/or demonstrations at the briefings when their workloads permit. Provide information cards to personnel as a reminder of the BTS threat and responsibilities for immediate action.

8. For major exercises, include BTS control and interdiction procedures in the exercise plan's Environmental Awareness Annex. Include in the annex, a copy of the information cards to be distributed to training personnel that will define applicable environmental protective measures, including the BTS protocol.

9. In consultation with WS, direct the sites to be used for tent cities and staging areas for vehicle, cargo pallets and containers, and other equipment.

10. Provide vehicle washing areas and high-pressure wash equipment when needed.

11. Designate areas to be used for inspecting vehicles after they have been cleaned and prior to movement to WACSAs or immediate loading aboard aircraft and/or ships.

12. Provide area lighting at WS approved designated inspection and staging areas.

13. Assist WS to facilitate the mandatory 100 percent inspection of all outbound cargo by detector dog teams.

14. For major exercises, assign members of the base environmental staff with experience in conducting BTS protocol as members of the Combined Exercise Command Group (CECG) and the Combined Exercise Support Group (CESG).

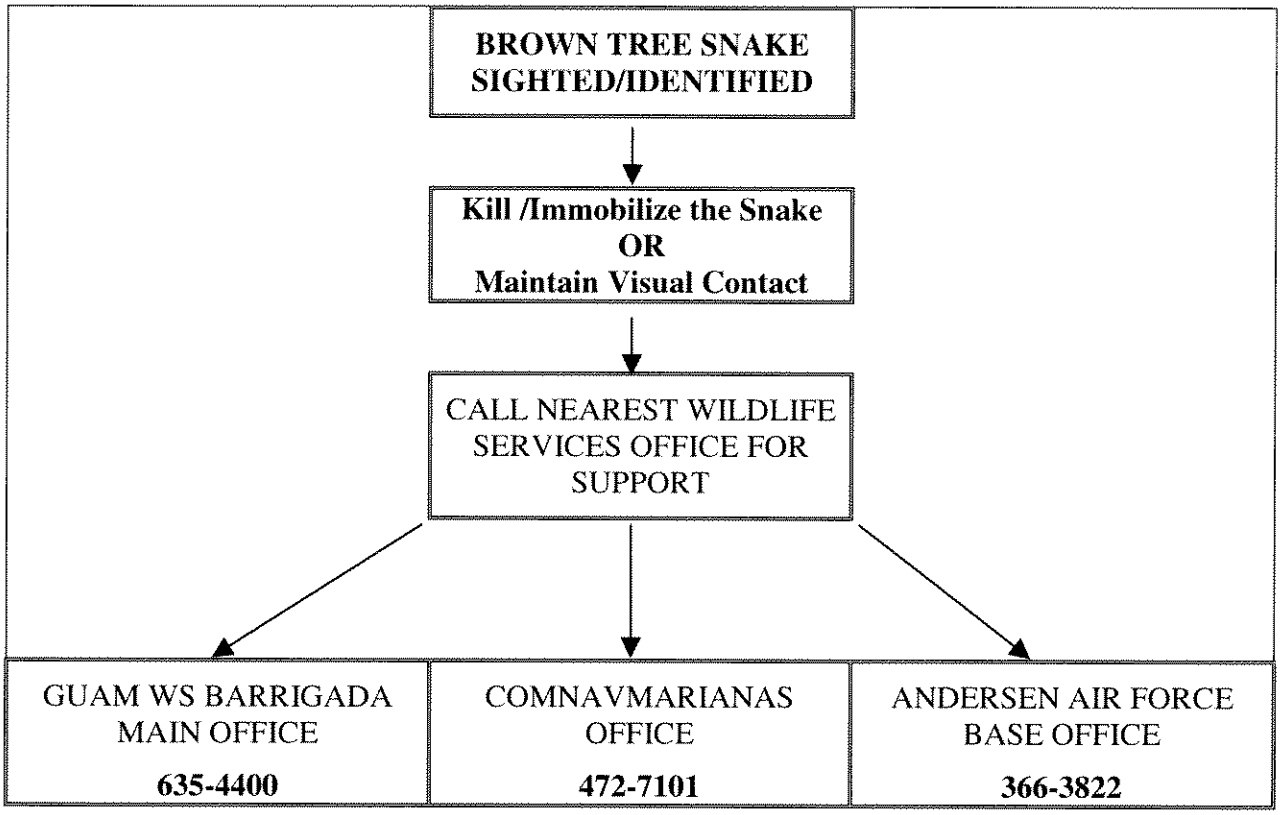
15. Provide personnel and logistic support to augment BTS protocol activities as needed.

16. For major exercises and in coordination with WS, enhance rodent control measures and grounds maintenance practices that reduce the potential for BTS activity/presence in areas selected for vehicle and cargo staging.

17. During day-to-day cargo inspections, the installation commander may authorize WS to stop any cargo carrier from departing Guam with any cargo or equipment suspected to harbor BTS.

1 4 FEB 2005

Table 1: BTS Emergency Response Procedures for Guam Cargo Stations



NOTE: Cellular phone numbers will be provided to exercise units during field exercises to ensure WS can be contacted at any hour.

B. Major Exercise Commanders

The CECG and CESG conducting major exercises are tasked with a variety of responsibilities to support the exercise force. Logistics coordination in response to command direction is the responsibility of the CESG. Early coordination with WS is required to incorporate BTS control and interdiction requirements into the exercise logistic support plans. In regard to BTS control and interdiction, the CECG/CESG will:

1. Work with the Installation Commander and WS when necessary to establish a WACSA for personal and unit equipment, and vehicle staging.

2. Work with the AAFB commander and WS to develop an aircraft parking plan that will minimize potential exposure of aircraft to BTS.

3. Supervise the BTS control and interdiction process by providing environmental monitors as needed.

4. Schedule and monitor BTS control and interdiction briefings for all training units upon arrival.

5. Identify to WS the logistics staff personnel who will be responsible for cargo handling operations and BTS response.

6. Provide WS the authority to stop any cargo carrier from departing Guam with any cargo or equipment suspected to harbor BTS.

C. Training Unit Commanders

Regardless of the size of training exercises, commanders of resident and transient organizations will request support from the Installation Commander (and/or the CECG and CESG) when tasked with establishing tent cities, staging areas, and areas for inspecting personnel, vehicles and cargo prior to shipment from Guam (see Section E below for a listing of WS assistance and service that are provided to training units). The commanders of training units will:

1. Ensure that installation staff or CESG conduct BTS control and interdiction information briefings for exercise personnel.

2. Distribute BTS information packets that include the Emergency Response Protocols in case of actual or suspected snake sightings.

3. Coordinate with the on-site commanders to obtain wash down facilities and inspection areas. 36th ABW may provide portable high-pressure washers and a cleaning area. Future plans include repair of a 36 Transportation Squadron vehicle washing area.

4. Identify key personnel responsible for cargo staging, handling and inspection to the installation commander/CESG and ensure their cooperation with WS personnel.

5. Provide additional information to cargo handlers to increase their levels of BTS awareness. Cargo handlers are the first-line of defense against BTS in military cargo. Request assistance from WS to review the following:

   a. History of BTS on Guam, the threat to the environment, action taken to control and interdict BTS, and the goals of existing programs. (Use the USDA video).

   b. A description of implementation efforts on base.

c. A demonstration by the WS detector dog team.

d. A live BTS to enhance immediate recognition.

e. A review of proper methods to kill or capture the snake.

f. Information cards.

6. Supervise the equipment and vehicle cleaning and inspection prior to moving items to the staging area for WS inspections.

7. Provide WS complete access to staged cargo and equipment, opening any containers as requested for a WS internal inspection.

8. Designate personnel as inspectors to assist during WS and cargo handling personnel during personnel, vehicle, cargo and equipment cleaning and inspection.

9. Ensure that all ships and aircraft departing from Guam for overseas and airports are inspected by WS.

10. Prior to breaking camp and off-island departure, ensure that personal belongings, tents and canvas used/staged in bivouac areas have been inspected for BTS presence by WS. Ensure that all personnel conduct inspections of their individual equipment (hand-carried/back-packed/sea-bags). Request WS assistance prior to breaking camp.

D. Flight Crews

Supporting aircraft may be staged at the AAFB parking apron. Supporting aircraft will not be staged overnight at Orote airfield. When idle, the doors of the aircraft will be closed so that BTS cannot enter the aircraft interior. During pre-flight inspections, flight crews should be alert for potential BTS on aircraft. Request WS assistance as needed.

E. USDA APHIS Wildlife Services Support in Guam

USDA APHIS field operations in Guam are conducted by Wildlife Services (WS) staff consisting of Wildlife Biologists, WS Specialists, and snake detector dogs. Logistic support is available to Guam from the WS staff in Yakima, Washington, who make and store equipment and snake traps.

WS BTS control and interdiction efforts are conducted at all commercial and DOD ports for day-to-day cargo shipments. In support of military exercises, WS inspection and containment efforts are enhanced, and WS will:

1. Conduct a 100 percent canine inspection of all outbound aircraft and surface cargo.

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2. Identify, purchase, operate, and maintain BTS control tools such as snake handling equipment, snake traps, and snake barriers. Barrier fencing is used to erect a WACSA at a port of embarkation on Guam (to keep snakes out of inspected cargo) and a containment area (to keep any snakes in) at the port of debarkation on Tinian. Other tools may be used as needed to accommodate special circumstances and situations.

3. Determine snake-trapping strategies by topographical features and proximity to cargo staging, handling, or processing areas. The BTS trap is a modified minnow trap with a mouse as an attractant within an inner chamber that is inaccessible to snakes. The trap is routinely restocked with food and moisture source for the mouse. The self-setting traps have one-way entrances on either end and are designed for multiple captures.

4. Assign WS personnel and detector dog teams 24 hours/7-days per week during deployment and post-exercise redeployment activities.

5. Use handheld spotlights to walk the perimeter at night to detect and capture BTS, and use detector dog teams to inspect shipments trucked into staging area.

To ensure effective communication with exercise participants, WS will rely on a close working relationship with military cargo managers, appropriate installation commanders, and training unit commanders, and the military commanders keeping WS informed of ongoing and future activities.

USDA WS may be contacted one of three offices on Guam: Andersen AFB Office (366-3822), Barrigada Heights District Office (635-4400), and COMNAVMARIANAS Office (472-7101). The supervisory office in Honolulu can be reached at (808) 861-8576. Cell phone numbers will be published prior to major exercises to ensure WS personnel on Guam and Tinian can be reached 24 hours a day

F. USGS/Colorado State University, Brown Treesnake Project (USGS/CSU)

The U.S. Geological Survey/CSU's Brown Treesnake Project may provide technical assistance to WS. BTS specialists in USGS/CSU may be called upon to provide technical assistance on barrier deployment and construction, trapping efficacy, population levels, special problems with visual or trap-capture of small snakes in dense vegetation, etc. The USGS-Rapid Response Team (RRT) can be requested by local government agencies to respond to any snake sightings outside of Guam.

V. CONTROL, CLEANING, AND INSPECTION PROCEDURES

The possibility of the inadvertent importation of the BTS to other areas of the world is always present whenever military units embark from Guam. BTS is a nocturnal snake that will seek shelter during the day in any area that offers shade, including CONEX boxes, MILVANS, commercial shipping containers, crates, pallets, and personal gear, as well as aboard aircraft, ships, and wheeled or tracked vehicles. The snake can hide in extremely confined spaces. The BTS has the ability to go without food for extended periods and to survive long voyages or flights undetected. Military and commercial air- and sea-ports have recorded several instances of

a live BTS arriving from Guam. Therefore, BTS control and interdiction responsibilities have high priority.

A. BTS Control Measures at COMNAVMARIANAS and AAFB Cargo Points

WS personnel will provide support to the military on a routine basis as well as throughout any training exercises that involve the shipment of military personnel and associated cargo off-island via ship (Apra Harbor) and/or aircraft (Andersen AFB). This support is identified in Section II. D above. Ensuring that the BTS protocol is accomplished and that there are no delays in off-island shipment will require full cooperation from the units being inspected prior to embarkation.

Permanent Staging Areas. Permanent staging areas provided by COMNAVMARIANAS and 36th ABW for sea and air cargo are surrounded by chain link fencing with lighting. These areas are extensively patrolled for BTS but are **not** WS approved cargo staging areas. COMNAVMARIANAS uses Sierra Wharf and warehouse facilities at the former Fleet Industrial Supply Center (FISC). At AAFB, the primary staging area is the 634th Air Mobility Support Squadron (AMSS) warehouse (see Figure 1). Cargo is inspected at these sites daily. These facilities are primarily used for day-to-day cargo staging, but may be used for cargo related to a training exercise.

Temporary USDA-WS Approved Cargo Staging Area (WACSA). When needed to support an influx of training materials and equipment, WS will assist military personnel to select the site for a WACSA for cargo that will be embarked from Guam. In addition to establishing a WACSA at or near a permanent staging area, other paved areas could be suitable.

WACSA will be established when there will be a delay between BTS cargo inspection and movement to the loading point for aircraft or ship embarkation. The WACSA would be used to keep BTS from contaminating inspected cargo and to establish a controlled staging area for snake surveillance and trapping. The necessity to use a WACSA as part of the overall embarkation process will be reviewed during major exercise planning conferences so that the steps and additional time may be included in embarkation plans. The need to use either permanent staging areas or a WACSA at other paved surfaces with low potential for BTS presence will be determined during pre-deployment conferences with WS assistance.

The WS developed WACSA is a barrier constructed with angled sections of weather shade netting on re-bar and PVC pipe supports, weighted along the bottom edge with water snakes and sandbags. The number of entry and exit points is minimized and the barriers at the entrances are designed to lead any BTS toward a trap. The advantage of the temporary barrier is portability and a means to readily support fixed wing operations at main airfields, helicopter operations at landing zones, and ship offloads in port. A temporary snake barrier at AAFB Main or the FISC would be erected 3-5 days prior to the exercise. Snake traps will be placed on the fencing and/or along the forest perimeter. WS personnel will be responsible for trap and portable fence line maintenance, including trap cleaning and the care of mice used as an attractant.

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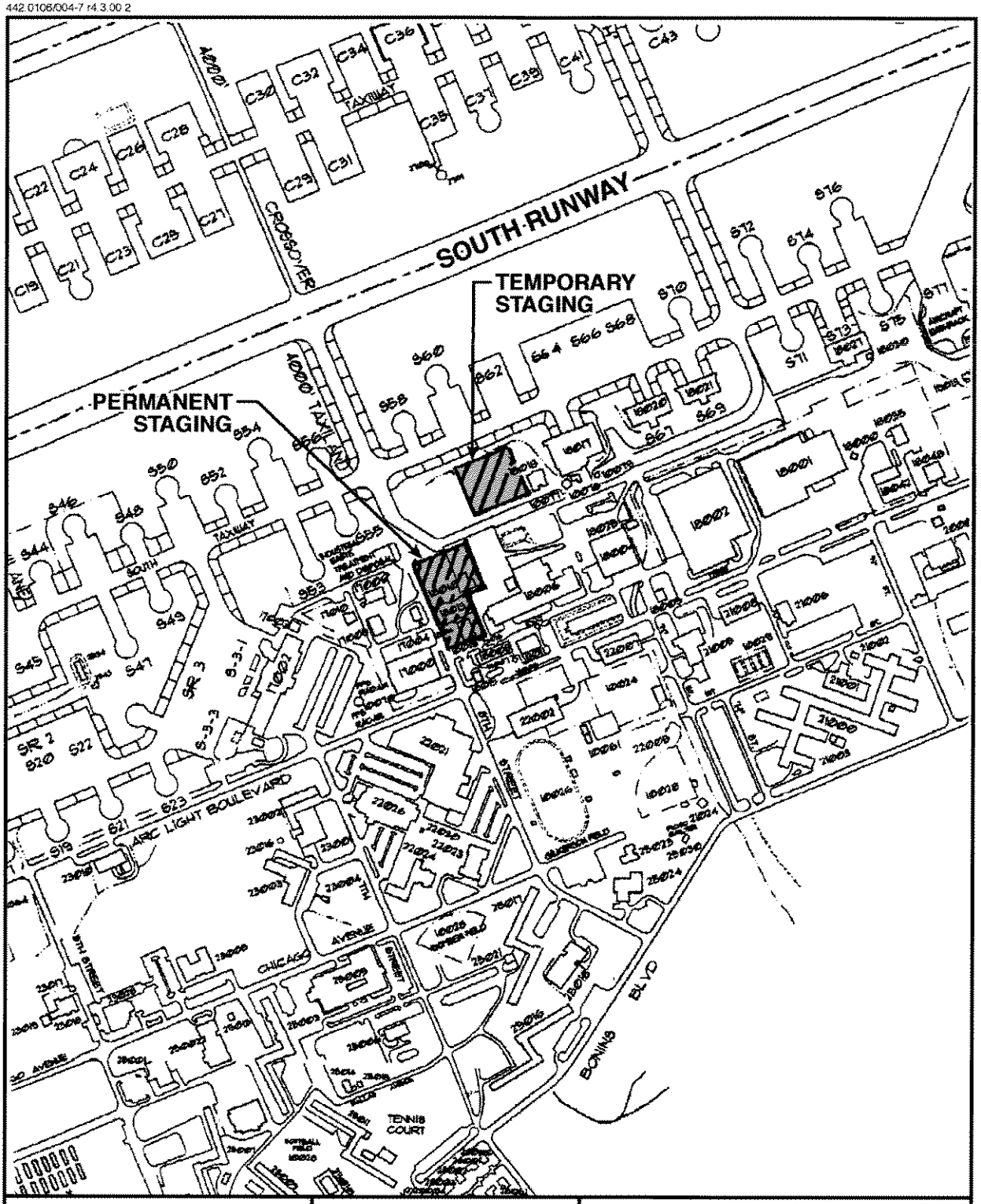

Figure 1
ANDERSEN AIR FORCE BASE CARGO STAGING AREAS
BTS Control and Interdiction Plan
Belt Collins Hawaii, April 2000

Snake Trapping. Snake trapping is conducted prior to construction of the WACSA on Guam. The time necessary to initiate the effort depends on the selected WACSA site and the nature of the exercise. If the WACSA will be established at AAFB Main and the FISC, snake-trapping activities are already being conducted. If an area elsewhere on Guam, such as Northwest Field, Ordnance Annex, or Orote Point is going to be used, WS will initiate snake trapping thirty days prior to the exercise. Once the WACSA is erected, WS will conduct nightly spotlight searches in the area of the fence to augment area snake trapping.

Detector Dog Teams. WS will use snake detector dogs to inspect outbound cargo and aircraft. The snake detector dog teams (one team equals one dog and handler) will be made available as necessary 24-hours a day, seven days a week.

B. BTS Control Measures at COMNAVMARIANAS and AAFB Tent Cities

Site Selection. WS will be consulted to recommend areas of low BTS risk to be considered as Tent City (bivouac) sites.

Trapping and Searching. WS may elect to activate and monitor brown tree snake traps surrounding the immediate vicinity of tent cities. WS Detector dog teams will periodically walk through the area while troops are being staged prior to departure from Guam. Particular attention to BTS control measures is needed while breaking camp and re-packing tents and equipment susceptible to BTS infestation during bivouac and field training.

C. Cleaning Procedures

Responsibility. Prior to staging in a WACSA and embarkation aboard an aircraft or ship, each training unit will be responsible for cleaning its vehicles and equipment. For vehicles and equipment considered to be high-risk, additional procedures may be required such as high-pressure washing, steam-cleaning, fumigation, or other methods suggested by WS. These additional efforts will supplement any inspection conducted by cargo handlers, unit personnel and WS.

Cleaning Facilities and Equipment. AAFB and COMNAVMARIANAS will provide cleaning areas. If cleaning equipment is unavailable or if the exercise scenario would increase the risk of snake infestation of vehicles, the training units may be tasked with augmenting or providing all necessary cleaning equipment and supplies. To request installation support, training units may contact the following units:

For Andersen Air Force Base: Call Vehicle Operations at 366-2239, 24 hours, 7 days per week.

For COMNAVMARIANAS: Call the COMNAVMARIANAS Area Training Officer (Code N3) 339-6141.

D. Inspection Procedures on Guam

General. The inspection procedure is a joint military/WS effort. It includes individual user and cargo handler attention when packing materials for air and sea embarkation, and a subsequent thorough, systematic inspection of cargo, equipment, and vehicles by WS. To maintain open lines of communication among all involved, DOD will provide WS the names of military contacts at the shipping or air terminals, and WS will keep the military points-of-contact informed of their BTS inspection activities.

WS inspections are required for all outbound cargo. This includes inspections of equipment belonging to units stationed on Guam, and equipment that is transported to Guam by transient units from CONUS, Hawaii, or Japan for subsequent exercise support. Upon completion of the exercise, another inspection is required for equipment that will be cleaned, packed, and embarked for movement to home installations off-island.

Inspecting Personal Equipment. Military commanders are responsible for ensuring that all personal gear, hand-carried equipment and supplies, and tent canvas are visually inspected by military personnel as it is repacked when breaking camp. To facilitate the inspection, personal equipment and tent canvas will be laid out for WS detector dog inspection prior to palletizing or loading into shipping containers.

Inspecting Outbound Cargo. The decisions are based on the nature of the training exercise and volume of cargo to be transported from Guam to an off-island location. The objectives are to minimize the timeline necessary between cleaning and embarking equipment, and to minimize the use of a WACSA without degrading BTS control and interdiction protocols. The military commander and WS cooperate in making these decisions.

Inspecting Transports. The WS Detector Dog Teams may be tasked to inspect accessible transport craft (ship, barge, and/or airplane) prior to departure from Guam.

Inspecting Heavy Equipment and Vehicles. This equipment is often used to support field maneuvers prior to movement to the port of embarkation. WS Detector Dog Teams will inspect all heavy equipment and vehicles after they have been thoroughly cleaned.

Snake Detected or Suspected. If the detector dogs alert to a possible BTS on a vehicle, pallet, or at the threshold of a locked container, the suspected equipment will not be moved. A second detector dog team may be brought on-scene to confirm the first dog alerting to BTS presence. If the BTS is not discovered, the affected military unit will break out the cargo to allow BTS detection and elimination. If the BTS is not immediately found, WS will intensify its search and may activate additional traps in the vicinity of the affected shipment.

All outbound cargo is to be cleaned, inspected and immediately loaded onto a vessel or aircraft. If there is a delay between inspection and loading, cargo may be subject to WS reinspection or be placed in an approved WS cargo staging area. WS will decide on the proper course of action. WS may determine that any ship, barge, boat or aircraft that was inspected and then unattended may require another inspection prior to departure. Cargo, vehicles, and equipment held within a WACSA for an extended period (such as during the night when snakes are active) may be subject to additional inspection prior to loading for departure.

Schedule and Plan Modifications. WS plans its personnel and detector dog team assignments based on published exercise plans, arrival and departure schedules. Sites to be used as WACSA at ports of embarkation and debarkation are selected in advance and activated prior to the exercise commencing. Relocating established WACSA might not be feasible. However, given reasonable time to react, WS may alter its personnel and detector dog team schedules and assigned cargo and vehicle inspection sites. Since the BTS protocols take precedence when executing tactical troop and cargo movements from Guam, the arrival and departure schedules and points-of-contact will be verified by the military so that WS support will be on-hand when expected.

Inspection Verification Process for Tinian Shipments. WS personnel will identify inspected items within Guam containment areas by affixing a stamp and/or tag to cargo or cargo manifest denoting the words "Snake-Inspected" together with date and time the inspection occurred.

WS will be especially watchful to ensure that airdrop cargo for Tinian has been thoroughly inspected and is tagged for identification by CNMI Customs Inspectors.

E. Inspection Procedures on Tinian

Military exercises may involve personnel, cargo, and equipment movement between Guam and Tinian, CNMI. Similar staging and inspection processes for Tinian may be established at other island training sites.

1. Prior to a training exercise commencing on Tinian, WS personnel will identify, purchase, and make arrangements with DOD to transport BTS control and interdiction tools and equipment such as temporary snake barrier components, snake capturing equipment, and lighting. WS personnel will train volunteering wildlife and/or customs officials to assist with BTS interdiction measures

2. Supporting cargo that is shipped to Tinian from Guam in advance of the training exercise is subject to the routine cargo inspection process conducted daily by WS. A WACSA-type barrier may be used at the Tinian harbor, and the cargo will be checked by CNMI Quarantine Inspectors to ensure that BTS inspection was conducted on Guam and the stickers/tags then removed.

3. Prior to arrival of the first military cargo from Guam to Tinian, WS will review the BTS protocol and necessary actions with the on-scene federal and CNMI wildlife and/or quarantine officials. Exercise planning will include designating the following: responsible logistics personnel, cargo offloading and staging areas, and cargo drop zones to be used that will require BTS control measures. WS will conduct BTS surveillance during nighttime cargo offloading, staging, and release of inbound traffic from Guam. WS will coordinate spotlight searches of staging areas, fence lines, and any tree lines/forest areas in proximity to runways/taxiways that are designated as drop zones. These areas will be targeted during inbound and exiting traffic times.

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4. The majority of personnel, cargo, and equipment that deploy from Guam to Tinian are air-transported to North Field (preferred) or the West Tinian Airport as part of the military exercise. Prior to arrival, sections of angled weather shading will be used to establish a containment area for offloaded personnel and cargo. The portable barrier will be erected and maintained about five days prior to the first shipment. Prior to the arrival of exercise personnel and cargo, snake traps with a mouse attractant, food and moisture source will be installed in the forest adjacent to the barrier. Snake traps inside the barrier will be a passive design.

5. WS will maintain the BTS traps at the containment area throughout the duration of the training exercise. Some traps will be installed near parachute drop zones and near take-off zones. Additional BTS traps shall be made available for contingency plans and in case BTS sightings occur in the exercise area.

6. An anti-coagulant toxicant (contained within a tamper proof bait box) will be used in and around brown tree snake trapping areas and near cargo containment/temporary snake barriers to reduce local rat populations. Removal of rats reduces the potential damage they inflict to traps and barrier material.

7. CNMI DLNR may provide Snake Detector Dog Teams from Saipan on short notice if BTS presence is suspected.

8. When shipments reach Tinian, CNMI Quarantine Inspectors may check for the BTS inspection stamp/tag that verifies that the inspection process was conducted on Guam. If there is no tag on cargo that originated in Guam, the cargo may be reloaded aboard the aircraft/ship and returned to Guam. The inspection stamp/tags will be removed prior to the cargo being moved out of the containment area or drop zone. It is important that the tags be removed to avoid any confusion when the equipment and vehicles are returned to Guam at the end of the exercise, and subsequently re-inspected prior to transient unit departures to home installations.

9. WS will maintain a log of all cargo, vehicle, equipment, and craft that are inspected and will monitor the time between inspection and movement. CNMI-DLNR staff may request copies of inspection logs and cargo manifests. WS and CNMI DLNR will continue to support inspection and surveillance at Tinian's air and sea ports of entry and exit until military forces have departed and the exercise is formally terminated.

VI. GUIDELINES FOR BTS SIGHTINGS

Emergency Response Procedures are published for COMNAVMARIANAS and Andersen Air Force Base to contact Guam WS immediately (see Table 1). Similar procedures have also been identified for publication at military bases in Hawaii, in case BTS are sighted or suspected in returning shipments. These procedures to obtain immediate support from Hawaii Department of Agriculture and WS are found in Enclosure (2).

A. Immediate Action

1. **Make every attempt to kill or to capture the snake**. Do not delay. The cost and difficulty of trying to locate an escaped BTS coupled with the potentially significant ecological impacts of

each snake justifies the killing or capturing of the snake immediately. If it is not possible to kill or capture the snake, maintain visual contact.

- A BTS can be captured by pinning it down with one's boot heel, a stick or rifle butt, or anything heavy. A sharp blow to the snake's head with the butt of a (unloaded) rifle or boot heel should be fatal.

- A bucket or heavy box can be used to capture a snake on a flat surface. Place the container over the head of the snake leaving enough space for the snake to crawl completely underneath the container. Then weight it down to confine the BTS. If bagging a stunned or pinned-down snake, grab it directly behind its head.

- Keep any dead or captured snake available for positive identification by WS or an Environmental Monitor.

2. **Exercise caution.** When threatened, a BTS will coil back into a strike position, flatten its head, and lunge to bite. Small grooved fangs located in the rear of the mouth enable the mild venom to trickle into the bite while the snake constricts. A normal defensive strike from a BTS will not allow the rear fangs to penetrate the skin and will usually result in minor punctures similar to pinpricks. When wearing battle dress uniforms (BDU) and field boots, a bite from a BTS will not penetrate clothing or footwear. Use caution with all snakes. There is the chance, although unlikely, that other, more dangerous, snakes could be encountered.

B. BTS Sighting on Tinian or Other CNMI Sites

Tinian is a BTS-free island, therefore, killing or capturing a sighted BTS is critical. Reaction to a BTS sighting on Tinian and subsequent incident reporting procedures are the same as described above for sightings on Guam. Staff response during major military training exercises on Tinian may include representatives of CNMI Division of Fish and Wildlife, WS, and/or Navy environmental monitor staffs. All are equipped with cellular phones. The latter will have radio/telephone communication with the CESG.

Exercise caution, safety and discretion. The priority action becomes killing, capturing, or containing the BTS. Report the incident, including the same information as needed for Guam BTS sightings.

The telephone numbers to call are:

CNMI Fish and Wildlife Saipan office:	(670) 664-6011/6000
CNMI Emergency Management Office:	(670) 322-9528/9
CNMI Fish and Wildlife Tinian office:	(670) 433-9298
USGS-RRT:	(671) 777-4477

USDA APHIS WS Guam District Office:	(671) 635-4400
USDA APHIS WS AAFB:	(671) 366-3822
USDA APHIS WS COMNAVMARIANAS	(671) 472-7101

CNMI will dispatch investigating personnel and detector dog team assistance. The WS and Navy Environmental Monitors/CESG will also be notified (via cellular phone numbers provided prior to the exercise).

C. Notifications for BTS Sightings on Guam

When a BTS is sighted, the immediate action is to kill or immobilize the snake so that it cannot escape. The person involved will then collect information of the incident that will describe the circumstances of the sighting, and remain on scene to act as primary POC to other responders. WS may call upon the person who discovered the snake to collect additional information.

1. When a BTS is sighted, killed and/or captured on Guam, or a BTS is suspected to be in a specific area, immediately contact the local area WS office, COMNAVMARIANAS and/or Commander. 36th ABW. The caller will provide the following information regarding BTS presence and will be given instructions regarding follow-on action:

- Caller:
- Military Organization:
- Sighting Location:
- Status: (Snake Killed/Captured/Contained/Loose)
- Date and Time of Sighting:
- Initial Response Action Underway at the Scene:

2. The telephone numbers to call during business hours are:

USDA APHIS WS Guam District Office:	(671) 635-4400
USDA APHIS WS AAFB:	(671) 366-3822
USDA APHIS WS COMNAVMARIANAS	(671) 472-7101

(WS is on call 24 hours per day, and WS field personnel are equipped with cellular telephones. The telephone numbers will be published prior to military exercises).

3. During major exercises, the unit and/or COMNAVMARIANAS will contact the CESG, who will alert exercise personnel needed to respond and the COMNAVMARIANAS Quarterdeck at (671) 339-7133. Cellular telephone numbers will be published prior to major exercises for contact with command Environmental Monitors in the field.

Once notified of a sighting and circumstances, WS will dispatch personnel and/or BTS Detector Dog Teams to the scene. Military personnel will cooperate fully with WS and their inspection of the area, and may provide any assistance needed to locate and capture a BTS.

D. Post-Training Exercise Snake Sighted in Hawaii

The Emergency Response Protocols established for snake sightings at Navy and Marine, Air Force, and Army installations on Oahu are attached as Enclosure (2). The principal state agency that must be informed is the Hawaii Department of Agriculture (HDOA), Plant Quarantine Branch at (808) 586-7378 or 586-PEST.

VII. REFERENCES

Brown Tree Snake Control Committee, Aquatic Nuisance Species Task Force. June 1996. *Brown Tree Snake Control Plan.*

Commander, Amphibious Group One Naval Message 040925Z December 1999, "USS Ogden and USS Rushmore Guam Equipment Washdown 7-13 Nov 99, Consolidated After Action Report of Lessons Learned."

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United States Department of Agriculture. June 1996. *Environmental Assessment for Brown Tree Snake Control Activities on Guam.*

United States Department of Interior, Office of Insular Affairs. September 1999. *Integrated Pest Management Approaches to Preventing the Dispersal of the Brown Tree Snake and Controlling Snakes in Other Situations.*

United States Pacific Command. June 1999. Final Environmental Impact Statement, Military Training in the Mariana Islands.

HAWAII EMERGENCY RESPONSE PROTOCOLS

U.S. NAVY

SNAKE SIGHTED ON NAVY PROPERTY

Kill or Immobilize the Snake

Maintain Visual Contact

If Sighting is in or around the Pearl Harbor Naval Complex

Navy Housing, Naval Station, Pearl Harbor Naval Shipyard, Fleet Industrial Supply Center, Naval Intermediate Maintenance Facility, Public Works Center

COMPACFLT, PACDIV, Inactive Ships, and all Navy Commands in the Area:

CALL NAVAL STATION SECURITY POLICE at

471-7114

If Sighting is outside the Pearl Harbor Naval Complex

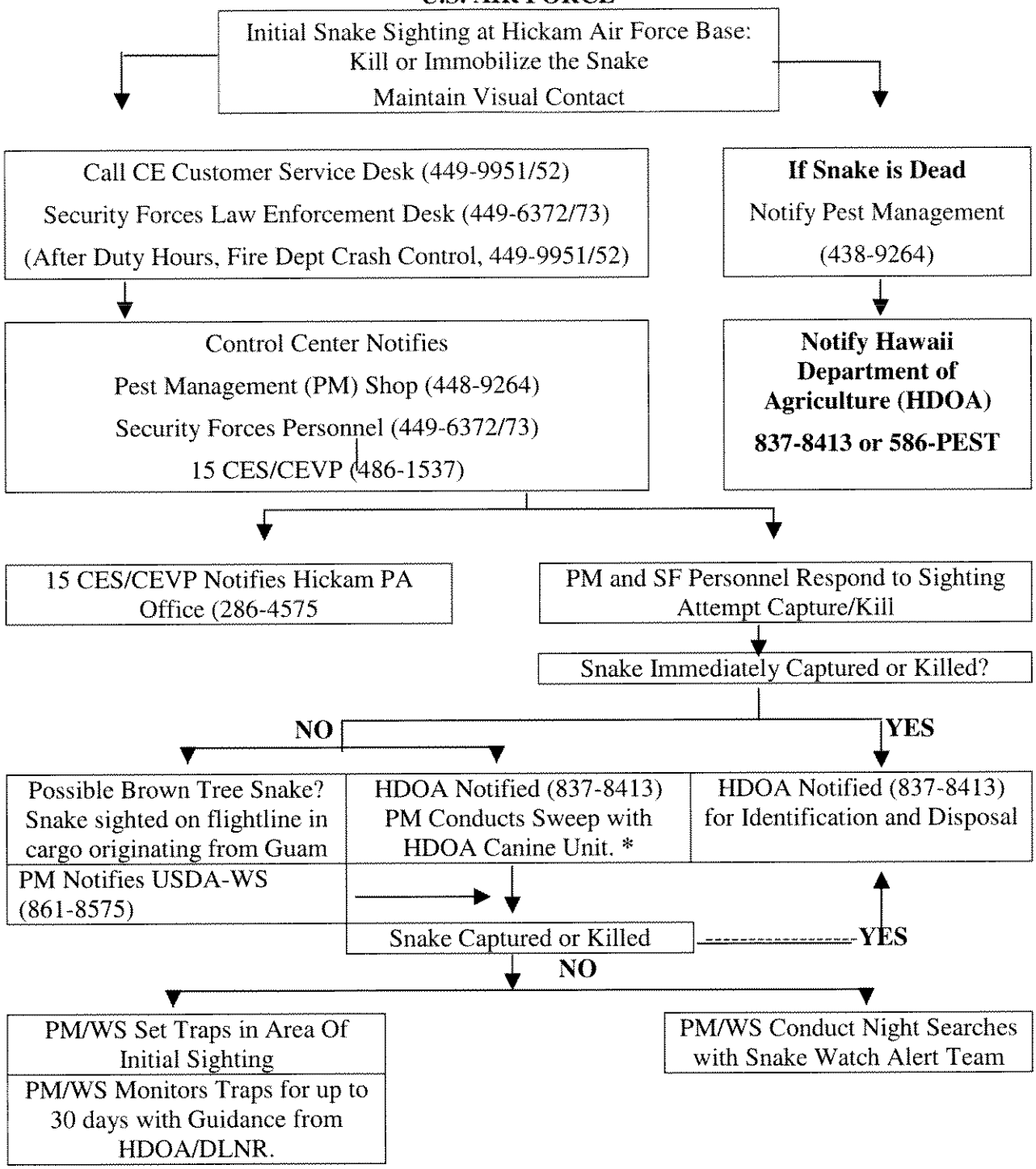
CALL SECURITY POLICE IN THAT AREA

Pacific Missile Range Facility, Kauai	Naval Magazine, Lualualei	Naval Computer and Telecommunications Master Station	Naval Security Group Activity, Kunia
471-6523 471-4185	668-7114 471-5141	653-0000 653-0234	655-3200 655-3205

Area Security Police will provide first response to sighting and inform NAVSTA dispatch at 71-7114 and the Department of Agriculture at 586-7378. First responders will collect information on the snake sighting, if it was killed or captured, and act as the primary POC to others responding to the scene. Security Police are trained in snake response equipment and techniques.

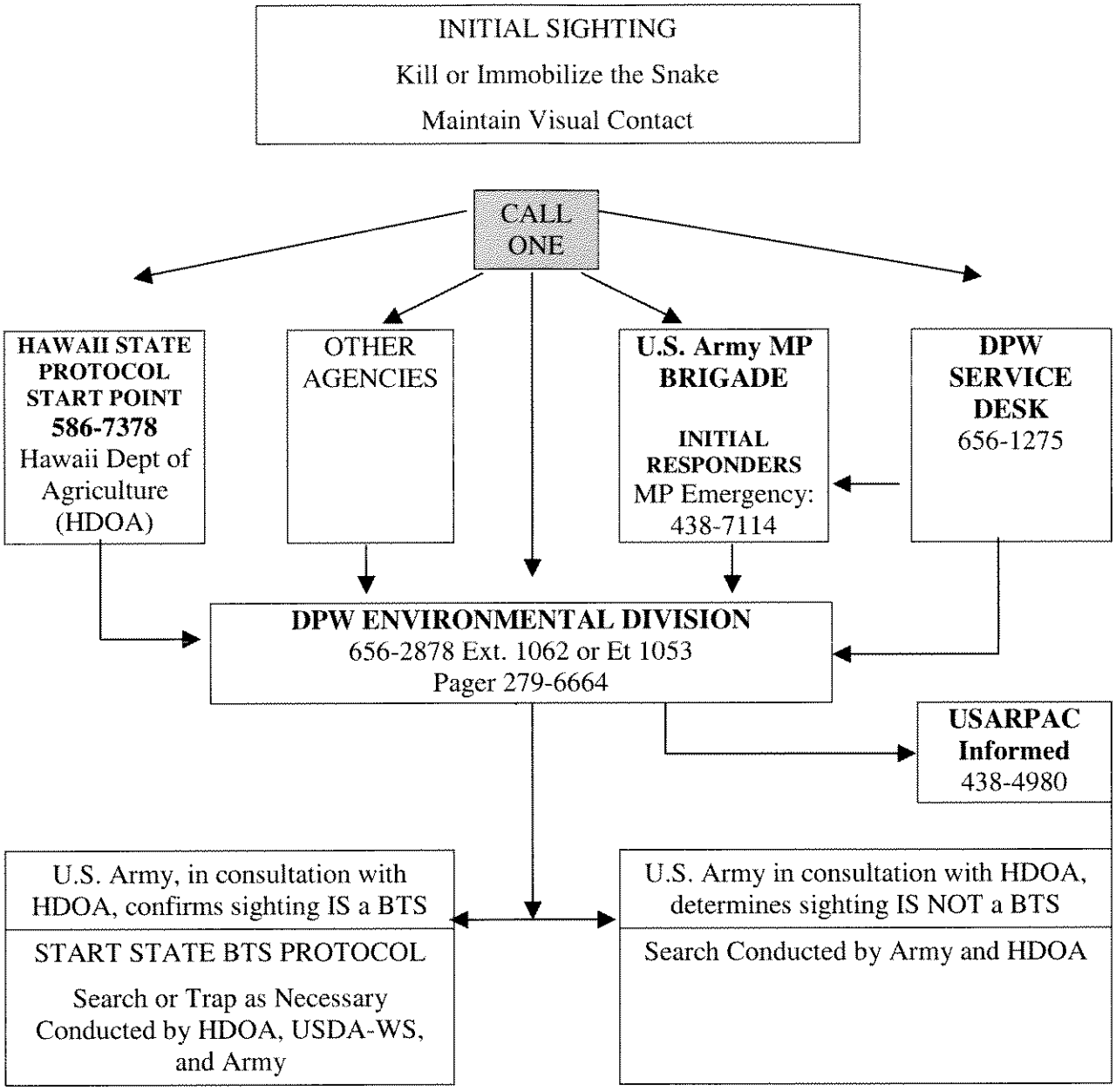
All civilian and military personnel will be briefed on BTS and trained to respond and comply with reporting procedures. The videotape "The Silent Invader" will be shown as part of this training. Training should be recurring. BTS posters will be displayed in buildings to remind personnel of the danger. The reporting number should be changed to the number for that area. For more information, contact the COMNAVBASE Pearl Harbor Regional Conservation Coordinator, at 471-0326, or Environmental Protection Specialist at 471-1171, extension 233. Alternate number is 471-1171, extension 225 (pager number 361-4864).

U.S. AIR FORCE



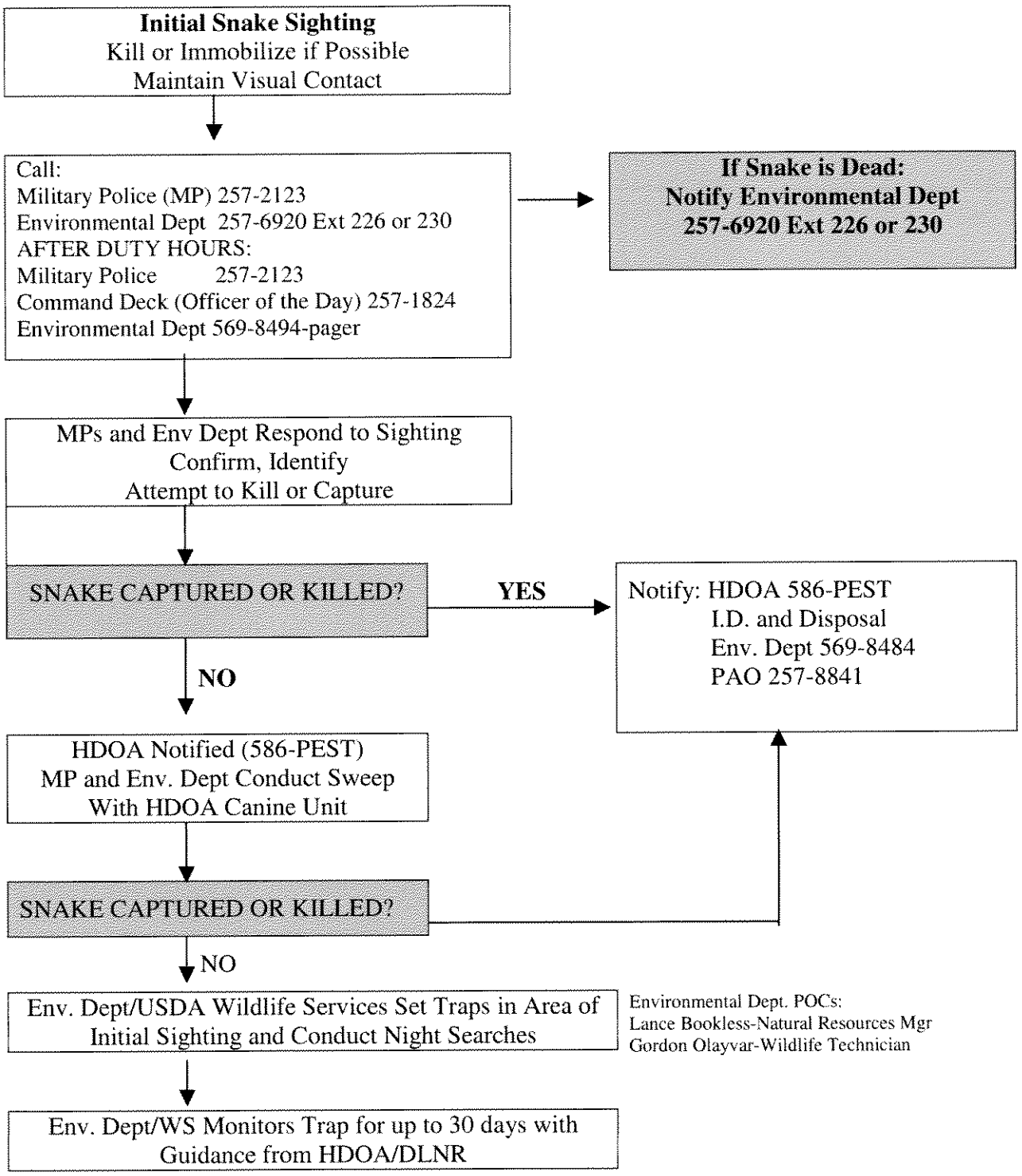
Notify J431, USCOMPAC at 477-0850 if State and WS activate Emergency Response Team.

UNITED STATES ARMY GARRISON-HAWAII



If State and WS Emergency Response Team are dispatched to military installations, notify J421, USCOMPAC at 477-0850.

MARINE CORPS BASE HAWAII, KANEOHE BAY



DEPARTMENT OF THE NAVY
COMMANDER, U.S. NAVAL FORCES MARIANAS
PSC 455, BOX 152
FPO AP 96540-1000

IN REPLY REFER TO
COMNAVMARIANASINST 3502.1
N3
25 Apr 05

COMNAVMARIANAS INSTRUCTION 3502.1

Subj: STANDARD OPERATING PROCEDURES AND REGULATIONS FOR RESTRICTED AREA 7201 AND FARALLON DE MEDINILLA (FDM) LASER BOMBING RANGE

Ref: (a) COMNAVMARIANASINST 3500.4 - MARIANAS TRAINING HANDBOOK
(b) OPNAVINST 5100.27/MCO 5104.1B - NAVY LASER HAZARDS CONTROL PROGRAM

Encl: (1) Laser Safety Survey Report of Farallon De Medinilla
(2) COMNAVMAR Training Area Request
(3) Laser Operation Request Requirements
(4) Farallon De Medinilla After Action Report
(5) Farallon De Medinilla Range Users Manual

1. Purpose. To promulgate information concerning training services, areas and facilities available in the R-7201/Farallon De Medinilla (FDM) bombing range, establish laser standard operating procedures, and to prescribe requesting procedures for its use.

2. Cancellation. COMNAVMARIANASINST 3502. This instruction is a complete revision and shall be read in its entirety.

3. Background. COMNAVMARIANAS is the controlling and scheduling authority for Navy owned and controlled training areas in the Mariana Islands. COMNAVMARIANAS schedules the training in the restricted area and bombing range on the island of FDM.

4. Discussion. COMNAVMARIANAS maintains the bombing range on FDM in accordance with environmental agreements with the Commonwealth of the Northern Mariana Islands (CNMI). Information about this agreement can be found in reference (a).

5. Action.

a. U.S. Naval Forces, Marianas Regional Program Director for Operations is responsible for scheduling and coordinating with local agencies all training on FDM. The ACOS Operations will ensure the maintenance of FDM on an annual basis.

b. Per reference (b), the Area Training Officer will be designated the Technical Laser Safety Officer (TLSO) and will comply with all requirements. He will be responsible for oversight and approval of all laser operations in R-7201 and on FDM. The TLSO will personally inspect FDM to the extent practicable at least annually.

c. The Regional Program Director of Environmental is responsible for the oversight of environmental compliance for training on FDM.

d. Commanding Officers/Officers-in-Charge of training units will:

(1) Conduct training in accordance with appropriate service directives, orders, standards, and procedures. This will include ensuring that unit personnel comply with the contents of this instruction and its references.

(2) Ensure all reports and requests for training are submitted within the timelines prescribed within this instruction.

(3) Commanders of training units are encouraged to submit recommendations concerning improvements or changes to this instruction via email to the Area Training Officer at n31@guam.navy.mil.

6. Applicability. This order applies to all commands, organizations, units, and activities authorized use of R-7201, FDM, and airspace controlled by COMNAVMARIANAS.

R. A. MCNAUGHT
Chief of Staff

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LASER RANGE SAFETY SURVEY REPORT

of

FARALLON DE MEDINILLA U.S. NAVAL FORCES MARIANAS, GUAM

PREPARED FOR: COMNAVAIRPAC (N8M)

26 April 2004

Prepared by:
Brian Sabino (TLSO, RLSS)

LASER SAFETY SURVEY REPORT
U.S. NAVAL FORCES MARIANAS GUAM

1. INTRODUCTION

1.1 The on-site laser safety survey was performed on the Farallon De Medinilla (FDM) laser range during 26 April 2004.

1.2 The next laser site safety survey for the FDM laser range should be completed by 31 May 2007.

1.3 The FDM laser range is under the control of the Commander U.S. Naval Forces, Marianas (COMNAVMARIANAS).

2. DISCLAIMER AND LIMITATIONS

2.1 The safe lasing profiles discussed in this report are not to be construed as mandated aircraft flight paths, but rather as boundary limits at a given location that distinguish between safe and unsafe laser use conditions.

2.2 This evaluation addresses only those systems approved for general training scenarios by the Navy Laser Safety Review Board (LSRB). A separate evaluation should be done on a case-by-case basis by the Range Laser Safety Specialist (RLSS) on laser systems used in non-traditional modes, research & development applications, and prototype systems.

2.3 Force-on-force scenarios are not evaluated in this report and should only be allowed with the express consent of the range Laser Systems Safety Officer (LSSO) using safety measures established by the LSRB.

2.4 Data for this report were sourced from multiple documents. All coordinates shown in this report are referenced to the World Geodetic System of 1984 (WGS 84) datum.

2.5 Bearings used to define the Laser Hazard Danger Zones (LHDZs) are referenced to Magnetic North.

3. SOURCE DOCUMENTS/REFERENCES

3.1 The Geodetic (Latitude/Longitude - LAT/LONG) grid coordinates used to describe the range, target area, point targets and firing locations were taken from the following documents:

3.1.1 Laser Safety Survey Report of Farallon De Medinilla (FDM) U.S. Naval Forces Marianas, Guam (Dec 2001).

3.1.2 Farallon De Medinilla Range Training Land Use, Marianas Training Handbook, Belt Collins Hawaii, June 2000.

3.1.3 Map of FARALLON DE MEDINILLA (WGS 84, 1:10,000 scale, 10 meter contour interval).

3.1.4 COMNAVMARIANAS INSTRUCTION 3502, 09 April 2002.

3.1.5 COMNAVMARIANAS INSTRUCTION 3500.3M, 18 August 1998.

3.2 The Nominal Ocular Hazard Distances (NOHD), Optical Densities (OD), and other laser weapon systems parameters were taken from MIL-HDBK-828 of 15 April 1993, and LSRB minutes.

4. Description

4.1 **Location**. FDM is part of the Commonwealth of the Northern Marianas Islands (CNMI) located approximately 175 miles northeast of Guam. The closest island to FDM is Anatahan located approximately 45 miles to the northwest. FDM is approximately 1.7 miles (2.8 km long) and 0.3 (450 m) wide and consists of a hilly plateau with cliffs dropping as much as 328 ft to the ocean on all sides. The target area consists of naval gunfire target, strafing targets, inert bombing targets, and live bombing targets. FDM is located within a 3-mile safety radius designated as Navy Restricted Area R-7201.

4.1.1 FDM contains two laser target areas (LTAs).

4.1.1.1 LTA 1 is located at the center of FDM, just south of the No Bomb Line. The targets within LTA 1 consist of multiple 50-foot connex boxes painted non-glossy white, shown in Figure 4.1.1. The boundaries for LTA 1 are listed in Table 4.1.1.

Figure 4.1.1.1 – LTA 1 Targets

Table 4.1.1.1 – LTA 1

MGRS			Geodetic
55Q	CT	99357 71592	16 01 19.0N, 146 03 33.4E
55Q	CT	99548 71531	16 01 17.1N, 146 03 39.8E
55Q	CT	99057 70770	16 00 52.2N, 146 03 23.4E
55Q	CT	98891 70844	16 00 54.6N, 146 03 17.8E

4.1.1.2 LTA 2 is located at the southern end of FDM. The targets consist of connex boxes painted non-glossy white. Targets include a high altitude laser target (LB 6) used for live bombing, and live strafe targets (LST 1, LST 2, and LST 3) located north of LB 6. These targets are designated for aerial use only. The coordinates are listed in Table 4.1.1.2.

Table 4.1.1.2 – LTA 2

MGRS			Geodetic
55Q	CT	98472 69695	16 00 17.2N, 146 03 03.9E
55Q	CT	98362 69740	16 00 18.6N, 146 03 00.2E
55Q	CT	98582 70264	16 00 35.7N, 146 03 07.5E
55Q	CT	98570 70498	16 00 43.3N, 146 03 07.1E
55Q	CT	98737 70519	16 00 44.0N, 146 03 00.4E
55Q	CT	98656 70131	16 00 31.4N, 146 03 10.0E

4.2 **Ground-Based Firing Lines.** There is one Firing Line (FL) location on FDM. The FL coordinates are listed in Table 4.2. FL 1 is used by ground-based laser systems against visible targets within LTA 1.

Table 4.2 – Firing Line 1

FL	MGRS			Geodetic
FL 1	55Q	CT	99788 71915	16 01 29.6N, 146 03 47.8E
	55Q	CT	99619 72160	16 01 37.6N, 146 03 42.1E

4.3 **Aerial Lasing**. There are two LTAs and that are established to support aviation laser systems, as specified in Appendix B provided that the pilot adheres to the approved laser flight profiles contained in Appendix C.

5. Survey

Mr. Brian Sabino performed the physical site inspection of FDM during 26 April 2004. Mr. Sabino is from the Naval Surface Warfare Center, Corona Division, Systems Engineering Directorate (SE41) in Corona, CA. Mr. Sabino is a Technical Laser Safety Officer (TLSO) and an RLSS. QM1 Robert Rennie from COMNAVMARIANAS participated in pre-survey discussions.

5.1 The following areas of concern were noted and should be considered by the range Laser Systems Safety Officer (LSSO).

5.1.1 The range safety officer has not taken the appropriate TLSO and RLSS training.

5.1.2 FDM offers little to no backstops and target elevations are between 50 ft and 200 ft MSL.

5.1.3 The areas around FDM are used by local fishing boats.

6. Evaluation

6.1 **Ground Lasing**. The ground systems used are limited to a 5 mrad buffer angle.

6.1.1 Ground laser systems should be tripod mounted and elevation limited to avoid lasing the horizon.

6.1.2 Ground lasing is limited to a maximum allowable Nominal Ocular Hazard Distance (NOHD) of 6 km if the system does not meet the maximum allowable buffer. (Note: The Navy/Marine Corps uses the NOHD for 7 x 50mm optics).

6.2 **Aerial Laser Targets**. The aerial systems used are limited to a 5 mrad buffer angle.

6.3 Appendix A contains the ground Laser Hazard Danger Zones (LHDZs).

6.4 Appendix B contains the airborne LHDZs.

6.5 Appendix C contains airborne-laser profiles.

6.6 Appendix D contains all LTA, PT, and FP coordinates in UTM, Geodetic, and MGRS formats.

6.7 If standing water, glass, or any other reflective materials becomes present within or near any of the established LTAs, then it will be the responsibility of the training facility LSSO to either suspend the exercise or ensure personnel are not within the NOHD of the system in use.

7. Results

7.1 **Ground Lasing.** Ground lasing designation is only permitted on the LTA shown in Appendix A provided that the user operates the laser within the lateral limits referenced and within the LTA. Table 7.1 shows the available lateral limits (magnetic north) for the LTA contained in Appendix A.

Table 7.1 – Laser Target Areas with Appropriate Lateral Limits

FL	LTA	Allowable Type System	Lateral Limits (Magnetic)
FL 1	1	Ground	203° clockwise to 227°

7.2 **Aerial Lasing.** Aerial lasing designation is permitted on the targets referenced in Appendix B provided that the pilot adheres to the approved laser flight profiles contained in Appendix C. Table 7.2 shows the available flight headings for the targets. The LHDZ for the targets are also contained in Appendix B.

Table 7.2 – Laser Target Areas with Appropriate Headings

Targets	Heading (Magnetic)	Number of Different Laser Flight Profiles
LTA 1	32° clockwise to 212°	1
LTA 2	32° clockwise to 212°	1

8. Recommendations

8.1 COMNAVMARIANAS has a laser safety program that is in compliance with OPNAVINST 5100.27/MCO 5104.1B.

8.1.1 All laser systems used on FDM are to be used only against targets located within the designated LTAs described in section 4.

8.1.2 All laser operators should meet the following minimum requirements:

8.1.2.1 Have received the appropriate laser range briefing from the training facility LSSO before use of any laser exercise.

8.1.2.2 Are familiar in detail with the FDM Laser Safety Program and adhere to the procedures established therein.

8.1.2.3 Are in constant communication with range safety/control during laser operations.

8.1.2.4 Fire ground lasers only after positive identification of the approved targets.

8.1.2.5 Fire aerial lasers only after positive identification of the target ensuring that the LTA and LHDZs are clear of unauthorized personnel.

8.2 The following are suggested general laser safety guidelines that apply to laser personnel during laser exercises:

8.2.1 Prior to laser operations, pilots should make a cold pass to ensure that the LTA and corresponding LHDZ are clear of unauthorized personnel.

8.2.2 The training facility LSSO should ensure that all personnel in the vicinity of the laser range remain outside the LTAs and LHDZs during laser operations and/or wear the appropriate eye and skin protection.

8.2.3 The range safety officer should notify the CNMI Emergency Management Office (EMO) Operations Section of any live-fire operations. EMO informs the local fishing vessels of the exercises via VHF and SSB.

8.2.4 COMNAVMARIANAS should provide administrative control measures to ensure a clear range up to 6 nmi beyond FDM on run-in heading for extended (low-altitude) aerial LHDZ laser operations.

8.3 The COMNAVMARIANAS range safety officer should take the appropriate training to become certified as a TLSO and RLSS.

8.4 The LSSO should post visible markings that indicate the extreme boundaries of the LTAs.

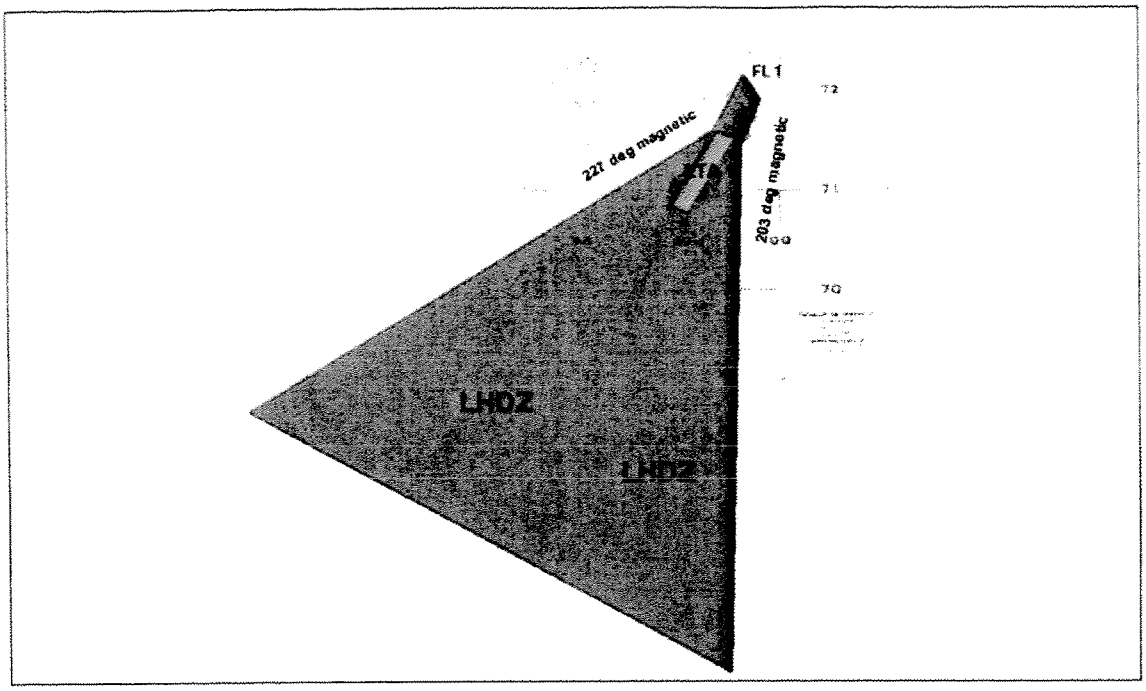
8.5 When ground positions are laser designating for aircraft, there should be an aircraft exclusion cone that is centered on the heading of the laser position on the target. The exclusionary zone recommended by the Joint Close Air Support Manual 3-09.3 requires a 20°-safety cone around the FP extending back from the target to the FP. In situations where the aircraft is approaching from a heading that is behind the FP, the pilot should offset when the aircraft is near the FP.

Appendix A

Ground-Based Laser Systems Laser Target Areas

Laser Hazard Danger Zones

LASER RANGE SAFETY SURVEY REPORT
U.S. NAVAL FORCES MARIANAS GUAM

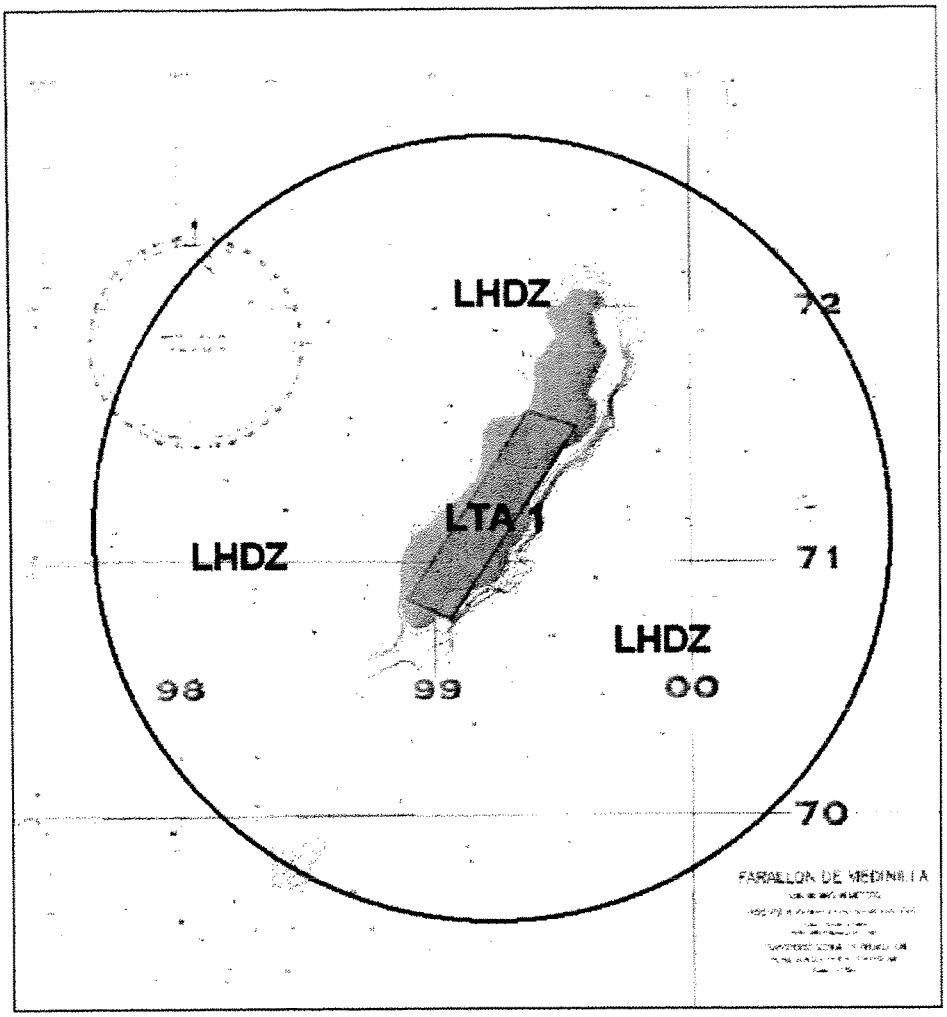


LTA	FL	Maximum Allowable Buffer	Max Allowable NOHD if buffer not met	Allowable Type System	Lateral Limits (magnetic)
1	1	5 mrad	6 km	Ground	203° clockwise to 227°
LTA Coordinates (LAT/LONG)		16 01 19.0N, 146 03 33.4E to 16 01 17.1N, 146 03 39.8E to 16 00 52.2N, 146 03 23.4E to 16 00 54.6N, 146 03 17.8E			
FL Coordinates (LAT/LONG)		16 01 29.6N, 146 03 47.8E 16 01 37.6N, 146 03 42.1E			

Appendix B

Airborne Laser Systems

Laser Hazard Danger Zones

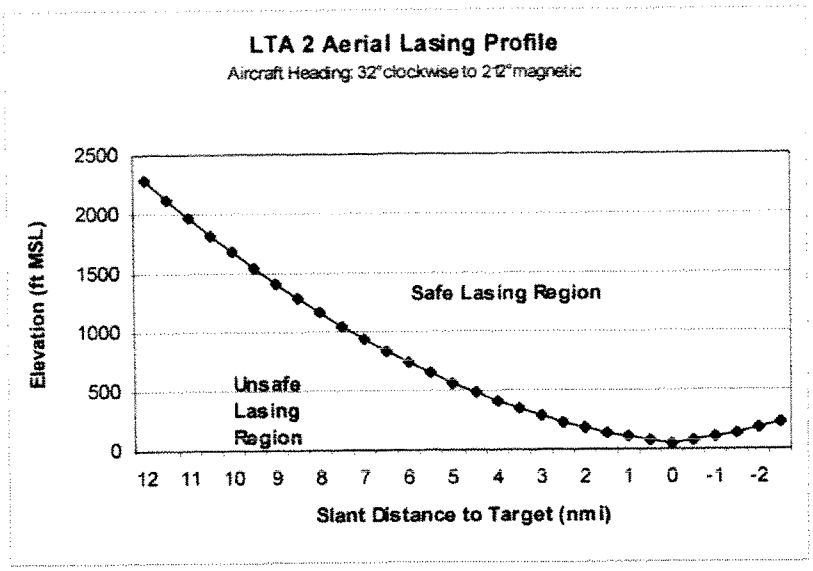


LTA 1	Figure B-1	Magnetic Heading: 32° clockwise to 212°
Scale: 1 grid = 1 km	Coordinates: 16 01 19.0N, 146 03 33.4E to 16 01 17.1N, 146 03 39.8E to 16 00 52.2N, 146 03 23.4E to 16 00 54.6N, 146 03 17.8E	Maximum Buffer Angle: 5 mrad

Appendix C

Airborne Laser Systems

Safe Lasing Profiles



Slant Distance (nmi)	Altitude (feet)	Slant Distance (nmi)	Altitude (feet)
12.0	2289	4.5	489
11.5	2128	4.0	416
11.0	1973	3.5	349
10.5	1823	3.0	287
10.0	1680	2.5	232
9.5	1542	2.0	182
9.0	1411	1.5	138
8.5	1285	1.0	100
8.0	1165	0.5	68
7.5	1051	0.0	42
7.0	942	-0.5	68
6.5	840	-1.0	100
6.0	743	-1.5	138
5.5	653	-2.0	182
5.0	568	-2.5	232

Appendix D

Laser Target Area Coordinates

Firing Line Coordinates

Table D-1 FDM LTA Coordinates

LTA	Zone	Easting	Northing	Geodetic	MGRS
LTA 1	55Q	399357	1771592	16 01 19.0N, 146 03 33.4E	55QCT9935771592
LTA 1	55Q	399548	1771531	16 01 17.1N, 146 03 39.8E	55QCT9954871531
LTA 1	55Q	399057	1770770	16 00 52.2N, 146 03 23.4E	55QCT9905770770
LTA 1	55Q	398891	1770844	16 00 54.6N, 146 03 17.8E	55QCT9889170844
LTA 2	55Q	398472	1769695	16 00 17.2N, 146 03 03.9E	55QCT9847269695
LTA 2	55Q	398362	1769740	16 00 18.6N, 146 03 00.2E	55QCT9836269740
LTA 2	55Q	398582	1770264	16 00 35.7N, 146 03 07.5E	55QCT9858270264
LTA 2	55Q	398570	1770498	16 00 43.3N, 146 03 07.1E	55QCT9857070498
LTA 2	55Q	398737	1770519	16 00 44.0N, 146 03 00.4E	55QCT9873770519
LTA 2	55Q	398656	1770131	16 00 31.4N, 146 03 10.0E	55QCT9865670131

Table D-2 FDM FL Coordinates

PT	Zone	Easting	Northing	Geodetic	MGRS
FL 1	55Q	399788	1771915	16 01 29.6N, 146 03 47.8E	55QCT9978871915
	55Q	399619	1772160	16 01 37.6N, 146 03 42.1E	55QCT9961972160

COMNAVMAR TRAINING AREA REQUEST

DATE OF REQUEST:	
NAME / RATE / RANK OF PERSON SUBMITTING REQUEST:	
POC NAME AND NUMBER:	
OCE / PARTICIPATING UNIT:	
SUPPORTING UNIT:	
REQUESTED DATE (S) / TIME (S):	
LOCATION REQUESTED:	
TYPE OF TRAINING:	
TYPE/NUMBER OF WEAPONS:	
ALTITUDE:	
NUMBER OF PERSONNEL:	
TYPE/NUMBER OF AIRCRAFT:	
SHIPS IN EVENT:	
NUMBER OF SORTIES:	
REMARKS:	

COMNAVMAR N31 USE ONLY	
EMO NOTIFICATION:	
SPECIAL USE AIRSPACE REQUEST:	
USCG APPROVAL REQUIRED:	
NOTMAR MSG DTG:	
OTHER APPROVAL: (UNDET/WATER SPACE/ENVIRONMENTAL)	
PERSONNEL TAKING REQUEST:	
REMARKS:	

LASER OPERATION REQUEST REQUIREMENTS

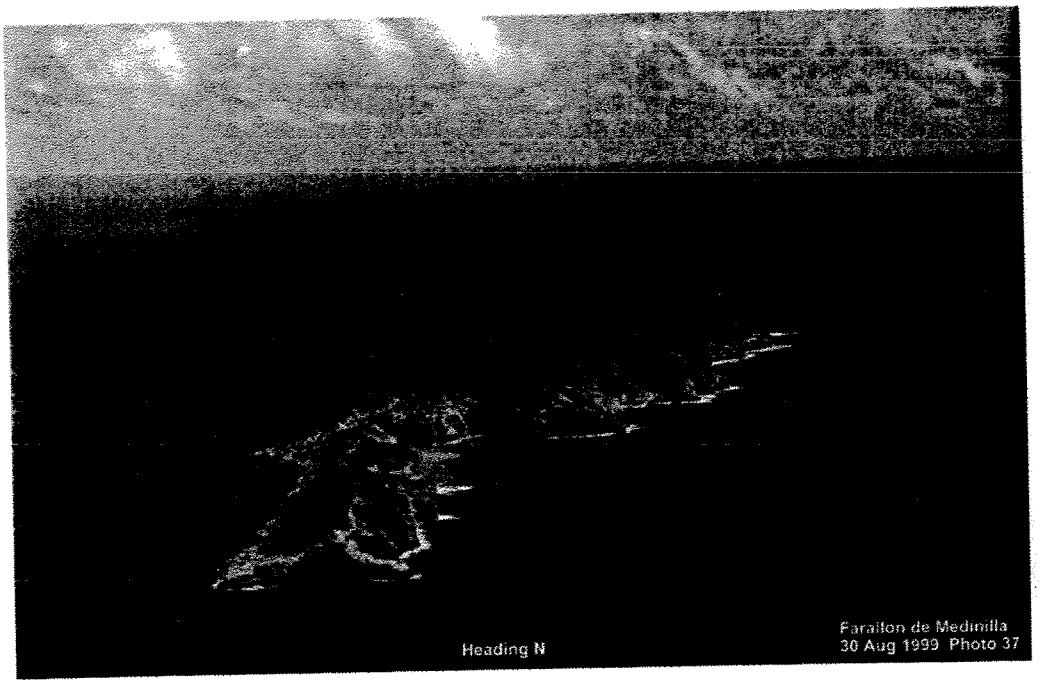
The command requesting use of the laser range shall include the following in the remarks section of enclosure (2).

1) Name and date of qualification of the command LSSO.
2) Laser devices to be used.
3) Laser device firing points.
4) Targets to be used/target area to be used.
5) Ground personnel locations (if applicable).
6) Laser eye protection to be used (if applicable).
7) Aircraft run-in headings (if applicable).
8) Laser mode(s)/tactics to be employed (e.g. force-on force, designation, range finding, offset lasing, etc).
9) Types of surveillance to be used to ensure a clear range.
10) Radio frequencies and standardized terminology for communication where appropriate.
11) Any amplifying information necessary.

FARALLON DE MEDINILLA AFTER ACTION REPORT

FM (EXERCISE UNIT)
TO COMNAVMARIANAS GU//N3//
(CLASSIFICATION) //N03500//
MSGID/GENADMIN/(REQUESTING UNIT)//
SUBJ/FDM AFTER ACTION REPORT//
REF/A/DOC/COMNAVMARIANAS/3502.1/28FEB05/
AMPN/REF A IS RESTRICTED AREA 7201 FARALLON DE MEDINILLA RANGE INSTRUCTION//
REMARKS/1. FOL SUBMITTED IAW REF A:
A. LOCATION - FARALLON DE MEDINILLA (FDM) (R-7201)
B. DATE(S)
C. HOURS SKED
D. HOURS UTILIZED
E. HOURS CANX (IF APPLICABLE)
F. REASON CANX (IF APPLICABLE)
G. COMMAND
H. UNIT
I. NUMBER/TYPE AIRCRAFT/SHIP
J. ORDNANCE EXPENDED (NUMBER AND TYPE PER DAY)
K. TARGETS USED AND DISPOSITIION
L. LOCATION AND AMOUNT OF ORDNANCE IMPACTING SURROUNDING WATER
M. COORDINATES AND AMOUNT OF ORDNANCE JETTISONED FOR EMERGENCY DISPOSAL
N. NUMBER AND TYPE OBSERVED WILDLIFE CASUALTIES
2. COMMENTS.//
DECL (IF APPLICABLE)//

FARALLON DE MEDINILLA (FDM) Range Users Manual



R-7201 And ATCAAs 1-5

Guam and the Commonwealth of the Northern Mariana Islands

Enclosure (5)

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APPENDIX A: Air Traffic Control Alert Areas (ATCAAs)

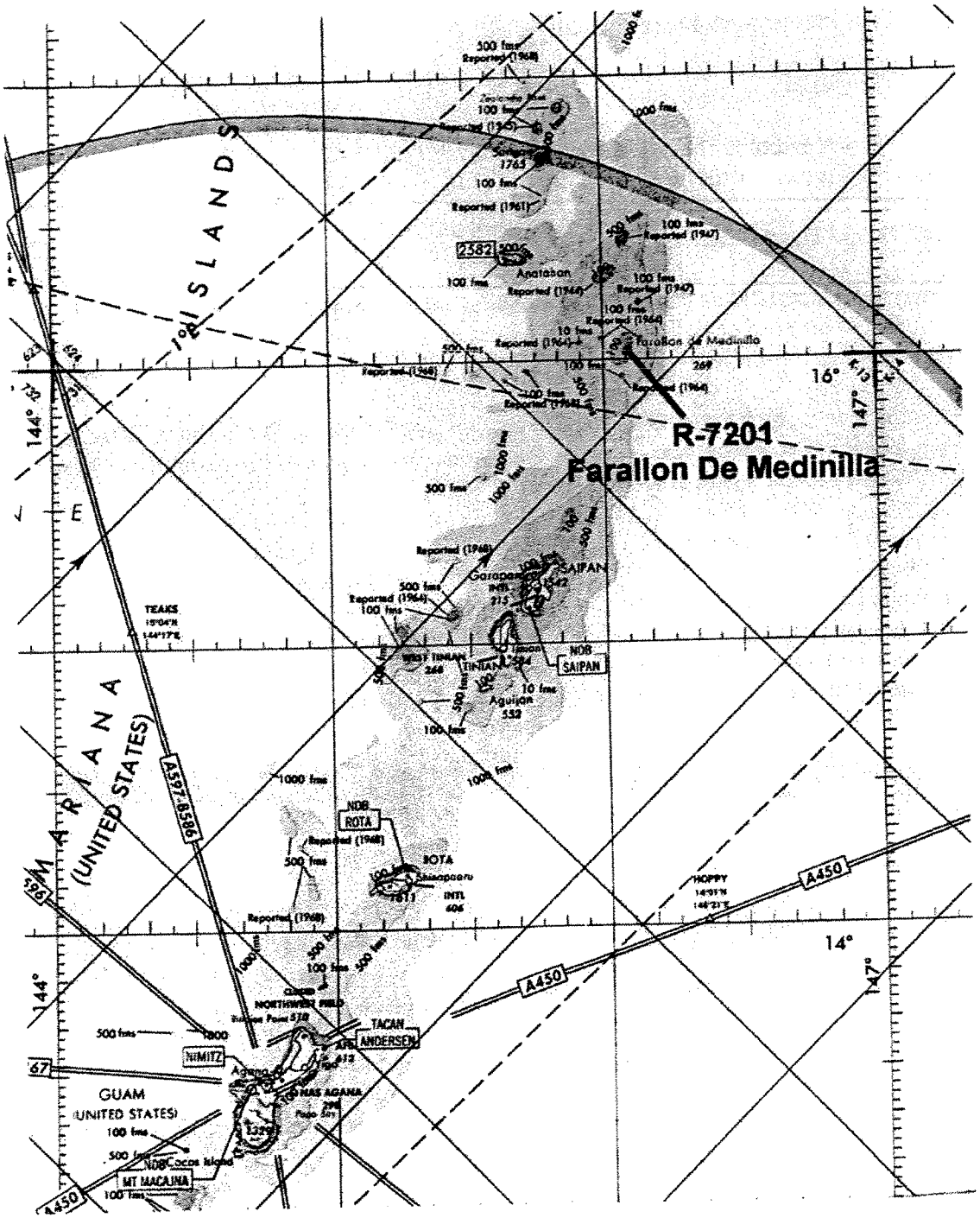


Figure 1.1
Marianas Islands
Extract from JNC-56

1.1 Overview and Description

1.1.1 Location

Farallon de Medinilla (FDM) is approximately 1.7 miles (2.8 kilometers) long and 0.3 miles (450 meters) wide, and is located at 16.01 N 146.03 E. (See Figure 1.1, page 3)

1.1.2 Land Resources

Since 1971, The US has leased the uninhabited island Farallon De Medinilla (FDM) for the express purpose of military activity including aerial bombardment and naval gunfire. The 206-acre (83-hectare) island and its 3-mile safety radius is designated as Navy Restricted Area 7201, with the restrictions applying to both air and sea traffic. FDM is the only air-to-ground and naval gunfire surface target range in the Marianas Islands. Reference (a) is the Marianas Training Handbook, and details the environmental constraints upon training in R-7201 and on FDM.

The island is currently used as a live and inert fire training range. FDM has been a bombing range for more than 30 years and contains an abundance of UXO (unexploded ordnance), including highly sensitive cluster bombs. Only explosive qualified military personnel with COMNAVMARIANAS authorization are allowed on the island due to the extensive amount of UXO present. On an event necessary basis, approval for ground operations may be requested through the COMNAVMARIANAS Operations Department. In accordance with ref (a), all aircraft, personnel, and equipment originating from Guam and landing on FDM must be undergo brown tree snake inspection procedures prior to departing Guam. Procedures concerning the use of ground lasers are listed in section 1.4.2.

1.1.3 Restricted Area 7201

Restricted Area 7201 (R-7201) is centered on FDM and is defined by the island and a Surface Danger Zone (SDZ) encompassing a 3-mile (4.8-kilometer) radius from the center of the island. Four types of ordnance delivery are performed in R-7201 (TACAIR/helicopter, strategic bombardment, naval surface fire support (NSFS), and small arms). **All ordnance delivery shall be in the designated impact areas on the island. Impacts outside these areas and in the water shall be reported to COMNAVMARIANAS Operations Department as soon as possible.** No commercial boaters are authorized access to this area.

WARNING

Regardless of the posted limits and pre-training public notices, fishing and boating within the 3-mile radius may occur, and surveillance of the island and Surface Danger Zone SDZ prior to live-fire training to ensure that the area is clear is MANDATORY.

WARNING

Laser operation hazard areas may extend beyond R-7201. Extra care in clearing these extended areas must be used by exercising units before commencing laser operations.

1.1.3.1 TACAIR/Helicopter Bombardment

Navy and Marine Corps fighter/attack aircraft operating from transiting aircraft carriers and air capable ships practice routine interdiction, strike, and Close Air Support (CAS) at FDM. Navy and Marine Corps helicopters also conduct missile and gunnery exercises. Other service tactical aircraft and helicopters also use FDM for similar readiness training. Authorized munitions are found in section 1.2.5. The amount and types of ordnance are established and audited by COMNAVMARIANAS (CNM) Operations (N3) and Environmental (N45). The types of ordnance are restricted to protect vegetation habitat and faunal species. Surveillance shall be conducted prior to any ordnance evolution to ensure that the area is clear of near-shore marine species. **Ordnance is prohibited from hitting water to the greatest extent possible. All ordnance observed impacting the water around FDM shall be reported to CNM N3 as soon as possible.**

FDM may be used by NSWU (Naval Special Warfare Unit) and Marine Forward Air Controllers (FAC) with EOD training to conduct TACP (Tactical Air Control Party) training for delivery of precision-guided munitions. The Special Use Area is the only authorized area for TACP training. Ground laser procedures and limitations are found in section 1.4.2. Permission for ground access to the island must be requested from COMNAVMARIANAS Operations Department.

1.1.3.2 Strategic Bombardment

The USAF Air Combat Command (ACC) bomber wings use FDM for global power-projection training missions. B-52, B-1 and B-2 bombers may conduct various altitude bombing runs after coordination with COMNAVMARIANAS, dropping conventional 500-, 750-, and 2000-pound (227-, 340-, and 907-kilogram) bombs (both live and inert), precision-guided munitions, and mines. Authorized munitions are found in section 1.2.5. The amount and types of ordnance are established and audited by COMNAVMARIANAS (CNM) Operations (N3) and Environmental (N45). Public notifications include establishing a 10-mile safety radius during the hours of training and publishing Notices to Airmen (NOTAM) and Notices to Mariners (NOTMAR). **Ordnance is prohibited from hitting water to the greatest extent possible. All ordnance observed impacting the water around FDM shall be reported to CNM Operations Department (N3) as soon as possible.**

1.1.3.3 Naval Surface Fire Support (NSFS)

U.S. Navy ships fire 5-inch (127-millimeter) and 76 mm deck–mounted guns from the west of the island to shore. Range ordnance includes high explosive, point-detonating rounds with mechanical and variable time-fuses. Illumination rounds may be used to light the impact area so that strikes may be observed and adjusted by spotters either aboard ship or airborne but should be fired as to avoid fire hazards on the island. These activities may be conducted during Pacific transits, or as a phase of joint/combined exercises. Ordnance and annual expenditures are established and audited by COMNAVMARIANAS N3 and N45. (Section 1.2.7) **Ordnance is prohibited from hitting water to the greatest extent possible. All ordnance observed impacting the water around FDM shall be reported to CNM Operations Department (N3) as soon as possible.**

1.1.3.4 Small Arms

Navy SEALS and other DoD special warfare units may use FDM for small arms practice. Typical use involves small arms fire from offshore to the island. Authorized munitions are found in section 1.2.5. No landing or on-island operations are allowed without express approval of COMNAVMAIRANAS Operations Department (N3). **Ordnance is prohibited from hitting water to the greatest extent possible. All ordnance observed impacting the water around FDM shall be reported to CNM Operations Department (N3) as soon as possible.**

1.2 Operations on FDM

NOTE

All procedures and guidance delineated in this instruction are minimum requirements. Any more restrictive exercising unit SOP or instruction shall be controlling.

1.2.1 FDM Special Use Area and Impact Areas

FDM is divided into several areas, as depicted in Figure 1-2. There is one Special Use Area – a NO-FIRE area at the northern end of the island for TACP/FAC use. The island has four designated impact areas: three that are authorized for air-to ground live and/or inert ordnance operations and one non-contiguous area for naval gunfire support and off-shore small arms. All other portions of the island are NO-FIRE. Coordinates below are referenced to WGS-84 datum.

NOTE

Other than designated impact areas, no other areas are approved for ordnance. Any ordnance expenditure shall be in accordance with the guidance below.

1.2.1.1 The Special Use Area. Reserved for TACP/FAC and Personnel Recovery (PR) use and consists of the area of the island north of the line defined in Table 1.2.1.1. In accordance with ref (a) all aircraft, personnel, and equipment originating from Guam and landing in the special use area must be undergo brown tree snake inspection procedures prior to departing Guam. The Special Use Area is a NO-FIRE ZONE.

N 16° 01' 23.80"	E 146° 03' 35.89"
N 16° 01' 23.32"	E 146° 03' 50.26"

Table 1.2.1.1 – Special Use Area

1.2.1.1.1 Helicopter Landing Zone (LZ). A helicopter landing zone (LZ) is located in the vicinity of N16° 01' 26.29" / E146° 03' 48.19". Hazards to helicopter landings include birds, vegetation, and uneven terrain. Any personnel inserted into the Special Use Area shall be accompanied by EOD personnel. In accordance with ref (a) all aircraft, personnel, and equipment originating from Guam and landing in the special use area must be undergo brown tree snake inspection procedures prior to departing Guam. Coordination for using the Special Use Area shall be through COMNAVMARIANAS Operations Department (N3).

1.2.1.2 Impact Area 1. This area contains high fidelity target structures, and is used for inert ordnance exclusively. The coordinates are listed in Table 1.2.1.2. Impact Area 1 is for INERT ORDNANCE ONLY. **Any live ordnance dropped into Impact Area 1 shall be reported to COMNAVMARIANAS Operations Department (N3) as soon as possible.**

N 16° 01' 19.44"	E 146° 03' 36.59"
N 16° 01' 18.59"	E 146° 03' 45.05"
N 16° 01' 09.63"	E 146° 03' 30.45"
N 16° 01' 06.61"	E 146° 03' 36.78"

Table 1.2.1.2 – Impact Area 1

1.2.1.3 Impact Area 2. This area is used for live ordnance and strategic bombing. The coordinates are listed in Table 1.2.1.3. Impact Area 2 may be used for both live and inert ordnance.

N 16° 01' 09.63"	E 146° 03' 30.45"
N 16° 01' 06.61"	E 146° 03' 36.78"
N 16° 00' 53.98"	E 146° 03' 28.02"
N 16° 00' 57.21"	E 146° 03' 22.66"

Table 1.2.1.3 – Impact Area 2

1.2.1.4 Impact Area 3. This area is south of the land bridge and is used for live and inert ordnance. It consists of the area of the island south of the line defined in Table 1.2.1.4. **Ordnance is prohibited from impacting the land bridge to the greatest extent possible. All ordnance observed impacting the land bridge shall be reported to CNM Operations Department (N3) as soon as possible.**

N 16° 00' 45.42"	E 146° 03' 15.52"
N 16° 00' 45.17"	E 146° 03' 16.57"

Table 1.2.1.4 – Impact Area 3

1.2.1.5 Impact Area 4. This area consists of a series of non-contiguous point targets, which are reserved for Naval Surface Fire Support (NSFS) and small arms training. These targets are located along the western side of FDM. Approximate locations are listed below in Table 1.2.1.5.

N 16° 01' 14.41"	E 146° 03' 30.10"
N 16° 01' 12.83"	E 146° 03' 30.05"
N 16° 01' 11.60"	E 146° 03' 31.65"
N 16° 00' 44.45"	E 146° 03' 10.78"
N 16° 00' 27.01"	E 146° 03' 10.30"
N 16° 00' 22.28"	E 146° 03' 06.88"
N 16° 00' 21.78"	E 146° 03' 04.01"
N 16° 00' 19.86"	E 146° 03' 03.22"

Table 1.2.1.2 –NSFS Point Targets

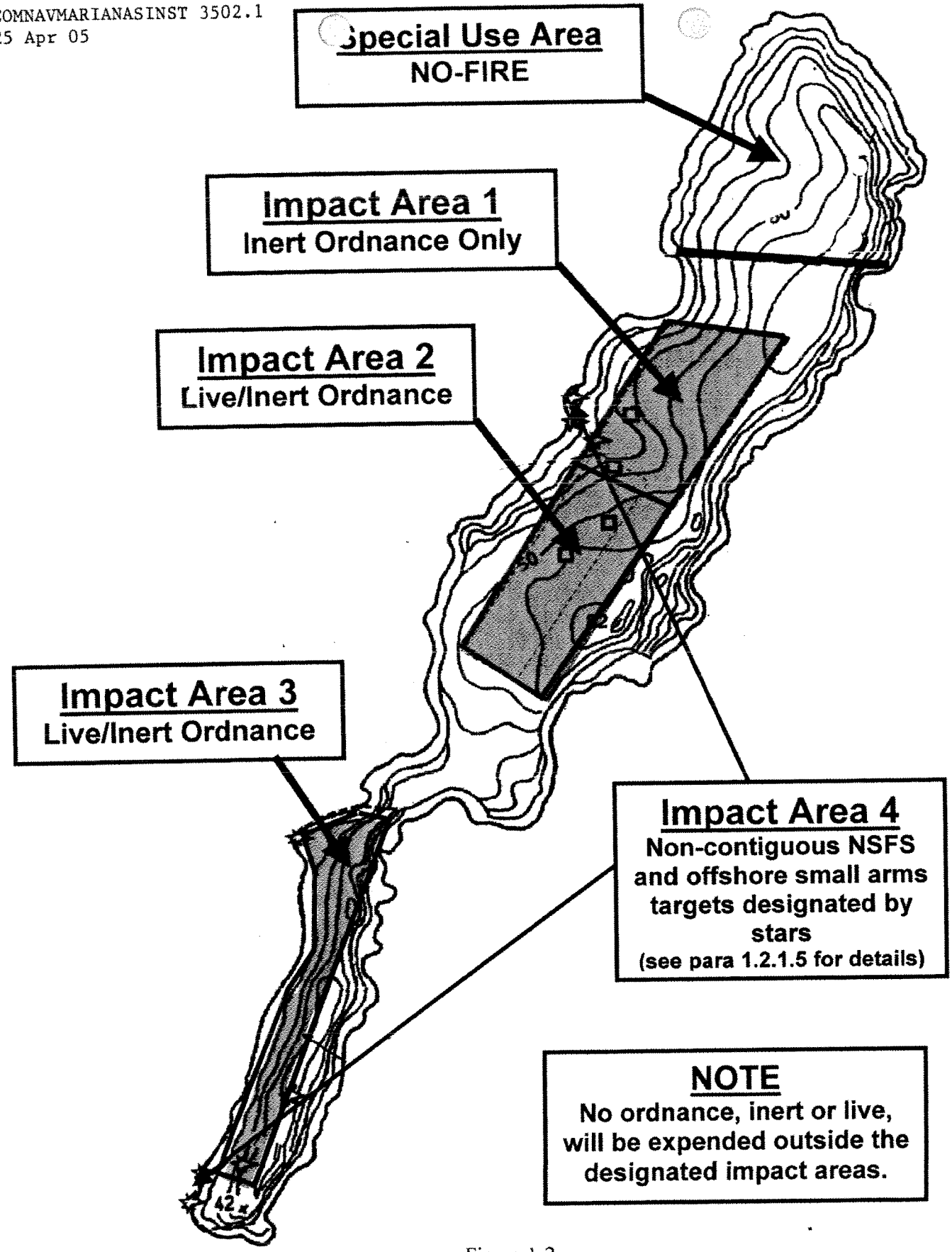

Special Use Area
NO-FIRE
Impact Area 1
Inert Ordnance Only
Impact Area 2
Live/Inert Ordnance
Impact Area 3
Live/Inert Ordnance
Impact Area 4
Non-contiguous NSFS and offshore small arms targets designated by stars
(see para 1.2.1.5 for details)
NOTE
No ordnance, inert or live, will be expended outside the designated impact areas.

Figure 1-2

1.2.2 Communications

R-7201 is an uncontrolled range. All units using FDM will monitor the assigned ATCAA common frequency. Prior to entry into ATCAA 3, a call will be made to de-conflict ATCAA 3 airspace IAW ATCAA procedures. Units operating without an established ATCAA, and with sole use of R-7201 may utilize a discrete frequency.

WARNING

Prior to delivering ordnance, a call will be made on GUARD (243.0 MHz) declaring the target "hot" with evolution duration.

In the event of radio failure (NORDO), weapons deliveries for that unit or aircraft will cease. Weapons delivery for that unit or aircraft may resume ONLY when radio communications have been regained.

1.2.3 Range Clearance

FDM is an uncontrolled range. Each participating aircraft must make a clearance pass for positive target identification and range clearance prior to ordnance release. Clearance passes must be made at 1,000 feet AGL or the minimum safe operating altitude of the aircraft, whichever is higher. All flights MUST ensure the target and surrounding water are clear of unauthorized personnel, vessels or marine life (turtles, marine mammals) prior to expending ordnance. Clearing passes are not required if the range was visually cleared within the last 10 minutes by aircraft exiting R-7201 or a TACP/ FAC is on FDM and can effectively ensure the target area and surrounding water are clear. The TACP/ FAC must be in two-way radio contact with the aircraft using the range. Clearance procedures for laser operations are in section 1.4.

WARNINGS

Regardless of the posted limits and pre-training public notices, fishing and boating within the 3-mile radius may occur, and surveillance of the island and SDZ prior to live-fire training to ensure that the area is clear is MANDATORY.

Laser operation hazard areas may extend beyond R-7201. Extra care in clearing these extended areas must be used by exercising units before commencing laser operations.

Other than designated impact areas, no other areas are approved for ordnance. Any ordnance expenditure shall be in accordance with the guidance in section 1.2.1.

1.2.4 Impact Areas

1.2.4.1 Impact Area 1. This area consists of manufactured targets simulating SAM sites, AAA sites, and command bunkers. Only inert free-fall ordnance is authorized in order to preserve the target complex. Forward firing ordnance is restricted to 25mm TP and TP tracer and below. **Live ordnance is NOT authorized.**

1.2.4.2 Impact Area 2. This area is used primarily for strategic bombing. All conventional live and inert free-fall and forward firing ordnance is authorized except for cluster, fuel air and incendiary munitions.

1.2.4.3 Impact Area 3. All conventional live and inert free-fall and forward firing ordnance is authorized except for cluster, fuel air and incendiary munitions.

1.2.4.4 Impact Area 4. This area is a non-contiguous area that includes various targets on the western side of the island used for surface fire support/small arms. Live gunfire is authorized in these areas.

1.2.5 Authorized Ordnance in R-7201

WARNINGS

Absolutely NO depleted uranium rounds, or any ordnance containing nuclear material, will be expended on R-7201.

Cluster bombs, fuel-air explosives, or incendiary devices are not authorized for use on R-7201.

NOTE

Target illumination flares, chaff and self-protection flares are authorized within the entirety of R-7201, but should be used in such a way as to avoid fire hazards on the island.

1.2.5.1 Ordnance Limitations. On FDM ordnance limitations are controlled by environmental agreements as delineated in reference (a). These expenditures are tracked and audited by CNM N3 and N45. The types and expenditures of ordnance allowed on FDM are delineated in Table 1.2.5.1

Tactical Air to Ground	
Missiles	80 annually
Rockets, 2.75 inch	400 annually
Rockets, 5 inch	400 annually
Rockets, other	40 annually
Conventional Bombs (250-500lb)	1400 annually
Conventional Bombs (1000-2000lb)	1240 annually
Inert Bombs	1380 annually
Strategic	
Live Conventional/Inert Bombs (500, 750, 2000lb)	612 monthly
Naval Surface Fire Support (HEPD/HECVT)	
5 inch	1040 annually
76mm	400 annually
Small Arms	
7.62mm	11,700
.50 caliber	600
40mm	2600
AT-4/other shoulder fired missile	40 (10 per quarter)

Table 1.2.5.1 Allowed Ordnance Expenditures

1.2.6 R-7201 Weapons Delivery Procedures and Restrictions

Surface fired ordnance shall be delivered from positions west of the island only. All units must plan to ensure all ordnance lands within the designated impact areas.

A dedicated mission safety observer must be assigned to each flight. The airborne safety observer may carry ordnance when necessary to fulfill a training commitment. The safety observer will retain ultimate responsibility for target area procedures throughout the course of the flight. The following criteria applies:
a. The safety observer must have 2-way radio communications with all strike elements.
b. The safety observer must have a positive ID of the target and visual contact with each strike element prior to delivery.
c. The safety observer will positively clear each element to drop after confirming ID of the target.
d. The safety observer has abort authority and responsibility.
e. The safety observer may swap roles with the element leader while the observer completes his live drop runs after the strike elements have completed their live drop runs.

For TACP/CAS missions, a qualified FAC shall act as safety observer. **Strike Leaders and Mission Commanders are accountable for the safety of ordnance deliveries.**

1.2.7 Targets and Locations

Impact Area 1 contains targets simulating SAM sites, AAA batteries, and command bunkers. CNM N3 will provide detailed pictures of the targets and locations upon request. These pictures will be included with the range instruction on compact disc. Units damaging or destroying targets shall indicate the target location and damage in the remarks section of their after action report (see section 1.2.8).

1.2.8 After Action Reports

The submission of an after action report is **required NLT 10 days** after the completion of an evolution. This information is closely tracked by civilian environmental authorities in the CNMI, and is necessary for the continued use of FDM. The after action report and necessary information is found in enclosure (4).

1.3 Scheduling

- Scheduling Authority:	COMNAVMARIANAS FPO AP 96540 DSN: 339-6399
- Scheduling Activity:	COMNAVMARIANAS N3
- Scheduling POC:	N31@guam.navy.mil, DSN 339-6399/4157 N3@guam.navy.mil, DSN 339-4670 Fax: (671) 339-6277

Commercial: (671) 339-6399/4157

1.3.1 R-7201 (FDM) Scheduling Procedures

All usage of R-7201 must be scheduled through COMNAVMARIANAS Operations Department (N3) via the CNM Area Training Officer (N31). Range use requests must arrive a minimum of 45 days prior to any large or extended exercise and 15 days for small scale exercises. This can be accomplished by e-mail or fax using the format provided in enclosure (2). Units desiring to use an ATCAA concurrent with R-7201 shall include this in their request. CNM N31 will coordinate with the FAA, Coast Guard, and the Commonwealth of Northern Marianas Islands (CNMI) for issue of all Notice to Airmen (NOTAM), Notice to Mariners (NOTMAR), and other public notices. Additional procedures for requesting laser use on FDM are found in section 1.4.4.

NOTE

The U.S. Navy reserves the right to schedule, for its use, any or all ranges under its operation. While USN range reservations are usually made 45 days in advance, short-notice requests will be evaluated for priority on a case-by-case basis. As such, units scheduled for use of these ranges may have range periods withdrawn with little or no advance warning.

1.3.2 FDM Maintenance

FDM will periodically be unavailable due to maintenance upkeep requirements. Questions concerning availability should be directed to CNM N31.

1.4 Laser Standard Operating Procedures

1.4.1 Air Operations

Laser operations on FDM shall be conducted in accordance with reference (b), enclosure (1) and this instruction. Laser Target Area (LTA) 1 is located within Impact Areas 1 and 2, and is specified in enclosure (1), paragraph 4.1.1.1. LTA 2 is located within Impact Area 3 and is specified in enclosure (1), paragraph 4.1.1.2.

Laser operations may be conducted on FDM provided that the laser system and profile are specified in enclosure (1) or authorized by the Range Technical Laser Safety Officer (TLSO) prior to scheduling. All LSRB approved aircraft mounted laser systems with a maximum buffer angle of 5 mrads are approved for use on FDM.

WARNING

Lasers shall not be directed above the apparent horizon or at non-laser targets.

The following laser safety procedures shall be adhered to:

- Observers viewing laser operations are not allowed to use optical aids unless laser protective eyewear is worn.
- Aircraft using laser-guided ordnance against ground laser designated targets shall approach the target from behind and on either side of the laser operator at an angle between 15 and 30 degrees along the laser line.
- All personnel in a Laser Hazard Zone, both in the air and on the ground, shall wear laser protective eyewear.
- Laser flight profiles in enclosure (1) depict minimum altitudes for specified run-in headings. Laser operations on run-in headings, other than those specified in enclosure (1), are not authorized.
- Laser hazard zones depicted in this instruction are based on the heading of the laser, and not the heading of the aircraft.

FDM is an uncontrolled range. All laser events shall have a qualified Laser System Safety Officer (LSSO), in accordance with reference (b), assigned to the range target area by the exercising unit. The LSSO's authority extends to the control of any act, apparent intention or condition that they deem unsafe, either in the air or on the ground within the target area.

Laser operations are not authorized until the LSSO has determined the target area is clear of potential laser hazards and people, and:

- Two-way communications between all safety personnel and the exercising unit are in place and maintained.
- A laser log identifying time, date, targets, firing points, and personnel present during all laser firings is maintained.
- In the event of a Laser Radiation Incident, notify the Range TLSO as soon as possible.
- Unit personnel are briefed on the lateral limits of the target areas.
- Only qualified personnel shall operate the laser systems.
- The target must be visually identified prior to lasing.

WARNING

FDM is a remote, unsurveilled range. Exercising units will assume responsibility for range clearance and safe laser operations. Extra care must be taken during range clearance to ensure FDM is clear of reflective surfaces, particularly standing water.

The depicted altitudes in enclosure (1), Appendix C are the minimum altitudes for the specific run-in headings. Laser operations on run-in headings other than those specified are not authorized.
Personnel within a laser hazard zone shall wear eye protection of the proper wavelength and optical density.
Lasers shall not be directed above the horizon.
The exercising unit will conduct a pre-brief prior to laser operations. The brief will include as a minimum:
Maps depicting the targets and/or target areas and their laser hazard zone.
Drawings or photographs (if available) of the targets to be utilized.
Run-in headings and flight profiles to be used in airborne laser operations.
Prior to any laser operations, exercising units will make a cold pass to ensure LTA and corresponding LHDZ are clear of unauthorized personnel or vessels.

1.4.2 Ground Laser Operations

Ground laser operations shall be conducted in accordance with enclosure (1), and this instruction.

The authorized firing line (FL) is located at the northern end of Special Use Area 1 . The coordinates of the FL are listed in enclosure (1), paragraph 4.2.

WARNINGS

Lasers shall not be directed above the apparent horizon or at non-laser targets.

Observers viewing laser operations shall not use optical aids unless laser protective eyewear is worn.

Two-way communications will be maintained between ground personnel and aircraft at all times during laser operations.

Prior to any laser operations, exercising units will make a cold pass to ensure LTA and corresponding LHDZ are clear of unauthorized personnel or vessels.

All LSRB approved ground laser systems with maximum buffer angles as shown in Enclosure (1), Appendix A are approved for use on FDM.

1.4.3 Range Maintenance

COMNAVMARIANAS will maintain the FDM range. All targets placed on the FDM range will be inspected by the COMNAVMARIANAS TLSO prior to placement on FDM. FDM will be inspected annually by the TLSO, accompanied by EOD, and as required by reference (b), to ensure compliance with laser safety directives. All targets found to be unsafe or unfit for laser operations will be removed.

COMNAVMARIANAS TLSO will maintain inspection records, laser logs, and all additional documentation necessary for a range safety compliance program in accordance with reference (b) and current applicable instructions.

1.4.4 Laser Operation Scheduling Procedures

Commands requesting the use of lasers on FDM should include the contents of enclosure (3) with the range request, enclosure (2). (See section 1.3.1)

The TLSO for FDM will review the data provided in enclosure (2), and:

- Ensure requesting unit has a certified LSSO coordinating the test/training operation.
- Provide the local range instruction/standard operating procedure to the LSSO of the requesting unit.
- Review proposed laser range operations plan or test plan to ensure compliance with current certification and local regulations and SOP's.
- Ensure a laser safety inspection has been conducted.

The command requesting use of the laser range shall:

- Review this range instruction and reference (a), the Marianas Training Handbook.

- Ensure all personnel involved in operations receive an appropriate pre-mission brief to include:

  - Authorized tactics, firing positions, firing fans, and aircraft run-in headings (as appropriate).
  - Drawings, photographs, descriptions or grid points of authorized targets.
  - Communication procedures that include specific frequencies, controlling authorities, and standardized terminology.
  - Acquisition, identification, and tracking procedures for targets are established prior to laser activation.
  - Missile/ordnance mode of operation (as appropriate for live fire operations).
  - Requirements for beam termination.
  - Control measures to minimize the risk of unauthorized aircraft or vessels entering the range area.
  - Type of eye protection to be worn.
  - Potential hazards posed by the laser system and the target area, and specific procedures to avoid these hazards (as appropriate).

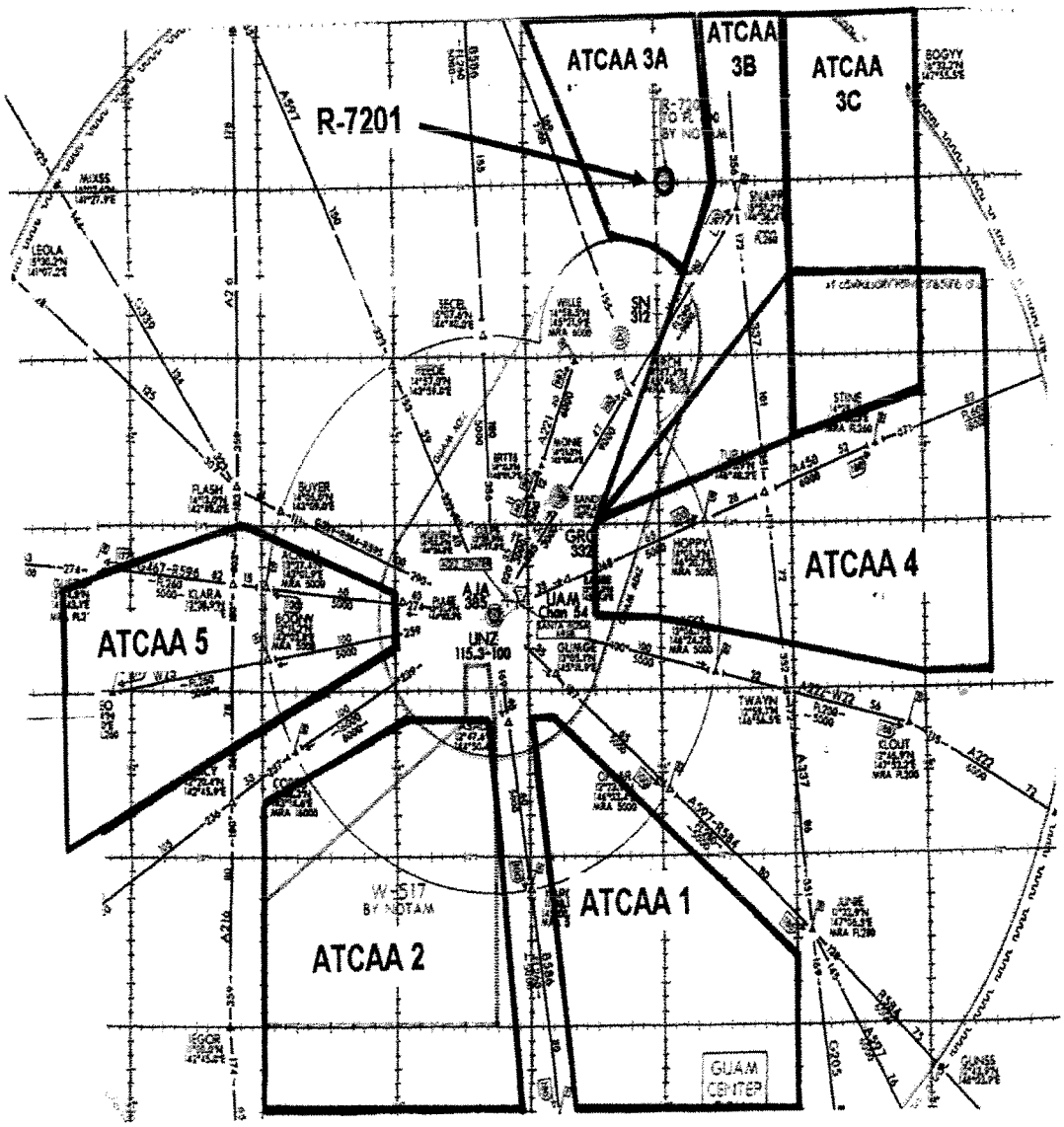
- Ensure appropriate laser eye protection is provided to all personnel within the laser hazard zone.

- Ensure all aspects of the FDM range instruction/ laser standard operating procedures are adhered to during the operation/ exercise/ test.

- Ensure only tactics authorized within the scope of the range certification (see encl. (1)), and only LSRB-approved laser systems are used for the operation/ exercise/ test.

Air Traffic Control Alert Area (ATCAA)

COMNAVMAR in conjunction with Guam ATC can establish any or all of five Air Traffic Control Alert Areas (ATCAAs) (see figure below) for military aircraft use and deconfliction. ATCAAs 1-5 are unattended, non-instrumented training ranges utilized for air-to-air and air-to-surface operations. ATCAA 3 is further divided into ATCAAs 3A, 3B and 3C, which may be activated individually or as a group. The ATCAAs define vertical/lateral limits, assigned by ATC, for the purpose of providing air traffic separation between the activities being conducted within the ATCAA and other IFR air traffic. Military aircraft within ATCAAs 1-5 operate under MARSA procedures.



Appendix A

ATCAA Establishment

CNM N31 will coordinate with the FAA to establish ATCAAs at the request of a training unit. Requesting units should not contact the FAA directly. Geographic coordinates have been historically preset, but can be tailored for individual needs. Requests for ATCAA establishments should be included with the R-7201 range request, enclosure (2). Historical geographic coordinates may be obtained from CNM N31 by email or phone. (See section 1.3.1)

Applicable Charts

See Operational Navigation Charts (ONC) J-14 and K-13 and Tactical Pilotage Charts (TPC) J-14C and K-13B.

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, DC 20350-2000

IN REPLY REFER TO

5090
Ser 456K/9U157914
23 June 2009

Mr. James Lecky, Director
Office of Protected Resources
National Oceanic and Atmospheric Administration
National Marine Fisheries Service (NMFS)

Dear Mr. Lecky:

The Navy submitted a Biological Assessment (BA) on May 27, 2009 and a request for a Letter of Authorization (LOA) on July 9, 2008 in support of the Mariana Islands Range Complex (MIRC) Environmental Impact Statement. As a result of comments on the DEIS, the Navy has refined its analysis since these submittals, including some changes to the preferred alternative. Those changes are summarized below:

(1) Additional tables summarizing sonar source parameters and explosive source modeling results;
(2) Additional Analysis of HELLFIRE missiles and Joint Direct Attack Munitions (JDAMs) use within W-517;
(3) Live ordnance drops in W-517 and BOMBEX operating procedures and mitigation measures;
(4) Additional analysis of humpback whale exposures;
(5) Analysis of results for MIRC Portable Underwater Tracking Range (PUTR) sound sources;
(6) Revisions of some preliminary effects determinations from the original BA submittal; and
(7) Updated take authorization language and language correction for March 18, 2009 Federal Register Notice.

To assist in your efforts to review these changes, we have prepared an addendum for the May 27, 2009 BA submittal and update number three for the July 9, 2008 LOA request. Navy requests for NMFS to utilize this updated information when preparing their biological opinion and rules.

My staff point of contact for the Endangered Species Act is Dr. Kelly Brock, who can be reached at 703-604-5420 or via email at Kelly.Brock@navy.mil and for the Marine Mammal Protection Act is Ms. Linda Petitpas, who can be reached at 703-604-1233 or via email at linda.petitpas@navy.mil.

Commander, Pacific Fleet's point of contact for this matter is Ms. Julie Rivers, who can be reached at (808) 472-1407 or julie.rivers@navy.mil.

Sincerely,

Ronald E. Tickle
Head, Operational Environmental
Readiness and Planning Branch
Environmental Readiness Division
(OPNAV N45)

Enclosure:
(1) Biological Assessment Addendum for Mariana Islands Range Complex - June 2009.
(2) Update Number Three to the Letter of Authorization Application - June 2009

Copy to (w/o enclosures):
DASN (E)
OPNAV N43
CPF NO1CE

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR, HAWAII 96860-3131

IN REPLY REFER TO:
5090
Ser N01CE1/0902
17 Jul 09

Mr. Patrick Leonard
Field Office Supervisor
U.S. Fish and Wildlife Service
Pacific Islands Field Office

Dear Mr. Leonard:

SUBJECT: REQUEST FOR FORMAL CONSULTATION UNDER SECTION 7 OF THE ENDANGERED SPECIES ACT FOR THE MARIANA ISLANDS RANGE COMPLEX [CONSULTATION #2007-1-0347]

The Department of the Navy for the Department of Defense Representative Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia and Republic of Palau proposes to support and conduct current and emerging training and research, development, testing and evaluation activities (RDT&E) and upgrade or modernize capabilities to enhance and sustain military training and testing in the Mariana Islands Range Complex (MIRC). Enclosed for your review is a Biological Assessment (BA) to initiate formal consultation under Section 7(a)(2) of the Endangered Species Act (ESA).

Informal consultation for this project began with the Navy's transmittal of the Federal Register document to the U. S. Fish and Wildlife Service (USFWS) Pacific Islands Field Office (PIFO) announcing the Notice of Intent and public scoping meetings for the MIRC Environmental Impact Statement (EIS)/Overseas EIS in June 2007 and subsequent meetings between the Navy (represented by NAVFACPAC and PACFLT personnel) and the PIFO in July of 2007. The Navy appreciates the technical assistance provided by PIFO personnel throughout the informal phase of this consultation.

As required by section 7 of the ESA, the Navy considered the potential impacts of training and RDT&E within the MIRC on listed species and critical habitats in drafting the BA and determined that:

1. The proposed action will not affect the following ESA-listed species: *Serianthes nelsonii*, *Nesogenes rotensis*, *Osmoxylon mariannense*, Guam Micronesian

kingfisher, Guam rail, and the Rota bridled white-eye.

2. Although critical habitats have been designated on both Guam (for the Mariana fruit bat, Mariana crow, and Micronesian kingfisher) and Rota (for the Mariana crow and Rota bridled white-eye), training and RDT&E within the MIRC will not take place within these areas. Navy has determined that the activities proposed in the BA will not destroy nor adversely modify these critical habitat units.

3. The training and RDT&E within the MIRC "may affect, but is not likely to adversely affect" the following ESA-listed species: green sea turtle and hawksbill sea turtle within USFWS jurisdiction, Mariana swiftlet, Mariana crow, Mariana common moorhen, nightingale reed warbler, and Mariana fruit bat.

4. The training and RDT&E within the MIRC "may affect and is likely to adversely affect" the Micronesian megapode.

In conclusion, the Navy requests (1) initiation of formal consultation under Section 7 of the ESA for the Micronesian megapode, and (2) USFWS concurrence that the described actions are not likely to adversely affect the green sea turtle and hawksbill sea turtle when within USFWS jurisdiction (i.e., on land), Mariana swiftlet, Mariana crow, Mariana common moorhen, nightingale reed warbler, and Mariana fruit bat (conclusions supported by data and analyses provided in the BA)

Thank you for your assistance. We would appreciate being apprised of your estimated schedule for completion of these determinations and request a draft copy of your biological opinion regarding the Micronesian megapode for our review when it is completed. Please contact Vanessa Pepi, NAVFACPAC Supervisory Fish and Wildlife Biologist (Vanessa.Pepi@navy.mil / 808-472-1406), regarding this consultation request.

Sincerely,

L. M. FOSTER
By direction

SUBJECT: REQUEST FOR FORMAL CONSULTATION UNDER SECTION 7 OF THE ENDANGERED SPECIES ACT FOR THE MARIANA ISLANDS RANGE COMPLEX [CONSULTATION #2007-1-0347]

Enclosure: Biological Assessment for the Mariana Islands Range Complex, Terrestrial Species Consultation (2 hard copies and 1 CD)

Copy to: (w/o encl)
National Marine Fisheries Service, Pacific Islands Regional Office (Mr. William L. Robinson)
Chief of Naval Operations, Washington, DC (N45)
Naval Facilities Engineering Command, Pacific (EV)
Naval Facilities Engineering Command, Marianas (EV - Mr. Robert Wescom)

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR, HAWAII 96860-3131

IN REPLY REFER TO:
5090
Ser N01CE1/0921
23 Jul 09

Mr. Alberto A. Lamorena V
Director
Guam Bureau of Statistics and Plans

Dear Mr. Lamorena:

SUBJECT: FEDERAL CONSISTENCY DETERMINATION FOR THE DEPARTMENT OF DEFENSE ACTIVITIES WITHIN THE MARIANA ISLANDS RANGE COMPLEX (MIRC)

We are in receipt of your letter of June 25, 2009 concerning the Federal Consistency Determination for the Department of Defense (DoD) activities in the Mariana Islands Range Complex (MIRC) and the associated Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). We have reviewed and considered the substance of your letter.

Contrary to your assertion, the Navy respectfully disagrees that it planned and prematurely submitted the Federal Consistency Determination for the DoD activities in the MIRC. The Navy's submission satisfied the procedural and substantive requirements for submission of a federal consistency determination.

The regulations implementing the Coastal Zone Management Act (CZMA) require that federal agencies provide consistency determinations to the state at the earliest practicable time in the planning of the activity but in no case later than 90 days before final approval of the federal activity (15 C.F.R. §930.36(b)). Further, pursuant to Guam's Coastal Management Plan (GCMP), as approved by the National Oceanic and Atmospheric Administration (NOAA), a letter describing the proposed activity and asserting that it "is consistent with and will be conducted (or supported) in a manner consistent" with the GCMP to the maximum extent practicable should be submitted to the Bureau of Planning (BOP) at least ninety (90) days before final approval of the federal activity. GCMP, Guam PL 26-169 and Guam Executive Order 12372. Both the federal and territorial procedures of the CZMA provide for a federal agency's determination to be made when

sufficient information has been developed to reasonably determine the consistency of the activity with the GCMP, but before the federal agency reaches a significant point in the decision-making process. See, e.g., 15 C.F.R. §§ 930.36(b), 930.39. In fact, the Guam procedural guide recommends that the consistency determination be submitted early in the process to assure timely review before final federal action.

With respect to the DoD activities in the MIRC, submission of the consistency determination at the draft EIS stage was appropriate. The Navy did not submit the Federal Consistency Determination until it had obtained information necessary to determine whether the federal activities were consistent with the GCMP, which was reached this spring. Moreover, the Navy ensured that the Federal Consistency Determination was submitted more than 90-days before issuance of a Record of Decision.

Accordingly, the Navy submitted the consistency determination on March 18, 2009 and it was received by your office on or about April 2, 2009. The consistency determination addressed all actions within the coastal zone and those located outside the coastal zone that would have any impacts in the coastal zone. The CZMA regulations require that the state notify the federal agency within 14 days of receiving the consistency determination if all the necessary supporting information was not submitted, and the state believes required information is missing. 15 C.F.R. § 930.41. The Navy received no such notification. As a result, the requisite 60-day review period began on the date that the Federal Consistency Determination was submitted.

Based upon the Navy's firm commitment to working cooperatively with the GCMP, Mr. Ed Lynch and Mr. Robert Wescom on behalf of the DoD Representative Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia and Republic of Palau (DoD Rep) met with you on April 14, 2009, and discussed the public's and the Bureau's interagency concerns and comments. At this time, despite its commitment to working with the GCMP, the Navy reiterated, per the above legal authority, that a formal objection to the consistency determination would have to be made within a timely manner but not later than 60 days after receipt of the consistency determination. Indeed, according to the express language of the regulations, if the state does not provide a

response within 60-day review period, the federal agency may presume state concurrence. 15 C.F.R. § 930.41(a). This 60-day period passed without comment by the Bureau of Statistics and Plans, or any other office within the Government of Guam. Therefore, the Navy appropriately presumed that the Government of Guam concurred with the Navy's federal consistency determination for MIRC after the expiration of the 60 days.

Notwithstanding the previous meetings and discussions between the Navy and Guam, the letter does not identify a statutory or regulatory reference by which the Navy is required to take actions different than those outlined herein. Also missing from your letter is an indication of what effects our proposed activities may have on Guam's coastal zone. Your letter merely indicates that the action proponent of the EIS should consider all comments of the public and territorial agencies before a final decision is made. To this latter point, we are pleased to advise you that the comments attached to your June 25, 2009 letter were in fact received by the Navy prior to the Consistency Determination being finalized and were specifically considered in drafting the Consistency Determination.

The Navy received numerous comments on the Draft EIS/OEIS that will be addressed in the Final EIS/OEIS, as appropriate. Although the Navy would acknowledge that the consistency determination process informs the EIS/OEIS process, the federal Coastal Consistency Determination (CCD) is not designed to provide a platform for responding to comments that were submitted on the Draft EIS/OEIS. As such, the Navy disagrees that the "concerns and issues raised by the people of Guam should have been discussed" in the CCD. Rather the CCD should be seen as a separate evaluation to determine the Federal government's compliance with enforceable policies of the Government of Guam. We will provide you with a copy of the Final EIS upon its completion.

Thank you again for the letter and for the detailed comments you provided. The Navy looks forward to a continued partnership with the Government of Guam and hopes that the procedural issues

raised in your letter can be expeditiously and amicably resolved through the continued cooperation of our respective offices. If you have any questions on this matter, please contact Mr. Edward J. Lynch, at (808) 471-1714 or by email at edward.j.lynch.ctr@navy.mil.

Sincerely,

D. A. McNAIR
Captain, U.S. Navy
By direction

Copy to:
Naval Facilities Engineering Command, Pacific (EV)
Naval Facilities Engineering Command, Marianas
(EV - Mr. Robert Wescom)

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR, HAWAII 96860-3131

IN REPLY REFER TO:
5090
Ser N01CE1/1100
1 Oct 09

Mr. William Robinson
Regional Administrator
Pacific Islands Regional Office
National Marine Fisheries Service

Dear Mr. Robinson:

SUBJECT: ESSENTIAL FISH HABITAT ASSESSMENT FOR THE MARIANA ISLANDS RANGE COMPLEX

In accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and regulations governing conservation of Essential Fish Habitat (EFH), this responds to National Marine Fisheries Service's (NMFS) September 2, 2009 conservation recommendations for proposed military training activities in the Mariana Islands Range Complex (MIRC). Although the Navy's proposed action would not result in long-term-adverse impacts to EFH as described in the "Essential Fish Habitat and Coral Reef Assessment for the Mariana Islands Range Complex EIS/OEIS", the Navy herein responds to NMFS' conservation recommendations. As noted in NMFS's letter, the conservation recommendations are pursuant only to the MSA. The Fish and Wildlife Coordination Act and Coral Reef Executive Order 13089 referenced in NMFS's letter will be addressed in separate correspondence.

The following provides Navy's responses to the six (6) EFH recommendations offered in your letter pursuant to section 305(b)(4)(A) of the MSA:

NMFS EFH Conservation Recommendation 1:

We recommend that further analysis of the impacts of amphibious landings and over the beach insertion/extractions be undertaken. Due to the increased frequency of these events, the impacts are likely to be additive and cumulative in nature. Physical impacts to

sufficient information has been developed to reasonably determine the consistency of the activity with the GCMP, but before the federal agency reaches a significant point in the decision-making process. See, e.g., 15 C.F.R. §§ 930.36(b), 930.39. In fact, the Guam procedural guide recommends that the consistency determination be submitted early in the process to assure timely review before final federal action.

With respect to the DoD activities in the MIRC, submission of the consistency determination at the draft EIS stage was appropriate. The Navy did not submit the Federal Consistency Determination until it had obtained information necessary to determine whether the federal activities were consistent with the GCMP, which was reached this spring. Moreover, the Navy ensured that the Federal Consistency Determination was submitted more than 90-days before issuance of a Record of Decision.

Accordingly, the Navy submitted the consistency determination on March 18, 2009 and it was received by your office on or about April 2, 2009. The consistency determination addressed all actions within the coastal zone and those located outside the coastal zone that would have any impacts in the coastal zone. The CZMA regulations require that the state notify the federal agency within 14 days of receiving the consistency determination if all the necessary supporting information was not submitted, and the state believes required information is missing. 15 C.F.R. § 930.41. The Navy received no such notification. As a result, the requisite 60-day review period began on the date that the Federal Consistency Determination was submitted.

Based upon the Navy's firm commitment to working cooperatively with the GCMP, Mr. Ed Lynch and Mr. Robert Wescom on behalf of the DoD Representative Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia and Republic of Palau (DoD Rep) met with you on April 14, 2009, and discussed the public's and the Bureau's interagency concerns and comments. At this time, despite its commitment to working with the GCMP, the Navy reiterated, per the above legal authority, that a formal objection to the consistency determination would have to be made within a timely manner but not later than 60 days after receipt of the consistency determination. Indeed, according to the express language of the regulations, if the state does not provide a

response within 60-day review period, the federal agency may presume state concurrence. 15 C.F.R. § 930.41(a). This 60-day period passed without comment by the Bureau of Statistics and Plans, or any other office within the Government of Guam. Therefore, the Navy appropriately presumed that the Government of Guam concurred with the Navy's federal consistency determination for MIRC after the expiration of the 60 days.

Notwithstanding the previous meetings and discussions between the Navy and Guam, the letter does not identify a statutory or regulatory reference by which the Navy is required to take actions different than those outlined herein. Also missing from your letter is an indication of what effects our proposed activities may have on Guam's coastal zone. Your letter merely indicates that the action proponent of the EIS should consider all comments of the public and territorial agencies before a final decision is made. To this latter point, we are pleased to advise you that the comments attached to your June 25, 2009 letter were in fact received by the Navy prior to the Consistency Determination being finalized and were specifically considered in drafting the Consistency Determination.

The Navy received numerous comments on the Draft EIS/OEIS that will be addressed in the Final EIS/OEIS, as appropriate. Although the Navy would acknowledge that the consistency determination process informs the EIS/OEIS process, the federal Coastal Consistency Determination (CCD) is not designed to provide a platform for responding to comments that were submitted on the Draft EIS/OEIS. As such, the Navy disagrees that the "concerns and issues raised by the people of Guam should have been discussed" in the CCD. Rather the CCD should be seen as a separate evaluation to determine the Federal government's compliance with enforceable policies of the Government of Guam. We will provide you with a copy of the Final EIS upon its completion.

Thank you again for the letter and for the detailed comments you provided. The Navy looks forward to a continued partnership with the Government of Guam and hopes that the procedural issues

raised in your letter can be expeditiously and amicably resolved through the continued cooperation of our respective offices. If you have any questions on this matter, please contact Mr. Edward J. Lynch, at (808) 471-1714 or by email at edward.j.lynch.ctr@navy.mil.

Sincerely,

D. A. McNAIR
Captain, U.S. Navy
By direction

Copy to:
Naval Facilities Engineering Command, Pacific (EV)
Naval Facilities Engineering Command, Marianas
(EV - Mr. Robert Wescom)

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2007-I-0347

MAY 0 2 2008

Ms. Karen Sumida
Department of the Navy
Naval Facilities Engineering Command, Pacific

Subject: Informal Consultation Request for the Proposed Establishment and Operation of the Mariana Islands Range Complex and for the Relocation of the U.S. Marine Corps Forces to Guam

Dear Ms. Sumida:

Thank you for your March 26, 2008, letter requesting agreement with the species list prepared for the proposed establishment and operation of the Mariana Islands Range Complex (MIRC) and for the relocation of the U.S. Marine Corps forces to Guam via the Joint Guam Program Office (JGPO). Your letter also requested to establish a date-of-record for the commencement of informal consultation under section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), as amended (Act) for U.S. Navy actions associated with MIRC and JGPO. We received your letter on March 28, 2008. On April 21, 2008, you agreed to an extension of our deadline.

As you mention in your letter, we began informal discussions regarding MIRC and JPGO in 2007. We have compiled a list of meetings and conversations that have occurred over the past year where we received any information or any discussion of endangered or threatened species that may be affected by MIRC or JGPO. We request that you verify this list and add any conversations, electronic mailings, and/or meetings that we may have inadvertently left off the coordination history (see Table 1 and Table 2) for either MIRC or JGPO.

We reviewed the species list you provided and we concur that the species on the list are the federally listed, candidate, delisted, and migratory bird species known to use the terrestrial resources from Guam and the Commonwealth of the Northern Mariana Islands (CNMI). The population numbers provided within these tables should be viewed with caution as some of the data are older and some data are currently in revision. For example, a recent survey (2007) for

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the nightingale reed-warbler on Saipan estimated the population size at 2,596 pairs (Camp et al., *in prep.*) instead of 4,200 pairs as reported from 1997. Additionally, the tables enclosed within your letter only include species and do not include critical habitat. Therefore, we have enclosed a list of terrestrial critical habitat (see Table 3).

There are many sites within Guam and CNMI that have other protected habitats that are not designated as critical habitat. U.S. Navy lands at the Communications Annex and the ordnance Annex and Andersen Air Force Base on Guam were excluded from the critical habitat designation due to their respective Integrated Natural Resources Management Plans, which include projects that could maintain or benefit the Mariana fruit bat (*Pteropus mariannus mariannus*), Mariana crow (*Corvus kubaryi*), and Guam Micronesian kingfisher (*Halcyon cinnamomina cinnamomina*). Though the U.S. Navy and U.S. Air Force lands were not included in the final critical habitat designation, these areas are essential for the conservation of these species and to meet their respective recovery goals. In 1994, the U.S. Navy and U.S. Air Force entered into cooperative agreements with the Service to create the Guam National Wildlife Refuge Overlay on U.S Navy and U.S. Air Force lands on Guam. This agreement established that the U.S. Navy and the U.S. Air Force will coordinate with the Service regarding Federal activities which may affect these areas even if they are currently unoccupied by the species. In addition, there are areas that were not designated as critical habitat but are essential to the survival and recovery of listed species outside U.S. Navy and U.S. Air Force lands on Guam that may be affected by the proposed action. Approximately 936 acres (379 hectares) of land was preserved on Tinian, for the protection of the Tinian monarch, as a conservation measure within the Federal Aviation Administration's project description for improvements to the Tinian International Airport. Also, several wetlands have been restored, enhanced, or created as mitigation under the U.S. Army Corps of Engineers authority under the Clean Water Act. Many of these wetlands are important for listed species including the Mariana common moorhen and the nightingale reed-warbler. At this time we do not have a comprehensive list of all locations and habitats that have been set aside or receive protection from other local and Federal agencies.

We recommend that you coordinate directly with Guam Division of Aquatic and Wildlife Resources, CNMI Division of Fish and Wildlife, and National Marine Fisheries Service to ensure that the species lists adequately reflect trust resources protected under their respective jurisdictions. We also recommend that you contact these and other appropriate agencies regarding critical habitat, essential habitat, or habitats with local protections.

The purpose of informal consultation is to: clarify whether the action area has listed, proposed, and candidate species or designated critical habitat; determine the potential effects of the proposed action on these species or critical habitats; explore ways to modify the proposed action to reduce or remove adverse affects to the species or critical habitats; determine the need to enter into formal consultation or conference; and to explore the design or modification of an action to benefit the species or critical habitat. Although we have been coordinating for over a year, we are concerned that the Service and the Navy have not spent a sufficient amount of time discussing actions associated with the MIRC or JGPO and their potential affect to listed species and their habitats. We recommend that prior to completion of your biological assessment, a series of informal meetings be conducted to update species status and critical habitat information and to explore ways to avoid and minimize impacts to these species and their habitats.

We look forward to working with you regarding the two proposed projects. If you have questions regarding federally protected species, critical habitat, or this letter, please contact Holly Herod, Fish and Wildlife Biologist for Technical Assistance and Consultation at (808)792-9400.

Sincerely,

for Patrick Leonard
Field Supervisor

cc:
Tino Aguon, Guam Division of Aquatic and Wildlife Resources, Guam
Chris Bandy, U.S. Fish and Wildlife Service, Guam
Paul Bassler, Guam Department of Agriculture, Guam
Theresa Bernhard, Joint Guam Program Office, Washington DC
Lisa Fiedler, Joint Guam Program Office, Guam
Larry Foster, COMPACFLT (N01CE1), Hawaii
Sylvan Igisomar, CNMI Division of Fish and Wildlife Resources, Saipan
Ed Lynch, KAYA, Contractor to Navy Commander Pacific Fleet

Enclosures

Table 1. Coordination history regarding the proposed establishment and operation of the Mariana Islands Range Complex.

June 8, 2007. The Service received a letter dated June 1, 2007, from the Navy. The letter included a copy of a Federal Register document announcing the Notice of Intent for MIRC and public scoping meetings. The letter requested our input in identifying the scope of issues and significant issues related to MIRC.

July 11, 2007. Department of Defense (DOD) held a Quarterly meeting with participating agencies including the Service. DOD indicated that: scoping meetings are complete for MIRC; a timeline for NEPA was provided; MIRC covers existing training in existing training areas only; new training or new areas would be covered by JGPO.

July 23, 2007. The Service received a copy of a letter dated July 16, 2007, from the U.S. Environmental Protection Agency regarding their comments related to the MIRC scoping comments.

July 30, 2007. The Service sent a letter to the MIRC office providing comments on the NOI to develop and EIS/OEIS for MIRC.

September 21, 2007. The Service had a meeting with the Navy and its representatives regarding MIRC, JGPO, and the brown treesnake. We suggested one section 7 consultation to combine both MIRC and JGPO actions as the actions are all interrelated and interdependent. We further indicated that a thorough biological assessment would be needed for MIRC and JGPO.

September 24, 2007. The Service had a meeting with the Navy regarding JGPO and MIRC actions, improving cross agency communication, and surveys for species that may be impacted by the proposed actions. We indicated that migratory birds should be considered in the NEPA documents if large towers are going to be built.

October 4 – 5, 2007. The Service attended the JGPO partnering session on Guam and received JGPO related hard copy presentations. We received a hard copy of the presentation given by Ed Lynch, Navy contractor, regarding the MIRC EIS/OEIS.

November 7, 2007. DOD held a Quarterly meeting with the participating agencies including the Service. DOD indicated that the terrestrial biological assessment for MIRC was 50% complete; the JGPO DEIS was due out January 2009 and currently only Guam information was known.

November 14 – 16, 2007. The Service attended the Brown Treesnake (BTS) Working Group meeting held on Saipan. A review of JGPO and MIRC was provided by Captain Robert Lee (Navy) and Ed Lynch (Navy contractor), respectively. Earl Campbell (Service) provided an update and lead a discussion regarding the efforts that will be needed by the Navy to prevent the spread of BTS from the implementation of JGPO and MIRC.

February 14 – 15, 2008. The Service attended the JGPO partnering session on Guam. An update on MIRC was presented to participants.

March 7, 2008. Vanessa Pepi (Navy) and Patrice Ashfield (Service) met to discuss the MIRC DOPPA and Biological Assessment. Ms. Ashfield mentioned Service concerns regarding increased training at Farallon de Medinilla and the potential impacts to the Micronesian megapode, the listing of the Mariana fruit bat throughout its range, and potential impacts to sea turtles and their nesting beaches.

March 28, 2008. The Service received a letter dated March 26, 2008, from the Navy. The letter included an attached species list and requested: official commencement of informal consultation and concurrence with the attached species list for MIRC and JGPO.

April 16 – 18, 2008. Service attended the BTS Conference held in Honolulu, HI. The conference provided an update on JGPO and MIRC and focused on status of current research and invasive species issues associated with JGPO and MIRC.

Table 2. Coordination history regarding the proposed relocation of the U.S. Marine Corps forces to Guam (JGPO).

May 17, 2007. The Navy sent a letter to Mr. Dale Hall (Service) requesting that the Service be a cooperating agency in the JGPO NEPA process. This letter was provided by copy at the June 4 – 5, 2007 JGPO Partnering Session.

May 18, 2007. Dwayne Minton (Service – Ecological Services) and Chris Bandy (Service – Refuges) emailed Captain Robert Lee (Navy) the Service's comments regarding the March 7, 2007, Notice of Intent to develop an EIS/OEIS for the relocation of the U.S. Marine Corps Forces to Guam.

June 4 – 5, 2007. The Service attended the JGPO Partnering Session.

June 11, 2007. Vanessa Pepi (Navy) provided the Service with a copy of the Scope of Work and Survey Methods for the biological surveys that will occur on Guam.

July 3, 2007. The Service sent a letter to Commander Hinton (Navy) regarding cooperating agency status for the development of the JGPO EIS/OEIS.

July 7, 2007. Earl Campbell (Service) emailed a summary of a phone conversation with Vanessa Pepi (Navy) regarding: potential areas in the CNMI where JGPO activities may occur; need to discuss conservation areas and strategies early, internal meetings, and a letter for NEPA cooperating agency status.

July 11, 2007. Department of Defense (DOD) held a Quarterly meeting with participating agencies including the Service. DOD indicated that: scoping meetings are complete for MIRC; a timeline for NEPA was provided; MIRC covers existing training in existing training areas only; new training or new areas would be covered by JGPO.

July 18, 2007. Earl Campbell (Service) emailed Mr. Bice, Mr. Lee, and Mr. Schregardus (Navy) a request for staff and financial support needed for brown treesnake interdiction, control, and research efforts associated with JGPO activities. The email also included a report from OMB.

July 31, 2007. The Service sent a letter to the JGPO office requesting assistance related to the increase in Service expected workload related to JGPO.

August 15, 2007. The Service had a meeting with the Navy to discuss terrestrial biological information needs for JGPO. We indicated that consultation needs to remain informal until all the information necessary to complete a formal consultation is prepared and finalized. We further requested that surveys should be completed for any species that may be impacted and that the surveys should consider the full extent of the range or status for these species.

September 21, 2007. The Service had a meeting with the Navy and its representatives regarding MIRC, JGPO, and the brown treesnake. We suggested one section 7 consultation to combine both MIRC and JGPO actions as the actions are all interrelated and interdependent. We further indicated that a thorough biological assessment would be needed for MIRC and JGPO.

September 24, 2007. The Service had a meeting with the Navy regarding JGPO and MIRC actions, improving cross agency communication, and surveys for species that may be impacted by the proposed actions. We indicated that migratory birds should be considered in the NEPA documents if large towers are going to be built.

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November 14 – 16, 2007. The Service attended the Brown Treesnake (BTS) Working Group meeting held on Saipan. A review of JGPO and MIRC was provided by Captain Robert Lee (Navy) and Ed Lynch (Navy contractor), respectively. Earl Campbell (Service) provided an update and lead a discussion regarding the efforts that will be needed by the Navy to prevent the spread of BTS from the implementation of JGPO and MIRC.

November 19, 2007. The Service emailed unofficial species lists for Guam and CNMI and resource lists for specific locations on Guam to Ed Lynch (Navy contractor), Teresa Bernhard (JGPO) and Lisa Fiedler (JGPO).

November 19, 2007. Earl Campbell (Service) participated in "The Department of Interior Interagency Group on Insular Affairs, Guam Interagency Task Force Meeting" and presented brown treesnake needs related to JGPO to the Natural Resources sub-Committee.

December 17, 2007. The Service met with the Navy regarding potential species surveys in the CNMI. We also provided information on the data needs for section 7 consultations as compared with the data needed for a programmatic NEPA document.

January 22, 2008. Earl Campbell (Service) provided a briefing to the Service, U.S. Marine Corps, and U.S. Army related to brown treesnake and JGPO activities.

January 23, 2008. Earl Campbell (Service) provided a briefing to Assistant Secretary of the Navy regarding brown treesnake and JGPO activities.

January 23, 2008. The Service attended a video teleconference regarding the upcoming JGPO Partnering Session meeting.

January 25, 2008. Earl Campbell (Service) provided an overview of the brown treesnake issues related to JGPO to the Service and Department of Defense.

January 29, 2008. Vanessa Pepi (Navy) emailed Dwayne Minton and Curt Kessler (Service) maps depicting the JGPO training concept plan for Tinian.

February 4, 2008. Stephen Smith (Navy) emailed Dwayne Minton, Curt Kessler, Kevin Foster, Michael Molina (Service) maps depicting the JGPO training concept study on Guam and CNMI.

February 14 – 15, 2008. The Service attended the JGPO partnering session on Guam.

February 19, 2008. Rick Spaulding (Navy contractor) emailed Nate Hawley, Earl Campbell, Holly Herod, and Dwayne Minton (Service) the Pre-Final Sampling Plan for the natural resource surveys to support JGPO on Guam.

March 27, 2008. The Navy emailed an initial monthly update related to the JGPO EIS.

March 28, 2008. The Service received a letter dated March 26, 2008, from the Navy. The letter included an attached species list and requested: official commencement of informal consultation and concurrence with the attached species list for MIRC and JGPO.

April 14, 2008. The Marines hosted a workshop to familiarize participants with the potential impacts from terrestrial training.

April 15, 2008. The Service hosted a workshop to familiarize participants with other DOD conservation strategies and to brainstorm conservation strategies that may be useful for implementation by JGPO.

April 16 – 18, 2008. Service attended the BTS Conference held in Honolulu, HI. The conference provided an update on JGPO and MIRC and focused on status of current research and invasive species issues associated with JGPO and MIRC.

Table 3. Designated critical habitat within Guam and the Commonwealth of the Northern Mariana Islands. DOD lands within the Guam National Wildlife Refuge (NWR) Overlay Refuge lands are not included in the totals below as they are not designated as critical habitat. However, the lands within the Guam NWR Overlay Refuge are essential to the recovery of several listed species and DOD is required to coordinate with us when projects may affect lands within Guam NWR Overlay Refuge, even when these lands are unoccupied.

Critical Habitat	Location	Area
Mariana fruit bat	Unit A: Guam NWR, fee simple area	376 acres (152 hectares)
Mariana crow	Unit A: Guam NWR, fee simple area	376 acres (152 hectares)
	Unit B: Rota – Subunit 1	5,668 acres (2,294 hectares)
	Unit B: Rota – Subunit 2	365 acres (148 hectares)
Guam Micronesian kingfisher	Unit A: Guam NWR, fee simple area	376 acres (152 hectares)
Rota bridled white-eye	Rota	3,958 acres (1,602 hectares)

BUREAU OF STATISTICS AND PLANS

(Bureau of Planning)

Government of Guam

Felix P. Camacho
Governor of Guam

Michael W. Cruz, M.D.
Lieutenant Governor

P.O. Box 2950 Hagåtña, Guam 96932
Tel: (671) 472-4201/3
Fax: (671) 477-1812

Alberto "Tony" Lamorena V
Director

JUN 25 2009

Commander
Department of the Navy
United States Pacific Fleet

Attn: Captain J.P. Rios, USN

Reference: 5090 Ser NO1CE1/0312

Dear Sir:

The Bureau of Statistics and Plans has completed the review of the Department of the Navy's Federal Consistency Determination for the Department of Defense activities within the Mariana Islands Range Complex (MIRC) dated, March 18, 2009 (received by the Bureau on April 2, 2009). It shows that the Navy's determination document was prepared prior to March 31, 2009 extended closing of the comment period for the Draft MIRC draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). With specific regard to the amount of time being given to us to review the document, it should be noted that as a general rule, it takes around ten (10) days or more for review documents from Hawaii to reach Guam and the Bureau, not considering the additional days that the document was posted, which gives us even less time to review.

We are concerned that most of the "Discussion" portion of the submitted Assessment of the Guam Coastal Management Program policies indicated that "***the proposed project, military training activities would continue to take place primarily either in international waters or within the boundaries of federally-owned lands, including submerged lands, on Guam.***" Please note that federal consistency requirement applies when any federal activity, regardless of location, affects any land or water use or natural resource of the coastal zone, Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) Public Law No. 101-508. The CZMA regulations 15 CFR Part 923.33(b), in part states, "The exclusion of Federal lands does not remove Federal agencies from the obligation of complying with the consistency provisions of section 307 of the Act when Federal actions on these excluded land have spillover impacts that affect any land or water use or natural resource of the coastal zone within the purview of a state's management program."

In our April 14, 2009 meeting on Guam with Mr. Edward J. Lynch, Commander Pacific Fleet NO1CE19, Mr. Robert Wescom, and Ms. Evangeline Lujan, GCMP Administrator, the issues regarding the numerous comments received from the community of Guam, the local government, public/private organizations and other individuals with regards to the proposed MIRC activities were discussed. The DOD/Navy is well aware that the people of Guam have legitimate questions regarding Guam's natural resources and its environment that need to be answered/clarified and issues that need to be addressed by the Navy and/or Department of Defense in the Final EIS/OEIS, including the Bureau's comments dated, March 16, 2009. It has been agreed that those legitimate concerns and issues raised by the people of Guam should have been discussed in the DOD Federal Consistency document and addressed in the Final EIS/OEIS, where the Navy's federal consistency determination must also be based.

It is apparent that the Federal Consistency Determination was pre-maturely prepared and submitted by the Navy and therefore, the Bureau is not in a position to concur with the submitted Federal Consistency Determination until the issues and concerns that were raised in the review of the draft EIS/OEIS are addressed/allayed or resolved.

In this respect, we suggest that the Navy/DOD further coordinate with the Bureau and submit an updated or a supplemental Federal Consistency Determination document incorporating and addressing issues and concerns iterated in the enclosed Bureau of Statistics and Plan's March 16, 2009 review of the MIRC Draft EIS/OEIS. Please provide us the revised/and or supplemental Navy/DOD's Federal Consistency determination in order that we can conduct a review and issue the Federal consistency statement at the earliest practicable time.

Should you need further questions, please do not hesitate to call Ms. Evangeline D. Lujan, GCMP Administrator at (671) 475-9672 or email: vangelujan@yahoo.com, cc: mely.deleon@bsp.guam.gov.

Sincerely,

ALBERTO A. LAMORENA V
Director

Enclosure: a/s

cc: GEPA
DoAg
DPR/GHPO
DLM
Ed Lynch
R. Wescom
B.Millhouser
K.Chaston
Paul Shintaku
AG's Office

BUREAU OF STATISTICS AND PLANS

Government of Guam

Felix P. Camacho
Governor of Guam

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Lieutenant Governor

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Tel: (671) 472-4201/3
Fax: (671) 477-1812

Alberto "Tony" Lamorena V
Director

MAR 16 2009

Mariana Islands Range Complex EIS
Attn: EV2

Hafa Adai:

The following are the Bureau of Statistics and Plans (BSP) comments in the review of the Draft Environmental Impact Statement/Overseas Impact Statement (DEIS/OEIS) for the proposed Mariana Islands Range Complex (MIRC) dated January 2009:

I – CZMA Federal Consistency Requirement

1.5.3. Coastal Zone Management Act was listed as one of the other Environmental Requirements considered in the DEIS. However, no Federal consistency determination, analysis, or even the timeline to accomplish the requirement was addressed. A consistency determination must include a detailed description of the activity, its coastal zone effects, and comprehensive data and information sufficient to support such determination. Therefore, a Consistency determination must be submitted to the BSP's Guam Coastal Management Program for review as mandated by the Coastal Zone Management Act (CZMA) of 1972, 16 USC § 1456 (c) (1), the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) Public Law 101-508. Any action proposed by a Federal agency that will have a reasonably foreseeable effect on any land or water sue or natural resource of a State's coastal zone, which in CZMA context is the Island of Guam in its entirety, must be consistent to the maximum extent practicable with the enforceable policies of State's federally approved CZMA programs, Section 307(c)(1)(A), 15 CFR Part 930, unless compliance is prohibited by existing law applicable to the federal agency's operations. BSP has to either concur or object to the proposed activity. Changes must be made before the Federal activity is permitted. There is no categorical exemption for any federal activity. However, under certain circumstances the President may exempt a specific federal activity. (see 16 U.S.C. 1456(c)(1)(b). Federal consistency requirement for Federal activities are detailed at 16 U.S.C. 1456©(1) and (2) and at 15 CFR Part 930 subpart C.

II – Issues and Concerns:

- Flight exercises should not be allowed over populated areas of Guam at any time. Catastrophic effects of aircraft accident due to increase in volume of air traffic expose people and properties to potential accident. Although, the risk to people on the ground of being killed or injured by aircraft accidents is small, an aircraft accident is a high consequence event and the result is often catastrophic. The 1998 US Air force AICUZ Report (April 1998) states that the Air Force determined that 75% of the accidents had definable debris impact areas, although they varied in size by type of accident. Of the 369 major USAF accidents 1968-1972, 70 percent occurred in daylight and fighter and training aircraft accounted for 80 percent.

Cumulative Impacts:

- Our coastal marine and terrestrial habitat will be affected by training exercises within the ocean surface and undersea areas, i.e. training explosions in Apra Harbor. The cumulative wastes and discharges from continued training explosions will generate pollutants and threaten our estuarine and reefs.

What assurances are there that our designated Northern Aquifer will not be impacted?

- Any type of land disturbing activity increases the potential for erosion to occur resulting in loss of shorelines that will eventually lead to damages to our coral reefs and disturbance of marine habitat.

- The cumulative impacts from continued firing range exercises will affect our native forests and wetland areas. What measures are there to ensure that this type of activity does not pose unreasonable risks to the health, safety or welfare of the people of Guam?

- Impacts from air traffic will have an effect on our community most especially on the elderly who will live in fear with the sounds of ammunition going off. This will affect their health to cause memories of war time and all the hardships endured by it, and cause them to live in fear from the constant loud sound of airplanes etc

- What assurances are there to protect our native birds, marine animals and disturbance to our native forests? Our marine environment will be subjected to continuous trauma from the military exercise leaving our marine animals defenseless.

2.2.1. This DEIS lacks a range of reasonable alternatives and does not provide an adequate explanation as to why other alternatives were eliminated from full consideration. As such, we believe the DEIS does not fulfill the requirement to "rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated (40 CFR §1502.14)." Our analysis of the alternatives in the DEIS leads us to believe that other alternatives may have been foreclosed prematurely, without adequate explanation regarding their elimination from the range of alternatives analyzed in the EIS. While some explanation is provided regarding the three alternatives that were eliminated from consideration, the categorical exclusion of these alternatives, without considering potential combinations of components of these broad alternatives (e.g., some training conducted elsewhere in the region, increased use of simulated training for certain activities, and possible combined use of certain sites in order to reduce the total number of training sites) resulted in essentially one alternative (see below for our opinion on why alternative 2 is not a reasonable alternative). It is difficult to accept that a proper analysis of all possible reasonable alternatives was conducted when we are left with essentially one alternative.

2.2.1. The authors of the MIRC DEIS indicate that the paucity of alternatives is the end result of a process that eliminated all other alternatives. While the criteria for determining the reasonableness of an alternative are provided, the decision making process that led to the elimination of a range of possible alternatives was not a process open to public input nor was it properly documented in the DEIS, and thus cannot be considered as fulfilling the requirements of the NEPA process. Alternatives analysis should clearly indicate why and how the particular range of project alternatives was developed, including what kind of public and agency input was used. In addition, alternatives analysis should explain why and how alternatives were eliminated from consideration. It must be made clear what criteria were used to eliminate alternatives, at what point in the process the alternatives were removed, who was involved in establishing the criteria for assessing alternatives, and the measures for assessing the alternatives' effectiveness. It is general practice by many federal agencies that in the preparation of NEPA documents, project sponsors should be candid about the rationale for generating, evaluating, and eliminating alternatives. If alternatives are eliminated from further consideration because they "do not meet the purpose and need," the action proponent must adequately explain how or why this alternative doesn't meet the purpose and need. We do not believe these criteria were met.

2.2.1. The Navy's Environmental and Natural Resources Program Manual provides examples of the types of alternatives that should be included in an EIS, including 1) taking no action, 2) postponing action, and 3) selecting actions of a significantly different nature that would meet mission and project objectives with different environmental impacts. We believe that Alternative 1 and Alternative 2 are not sufficiently different, leaving reviewers with essentially one action alternative (which, then, is not an "alternative" at all), and thus a range of reasonable alternatives is not offered for evaluation of environmental impacts. Alternatives should address alternate designs, site locations, etc. when establishing the selection criteria.

2.2.1. In general, it appears as though the information used to support conclusions about the impacts of various activities under the No Action Alternative were based on the information presented in the 1999 Military Training in the Marianas EIS. While the level of training would remain relatively consistent under the No Action Alternative, this approach does not take into account changes in the environment that may have occurred since the 1999 EIS. For example, a recent survey of immigrants to Guam conducted by the U.S. Census Bureau and the Government of Guam indicated that the population of immigrants from the Freely Associated States increased from about 10,000 in 2003 to over 18,000 in 2008. There have also been increases in other demographic groups over this period, pushing the total population significantly higher. There are various direct and indirect effects of population increases, such as changes in land use, recreational use, resource condition, etc., that may result in impacts different than those determined in the 1999 EIS. There may also have been changes to laws, rules, and regulations that may call for a different analysis of the current level of training. We have also learned a lot more about climate change and its expected impacts to coastal resources and coastal communities over the last 10 years. Our improved understanding of these impacts would likely result in a different analysis of impacts of the current level of training activity. It is not reasonable to apply the results of impact analysis conducted more than 10 years ago to the current EIS process, so a new analysis of impacts of activities under the No Action alternative should be carried out for inclusion in the FEIS. And because the No Action alternative serves as the baseline for Alternative 1 and Alternative 2, the impacts of these alternatives must also be re-evaluated.

3.3.4. The authors of the MIRC DEIS claim that unavoidable impacts to water quality are only temporary and would not result in adverse effects. However, Government of Guam biologists have witnessed highly turbid water apparently related to the nearby LCAC activity while snorkeling at Jade Shoals on February 2, 2009 that was severe enough to raise concern about the veracity of that statement. A sediment plume was visible in the immediate vicinity of the craft near relatively shallow areas, and the water quality appeared to diminish as one approached the landing beach, indicating that the shallow water near the landing beach was the main source of the suspended solids. While temporary, these impacts should not be considered insignificant, especially if the intensity of these activities will increase. While the poor water quality observed at Jade Shoals would not likely cause the mortality of corals and other reef organisms directly, it does place upon the reef community a level of stress that would not otherwise occur but for the activity of the LCACs. Corals, for example, would have to expend additional energy removing sediment that would not otherwise occur, potentially resulting in reduced fecundity, reduced growth rates, and increased susceptibility to pathogens. Many of the reefs of Guam are subject to intense anthropogenic impacts, and as such many are in poor to fair condition. Additional impacts to corals and other reef organisms should be considered within this context, especially within the larger context of climate change and the expected impacts to reefs; the cumulative impacts of the myriad of impacts caused by human activity should be considered in this analysis. This section does not provide sufficient support for the claim that there will be no significant impacts to water quality by training activities described in this DEIS.

3.5.4. We find it hard to believe that so few residences will be impacted by the increase in aircraft events. Part of the impact analysis should include interviews with current residents in order to calibrate the models results (what the community thinks is disruptive/annoying vs. some other standard). Even if additional analysis indicates the relatively few residents will indeed be affected by airborne noise, mitigation (e.g., soundproofing their windows, A/C units, etc.) should be offered to these residents similar to the mitigation offered to residents affected by airborne noise associated with the International Airport.

3.7.3.1.8. A recent publication (Parsons et al. 2008) that was not cited in the DEIS raises concern about sonar impacts to marine mammals, particularly as a result of injuries resulting from behavioral impacts of active sonar use. Secondary, or indirect effects, such as injury or mortality sustained from disrupted behavior or physiology are not considered because consideration of secondary effects "would result in much Level A harassment being considered Level B harassment, and vice versa, since much injury (Level A harassment) has the potential to disrupt behavior (Level B harassment), and much temporary or physiological or behavioral disruption (Level B) could be conjectured to have the potential for injury (Level A)" and thus "considerations of secondary effects would lead to circular definitions of harassment." While admitting that secondary effects are possible, the authors of the DEIS claim that these injuries "can only be reliably predicted in circumstances where the responses have been well documented." Such an approach seems to exclude the consideration of one the main suspected mechanisms by which marine mammals could be injured – namely, through a physiological injury resulting from behavioral changes spurred by the presence of anthropogenic acoustic sources. If the end result of a cascade resulting in the reduced fitness or death of a marine mammal (behavior change-physiological injury-reduced fitness or behavior change-physiological injury-mortality), than it seems as though it should be considered Level A harassment as it is not a temporary, recoverable physiological effect. Parsons et al. (2008) claim that there is sufficient circumstantial evidence to raise serious concern about the potential for active sonar to injure marine mammals, and they raise concern over the inappropriateness of the most commonly used impact analyses in estimating potential impacts. We request that the preparers respond to these and other points raised in Parsons et al. (2008).

Reference: Parsons, E.C.M., S.J. Dolman, A.J. Wright, N.A. rose, and W.C.G. Burns. 2008. Navy sonar and cetaceans: Just how much does the gun need to smoke before we act? Marine Pollution Bulletin 56: 1248-1257.

3.7.4. We are concerned about the impact of landing craft exercises on the dolphins that reside in Agat Bay. LCAC's, for example, are very loud and have a high potential to disturb the natural behavior of the dolphin pod that resides in Agat Bay. There is also the chance of injury resulting from vessel collisions. Repeated temporary disturbances may result in long term impacts, such as abandonment of that area. The apparently high potential for disturbance/injury to cetaceans as a result of increased intensity of exercises involving amphibious vehicle suggests that there will be unavoidable impacts, a conclusion not shared by the authors of the DEIS.

3.7.3.8.3. We are also concerned about the impacts of UNDET activities on dolphins and other cetaceans. What assurances can be provided that marine mammals will not be impacted during an UNDET exercise, particularly in Agat Bay?

3.7.3.1.16. The authors of the DEIS claim that there has been no stranding of beaked whales in Marianas associated with sonar use. However, the Guam Department of Agriculture's Division of Aquatic and Wildlife Resources responded to a stranding of a live Cuvier's beaked whale on August 30, 2007, two weeks after Operation Valiant Shield was conducted between August 7-14. The animal was disoriented and appeared to have injured itself by impact with the reef, but was deemed to be in sufficient condition to be escorted to deeper water and released. While the cause(s) of the stranding cannot be determined conclusively, especially without a detailed examination of a carcass, the circumstances of the stranding are highly suspicious. A handful of marine mammal strandings have occurred on Guam in the last decade, but only in the incident associated with the Valiant Shield exercise was it known to local resource agencies that mid-frequency sonar was being used. Another suspicious stranding incident occurred on April 11, 2007, and involved a dolphin and a false killer whale stranding at approximately the same time and at separate locations on the island. It would be interesting to examine the dates of the strandings with known Navy sonar activity, especially in instances involving beaked whales. We highly recommend contacting with the Department of Agriculture for information regarding strandings, as well as other marine and terrestrial resource-related data/information that are integral to ensuring that adequate impact assessments are carried out.

3.8.3.1.3. We disagree with the conclusion that sea turtles would not be affected by landing craft training activities conducted in the MIRC. We are concerned about the direct threat to turtles by vessel collision, disturbance of natural behavior, and impacts to the nesting habitat as a result of repeated landing events. Increased compaction, erosion, and other impacts will likely result from this activity, causing the beach to become less suitable or unsuitable for turtle nesting activity. We feel that these potential impacts are not adequately addressed in the DEIS, and request that more information be provided regarding these impacts.

3.9.3.2.2. We are very concerned about the impacts of LCAC and AAV activity on coral reef habitat at Tipalao, Dadi, and areas within Apra Harbor. While the shallow benthic habitat at Tipalao does not possess a large amount of living coral, this does not mean that EFH will not be impacted. Living coral is not the only type of EFH. Impacts that alter the structure of the reef, whether covered with living coral, crustose coralline algae, turf algae, macroalgae, etc. can also be considered impacts to EFH. For example, the repeated use of AAVs in the shallow waters at Tipalao would likely alter the reef structure, possibly reducing rugosity and thus affecting its suitability to certain fish species. We also have concern about the impact of LCAC use at Dadi Beach and in the area near Dry Dock Island. As mentioned above, the resuspended sediments resulting from LCAC operation in shallow water has the potential to stress corals and associated reef life. In addition, the improper use of these craft could directly impact shallow coral reef habitat. For example, anecdotal reports from a past LCAC demonstration at Dadi Beach indicate that large coral colonies were disturbed (e.g., detached from substrate) when an LCAC was brought down in the shallow water just beyond the beach, and then raised again to bring the craft

upon the beach. What measures will be implemented so that this type of impact does not occur? And what type of mitigation will occur if this impact does occur?

3.11. A major concern voiced to us by residents of Yigo is the current impact of low-flying helicopters along the cliffline in Yigo to native wildlife, particularly the Marianas fruit bat. These activities are not described in the EIS, and it is assumed they are not considered allowable activities, but yet they still occur. Who is accountable for these deviations from protocol and who does the community contact in order to address these concerns?

3.11. There appears to be a lack of a biosecurity plan to prevent introduction of invasive species and to prevent spread of species (e.g., brown tree snake) to other islands as a result of vessel/aircraft movement during training activities.

3.12.2.4.2. Andersen Air Force Base: Practice takeoffs/landings and instrument approaches, and base maintenance runup activities conducted during normal working hours (scheduled between 0600 and 2200); GCMP suggest to conduct activities during the hours of 8:00a.m. to 5:00p.m. and that the community be notified.

3.16. The section describing the impacts to Guam's economy does not adequately address the potential impacts to commercial fishing and tourist operators or to Guam's tourism economy as a whole. Even short term impacts to commercial fishing and tourism operations result in lost income. This is especially true for areas that have been identified in a recent coral reef valuation study conducted by an international team of researchers as being exceptionally valuable (e.g. Western Shoals, Gab Gab II, Blue Hole, Hap's Reef, and Double Reef). Access to sites that are already restricted when training activities are conducted will be further restricted, while sites not currently restricted may experience restrictions as a result of landing craft training or some other type of training. It is also difficult to understand how the preparers reached the conclusion that there will be no impacts or that impact will be unlikely when access to important fishing grounds such as Galvez and Santa Rosa banks and Double Reef will be restricted more frequently. Repeated incidences, and cumulative impacts of other activities, could cause substantial impact on the viability of certain commercial operations. This is especially true if repeated training activity, such as UNDET exercises or exercises involving landing craft, disturb the resident dolphin pod(s) in Agat Bay to the point of abandoning the site. These potential impacts are not recognized within the DEIS, and thus mitigation for these impacts are not addressed in any way. The claims that there will be no impacts or that impacts will be unlikely to commercial fishing, recreational and subsistence fishing, and tourism are unsubstantiated. Some suggestions are to obtain creel data from DAWR to determine how much use these areas receive and interview fishermen and commercial operators to find out how often they are restricted from important areas and how that impacts their businesses. The potential cumulative impacts of increased intensity/frequency of training activities, in combination with an overall increase in U.S. military presence on Guam, on the tourism economy should also be carried out. It seems reasonable to be concerned about the potential impacts to a tourism economy largely dependent on Japanese tourists. Was there any survey of the Japanese tourists' perceptions of the U.S. military and how

an increased presence may alter their perception of Guam and perhaps change their willingness to visit the island?

3.16.2.2. The supposedly greater "ripple effect" of defense spending versus recreational spending is not a justification for displacing current recreational spending, and is unsubstantiated and is actually quite offensive. Is this statement suggesting that the displacement of recreational spending is beneficial to the economy, thus justifying any impacts to Guam's tourism sector? Do you really think that the people of Guam would rather replace a self-sustaining, locally-managed tourism industry with increased federal defense spending over which they have no control?

3.17. The Recreation section is perhaps one of the weakest sections in the MIRC EIS, and includes what could be described as a cursory analysis of potential impacts. It appears as no interviews with local agencies (e.g., Department of Parks and Recreation or the Guam Coastal Management Program) or with individual recreational users were conducted. As a result, we strongly feel that this section does not adequately address the range of potential impacts to recreational use on Guam. A few of the many examples of potential impacts to recreational users include restricted fishing access to the offshore banks occurring within area W-517, restricted access to the Double Reef and Haputo Bay areas by fishermen, divers, boaters, and other recreators, and restricted access to/disturbance of fishermen, divers, boaters, and other recreators in Apra Harbor and Agat Bay. While temporary, these impacts can be significant when they occur regularly, which is already a concern under the current training regime. While access to these areas is already restricted while training activities are underway under the current level of training, access will be further restricted if either of the action alternatives is adopted. We would also like to reiterate our concern about the inappropriateness of using the 1999 EIS to evaluate the impacts of the current level of training intensity within the present day context. The claim that there will be no significant impact to recreational use is not substantiated, and in contrast we believe that there will indeed be significant impacts to recreational users, especially when considering the cumulative impacts of other military activities.

General Comments:

Based on input provided to us by mayors, vice mayors, and other community members in Agat and Yigo, where the bulk of the training activity impacts would occur, there is concern about the lack of proper notification for a range of exercises that occur in the vicinity of residents. The mayor's office in Agat, for example, was not provided advance notice of training activities occurring off shore of their community, including insertions and extractions involving helicopters. The vice mayor was not personally alarmed by this activity, but was concerned about the potential reaction of some of the residents and the lack of respect demonstrated by the lack of advanced notification. Similar concerns were raised by the Yigo Mayor's Office, which voiced concern over low-flying helicopter activity in residential areas. Concern was also voiced over the potential impact of helicopters flying very low, and along the cliffline, producing loud noise, disturbing wildlife, and potentially harming native vegetation. Helicopter activity was also reported at night from several locations around the island. It is our understanding that

training activities typically occur in daylight hours. There were several other reports of activities occurring without proper notification.

The above concern brings up a larger issue that was commented upon by several community members: who is accountable for deviations from protocol established for various training activities? Where do community members turn when they observe activities that they believe deviate from protocol and cause disruption to their quality of life or cause harm to wildlife or habitat? We have heard numerous reports of activities that appear to be against protocol, but no one – including the mayors - knew what they should do about it. Also, who is accountable in the event of an accident (e.g., plane crash) – the risk of which will increase as the frequency of aircraft events increases? Concern was also raised about the potential for debris to fall from aircraft into residential areas.

The preparers appear to treat all of area W-517 as open ocean, but offshore banks (e.g. Galvez and Santa Rosa banks) occur in this area. These banks are important to fishing and may serve as an important source of larvae for Guam's near shore reefs. Impacts of concern include vessel collision, explosive use, anchoring, and the restriction of access for fishermen.

We wish to emphasize that the Bureau does not agree with DEIS/OEIS conclusion (last paragraph page ES-30) that, "The proposed Action would not be expected to result in any impacts that would reduce environmental productivity, permanently narrow the range of beneficial uses of the environment, or pose long-term risks to health, safety, or the general welfare of the public. The comments and concerns that were received from the Natural Resources agencies and the public are too important to ignore in the development of the Final EIS/OEIS.

Sincerely,

ALBERTO A. LAMORENA V
Director

cc: Guam Environmental Protection Agency
Department of Agriculture/DAWR
Department of Parks & Recreation/Historic Preservation
Department of Land Management
UOG/Guam Soil & Water Conservation

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2009-F-0345

AUG 2 1 2009

Mr. Larry M. Foster
Department of the Navy
U.S. Pacific Fleet

Subject: Initiation of Formal Consultation for the Proposed Mariana Islands Range Complex, Guam and the Commonwealth of the Northern Mariana Islands

Dear Mr. Foster:

This letter acknowledges the U.S. Fish and Wildlife Service's July 22, 2009, receipt of your July 14, 2008, letter requesting initiation of formal section 7 consultation pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*), as amended. The Mariana Islands Range Complex (MIRC) project proposes to support and conduct current and emerging training; implement research, development, testing and evaluation activities; and upgrade or modernize capabilities to enhance and sustain military training and testing in Guam, the Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, and the Republic of Palau. You have determined that implementation of the proposed project will not affect six species; may affect, but is not likely to adversely affect seven species; may affect and is likely to adversely affect one species; and will not adversely modify or destroy critical habitat units for four species (Table 1).

The early coordination between our offices and exceptional effort on the part of U.S. Navy staff has resulted in the Biological Assessment containing all the required information to initiate consultation. However, additional information and some clarification of the Biological Assessment is necessary to complete the consultation. Therefore, we request a coordination meeting as soon as possible. To facilitate this meeting, we have provided our information request in Table 2. We have assigned log number 2009-F-0345 to this consultation. Please refer to that number in future correspondence on this consultation.

Section 7 allows the Service 135 calendar days to deliver the final biological opinion (unless we mutually agree to an extension). Therefore, we expect to provide you with our final biological opinion no later than December 20, 2009.

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As a reminder, the Endangered Species Act requires that after initiation of formal consultation, the Federal action agency may not make any irreversible or irretrievable commitment of resources that limits future options. This practice insures agency actions do not preclude the formulation or implementation of reasonable and prudent alternatives that avoid jeopardizing the continued existence of endangered or threatened species or destroying or modifying their critical habitats.

We appreciate the opportunity to assist you with the proposed project. If you have any questions or concerns about this consultation or the consultation process in general, please feel free to contact Holly Herod, Fish and Wildlife Biologist, at (808) 792-9400.

Sincerely,

Patricia Ashfield

for Loyal Mehrhoff
Field Supervisor

Attachments

Table 1. Endangered and threatened species on Guam and the Commonwealth of the Northern Mariana Islands that may be affected by implementation of the Mariana Islands Range Complex (NE = No Effect; NLAA = May Affect, Not Likely to Adversely Affect; NJ = May Adversely Affect, Non-Jeopardy).

Common Name	Scientific Name	Status	Navy's Determination
Plants			
Hayun Lagu	*Serianthes nelsonii*	E	NE
No common name	*Osmoxylon mariannense*	E	NE
No common name	*Nesogenes rotensis*	E	NE
Reptiles			
Green Sea Turtle	*Chelonia mydas*	T	NLAA
Hawksbill Turtle	*Eretmochelys imbricata*	E	NLAA
Birds			
Nightingale reed-warbler	*Acrocephalus luscinia*	E	NLAA
Mariana Swiftlet	*Aerodramus bartschi*	E	NLAA
Mariana Crow	*Corvus kubaryi*	E	NLAA
Mariana Common Moorhen	*Gallinula chloropus guami*	E	NLAA
Guam Micronesian Kingfisher	*Halcyon c. cinnamomina*	E	NE
Guam Rail	*Gallirallus owstoni*	E	NE
Micronesian megapode	*Megapodius laperouse*	E	NJ
Rota bridled white-eye	*Zosterops rotensis*	E	NE
Mammals			
Mariana Fruit Bat	*Pteropus mariannus*	T	NLAA
Critical Habitat Units	**Common Name**	**Size**	**Adverse Modification**
Ritidian Point, Guam	Mariana fruit bat, Mariana crow, Guam Micronesian kingfisher	152 hectares (376 acres)	NE
Rota	Mariana crow	2,594 ha (6,409 ac)	NE
Rota	Rota bridled white-eye	1,602 ha (3,958)	NE

Table 2. Items within the MIRC Biological Assessment needing additional detail or clarification.

Comment Number	Page Number	Comment
1	3	The MIRC DEIS indicates that the endangered short-tailed albatross *(Phoebastria albatrus)*, endangered Hawaiian petrel *(Pterodroma sandwichensis)*, and threatened Newell's shearwater *(Puffinus auricularis newelli)* have been detected within the action area. However, these species were not considered in section 1.2.3 (species evaluated in the BA) or section 1.2.6 (species eliminated from analysis). Because these species are protected under the ESA and are discussed within the DEIS, we request that you make an affect determination for each of these three species and provide justification to support your determination.
2	8	The BA indicates that Unai Chulu beach on Tinian requires repairs prior to use; however, beach repairs are not included within your action. If the beach will be repaired within the next 5 years (duration of EIS and BO), please provide a description of the type of repairs and how these repairs will be implemented so that we may consider the potential impacts to sea turtles. Alternatiavely, please indicate that if repairs are planned, a separate consultation will be initiated to review potential impacts of this activity to sea turtles.
3	8	The BA indicates that sniper training may occur outside the Exclusive Military Use Area, Tinian on a case-by-case basis. Please confirm that the Navy will request consultation if sniper training is planned outside of areas evaluated within the BA and the subsequent BO, if these areas provide potential habitat for ESA listed species.
4	8	The U.S. Army Reserve was interested in building a training facility and ranges on Saipan. It is our understanding their training needs would be incorporated in the MIRC (reference email exchange April 30 – May 1, 2009). We want to confirm their training needs are covered by the MIRC and no construction is planned for Saipan.
5	9, 39	The training area description for the Marpi Maneuver area is inconsistent with the description on Figure 2.3, page 14. We will analyze the impacts to species within the Marpi Maneuver area based upon Figure 2.3 instead of restricting the analysis to "cow town" to allow for maximum flexibility for military training within this area.
6	9-10	The following locations were included within the action area of the MIRC DEIS but are not listed within the BA as training areas: Kilo Warf, Clipper Channel, Toyland Beach, and Polaris Point Site III. Please let us know if these sites will be used for MIRC training. We can extract the needed site descriptions from the MIRC DEIS.
7	27-35	Each conservation measure needs an implementation timeline or timeframe.

8	27	Interdiction of brown treesnakes on Guam is a multifaceted program. We appreciate that the Navy is committed to a 100 percent inspection rate for all cargo, vessels, and outgoing aircraft. The BA did not indicate all of the interdiction actions that the Navy has previously committed to and currently implements (i.e., control of brown treesnakes occurs in areas in and around shipping sites and includes trapping, toxicant application, hand capture, and public education. Therefore, we will include these actions as a component of our analysis.
9	27	After your statement, "In addition, the Navy will route inbound personnel and cargo for tactical approach exercises that require an uninterrupted flow of events direct to CNMI training locations to avoid Guam seaports and airfields to the extent possible" we recommend you incorporate the following additional conservation measure into section 2.6.1 A bullet one: "Additionally, tactical approach exercises will involve only cargo/equipment that has not originated from areas containing a brown treesnake population or will be 100 percent inspected by certified BTS Detector Canine Programs."
10	27	In the statement above the BA indicates the tactical approach exercises…will avoid Guam to the extent possible. Please provide an example of conditions that may preclude implementation of this measure. Please describe the measures that would be implemented to maintain biosecurity in the event Guam is not avoided during tactical approach exercises.
11	27	Under conservation measure A bullet one, we suggest the following revision "The Navy, in compliance with the DoD Defense Transportation Regulations, Chapter 505 protocols, is committed to implementing 100 percent inspection of all outgoing vessels and aircraft with dog detection teams by USDA-Wildlife Services. The Navy, USFWS, USDA-Wildlife Services and CNMI DFW will evaluate training activities on a case-by-case basis to determine how best to meet 100 percent inspection goals for training activities (DoD 2008, page 3). The Service will have approval and quality-assurance authority over proposed brown treesnake interdiction activities. The Navy in cooperation with USDA -Wildlife Services and the Service will develop Standard Operating Protocols for training activities. The protocols will describe brown treesnake interdiction procedures associated with a specific activity, who is responsible for implementing the activity and who is accountable if protocols are not implemented appropriately. The Navy understands that inspection capacity limitations exist within the present USDA-WS interdiction capabilities and 100 percent inspection might not occur. In the event of military units, vehicles, and equipment leaving Guam without inspection, the Navy will notify the point of destination port or airport authorities. In addition, the Navy will route inbound personnel and cargo for tactical approach exercises that require an uninterrupted flow of events direct to CNMI training locations to avoid Guam seaports and airfields to the extent possible. For example, a Hawaii-based unit destined to Tinian for MOUT training will travel

		direct to Tinian and only pass through Guam on the outbound journey. The Navy is committed to implementing redundant inspections, where and when appropriate after discussions with appropriate stakeholders. Redundant inspections include inspections at the receiving jurisdiction for administrative and logistical movements that do not require a tactical approach to complete the training requirements. It is anticipated that redundant inspections would utilize existing quarantine and inspection protocols at receiving ports."
12	27-28	The Navy has committed to notifying points of destination if units, vehicles, or equipment leave Guam without inspections and have committed to redundant inspections at the receiving jurisdiction for administrative and logistical movements that do not require a tactical approach for training. The Navy anticipates these inspections would use existing quarantine and inspection protocols at receiving ports. Please describe the Navy's anticipated response if the receiving jurisdictions notify the Navy they are unable to provide the inspections. For example: "The Navy will provide staff, tools, and detector dogs to the receiving ports to complete these inspections."
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		so that if avoidance and minimization are not possible, formal consultation can be initiated.
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30	35	Conservation measure 2.6.6 D. The overflight restrictions in the Naval Munitions site (see 2.6.6 A) should minimize impacts to the Mariana swiftlet and further support your NLAA determination for this species. Therefore, we will consider this measure in our analysis for swiftlets.
31	36, 105	Conservation measure 2.6.6 E. We recommend that this conservation measure be revised to state " Potential nesting habitats (palustrine emergent wetlands) are dispersed throughout the SLNA and NLNA. No maneuver and navigation training will occur in areas supporting these habitats to further avoid impacts to the Mariana common moorhen."
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34	44, 106	Mariana fruit bat incidental take limits authorized by the ISR Strike are being approached. We have new information that suggests the colony may not have declined in number on Guam, but is possibly shifting its location. To ensure take is not exceeded we recommend that an additional conservation measure be added to provide for additional monitoring to determine if the colony is shifting.
35	79-80	The BA adequately depicts the Guam National Wildlife Refuge Overlay; however, an analysis of potential impacts and an effect determination was not provided in the BA. Under the Cooperative Agreement between the Navy and the Service, and the Air Force and the Service, any project that may impact endangered or threatened species habitat within the Guam National Wildlife Refuge Overlay (even if the species is not present) must be reviewed under section 7. We request that you make an affect determination regarding training impacts to habitat within the Guam National Wildlife Refuge Overlay.
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37	91	Please confirm that the information regarding decisions made in the Operation Tandem Thrust consultation is provided for informational purposes only and that Operation Tandem Thrust is not proposed for MIRC.

38	93	The clearing of strand vegetation in areas currently used by sea turtles would represent an impact to the species even if the areas were evaluated in the 1999 consultation. Please describe if nesting has occurred within the last ten years at beaches that were evaluated in 1999.
39	98	Cumulative Effects. On Saipan the Marpi Maneuver area has also been proposed for agricultural farm plots. These may or may not receive the benefit of section 7 consultation. Additional harvest of tangantangan for charcoal likely occurs within this area.
40	104-105	Chapter 6.3 lists the species for which you made a NLAA determination and provides supporting justification. For the green sea turtle, you indicate that no additional take is needed because take had been authorized at Sumay Cove in previous consultations. However, no take was previously authorized for green sea turtles at Sumay Cove. Instead this take was previously authorized for hawksbill sea turtles. In addition you mention that the previous take is sufficient to account for increased operations at Sumay. For this consultation you have made an NLAA determination for sea turtles; therefore, no take of adult sea turtles or their nests, eggs, or hatchlings will be authorized or allowed for actions implemented under MIRC. Any previous take authorizations from prior biological opinions will be superseded by this consultation.
41	105	As a point of clarification you indicated that the ISR Strike biological opinion determined that the action would not adversely affect the Mariana crow. Instead the biological opinion determined that the action would not jeopardize the survival and recovery of the Mariana crow.
42	105	To fully support your determination of NLAA for Mariana common moorhen, we recommend the inclusion of additional conservation measures as described above (comment 23 and 27).
43	106	To fully support your NLAA determination for Mariana fruit bat we recommend that you incorporate additional conservation measures as described above (comment 16). MIRC will not increase activities beyond those analyzed for the ISR Strike. If an increase is planned, the Navy should coordinate with our office to determine if the conservation measures and amount of take authorized by the ISR Strike is still appropriate.
44	107	The Navy does not expect take of megapodes on Tinian; however, the BA does not specifically mention that the limestone habitat will be avoided during training. We recommend adding limestone forest avoidance as a conservation measure as described above (comment 24).

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2009-F-0345

AUG 2 1 2009

Mr. Larry M. Foster
Department of the Navy
U.S. Pacific Fleet

Subject: Initiation of Formal Consultation for the Proposed Mariana Islands Range Complex, Guam and the Commonwealth of the Northern Mariana Islands

Dear Mr. Foster:

This letter acknowledges the U.S. Fish and Wildlife Service's July 22, 2009, receipt of your July 14, 2008, letter requesting initiation of formal section 7 consultation pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*), as amended. The Mariana Islands Range Complex (MIRC) project proposes to support and conduct current and emerging training; implement research, development, testing and evaluation activities; and upgrade or modernize capabilities to enhance and sustain military training and testing in Guam, the Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, and the Republic of Palau. You have determined that implementation of the proposed project will not affect six species; may affect, but is not likely to adversely affect seven species; may affect and is likely to adversely affect one species; and will not adversely modify or destroy critical habitat units for four species (Table 1).

The early coordination between our offices and exceptional effort on the part of U.S. Navy staff has resulted in the Biological Assessment containing all the required information to initiate consultation. However, additional information and some clarification of the Biological Assessment is necessary to complete the consultation. Therefore, we request a coordination meeting as soon as possible. To facilitate this meeting, we have provided our information request in Table 2. We have assigned log number 2009-F-0345 to this consultation. Please refer to that number in future correspondence on this consultation.

Section 7 allows the Service 135 calendar days to deliver the final biological opinion (unless we mutually agree to an extension). Therefore, we expect to provide you with our final biological opinion no later than December 20, 2009.

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As a reminder, the Endangered Species Act requires that after initiation of formal consultation, the Federal action agency may not make any irreversible or irretrievable commitment of resources that limits future options. This practice insures agency actions do not preclude the formulation or implementation of reasonable and prudent alternatives that avoid jeopardizing the continued existence of endangered or threatened species or destroying or modifying their critical habitats.

We appreciate the opportunity to assist you with the proposed project. If you have any questions or concerns about this consultation or the consultation process in general, please feel free to contact Holly Herod, Fish and Wildlife Biologist, at (808) 792-9400.

Sincerely,

Patricia Ashfield

for Loyal Mehrhoff
Field Supervisor

Attachments

Table 1. Endangered and threatened species on Guam and the Commonwealth of the Northern Mariana Islands that may be affected by implementation of the Mariana Islands Range Complex (NE = No Effect; NLAA = May Affect, Not Likely to Adversely Affect; NJ = May Adversely Affect, Non-Jeopardy).

Common Name	Scientific Name	Status	Navy's Determination
Plants			
Hayun Lagu	*Serianthes nelsonii*	E	NE
No common name	*Osmoxylon mariannense*	E	NE
No common name	*Nesogenes rotensis*	E	NE
Reptiles			
Green Sea Turtle	*Chelonia mydas*	T	NLAA
Hawksbill Turtle	*Eretmochelys imbricata*	E	NLAA
Birds			
Nightingale reed-warbler	*Acrocephalus luscinia*	E	NLAA
Mariana Swiftlet	*Aerodramus bartschi*	E	NLAA
Mariana Crow	*Corvus kubaryi*	E	NLAA
Mariana Common Moorhen	*Gallinula chloropus guami*	E	NLAA
Guam Micronesian Kingfisher	*Halcyon c. cinnamomina*	E	NE
Guam Rail	*Gallirallus owstoni*	E	NE
Micronesian megapode	*Megapodius laperouse*	E	NJ
Rota bridled white-eye	*Zosterops rotensis*	E	NE
Mammals			
Mariana Fruit Bat	*Pteropus mariannus*	T	NLAA
Critical Habitat Units	**Common Name**	**Size**	**Adverse Modification**
Ritidian Point, Guam	Mariana fruit bat, Mariana crow, Guam Micronesian kingfisher	152 hectares (376 acres)	NE
Rota	Mariana crow	2,594 ha (6,409 ac)	NE
Rota	Rota bridled white-eye	1,602 ha (3,958)	NE

Table 2. Items within the MIRC Biological Assessment needing additional detail or clarification.

Comment Number	Page Number	Comment
1	3	The MIRC DEIS indicates that the endangered short-tailed albatross *(Phoebastria albatrus)*, endangered Hawaiian petrel *(Pterodroma sandwichensis)*, and threatened Newell's shearwater *(Puffinus auricularis newelli)* have been detected within the action area. However, these species were not considered in section 1.2.3 (species evaluated in the BA) or section 1.2.6 (species eliminated from analysis). Because these species are protected under the ESA and are discussed within the DEIS, we request that you make an affect determination for each of these three species and provide justification to support your determination.
2	8	The BA indicates that Unai Chulu beach on Tinian requires repairs prior to use; however, beach repairs are not included within your action. If the beach will be repaired within the next 5 years (duration of EIS and BO), please provide a description of the type of repairs and how these repairs will be implemented so that we may consider the potential impacts to sea turtles. Alternatiavely, please indicate that if repairs are planned, a separate consultation will be initiated to review potential impacts of this activity to sea turtles.
3	8	The BA indicates that sniper training may occur outside the Exclusive Military Use Area, Tinian on a case-by-case basis. Please confirm that the Navy will request consultation if sniper training is planned outside of areas evaluated within the BA and the subsequent BO, if these areas provide potential habitat for ESA listed species.
4	8	The U.S. Army Reserve was interested in building a training facility and ranges on Saipan. It is our understanding their training needs would be incorporated in the MIRC (reference email exchange April 30 – May 1, 2009). We want to confirm their training needs are covered by the MIRC and no construction is planned for Saipan.
5	9, 39	The training area description for the Marpi Maneuver area is inconsistent with the description on Figure 2.3, page 14. We will analyze the impacts to species within the Marpi Maneuver area based upon Figure 2.3 instead of restricting the analysis to "cow town" to allow for maximum flexibility for military training within this area.
6	9-10	The following locations were included within the action area of the MIRC DEIS but are not listed within the BA as training areas: Kilo Warf, Clipper Channel, Toyland Beach, and Polaris Point Site III. Please let us know if these sites will be used for MIRC training. We can extract the needed site descriptions from the MIRC DEIS.
7	27-35	Each conservation measure needs an implementation timeline or timeframe.

8	27	Interdiction of brown treesnakes on Guam is a multifaceted program. We appreciate that the Navy is committed to a 100 percent inspection rate for all cargo, vessels, and outgoing aircraft. The BA did not indicate all of the interdiction actions that the Navy has previously committed to and currently implements (i.e., control of brown treesnakes occurs in areas in and around shipping sites and includes trapping, toxicant application, hand capture, and public education. Therefore, we will include these actions as a component of our analysis.
9	27	After your statement, "In addition, the Navy will route inbound personnel and cargo for tactical approach exercises that require an uninterrupted flow of events direct to CNMI training locations to avoid Guam seaports and airfields to the extent possible" we recommend you incorporate the following additional conservation measure into section 2.6.1 A bullet one: "Additionally, tactical approach exercises will involve only cargo/equipment that has not originated from areas containing a brown treesnake population or will be 100 percent inspected by certified BTS Detector Canine Programs."
10	27	In the statement above the BA indicates the tactical approach exercises…will avoid Guam to the extent possible. Please provide an example of conditions that may preclude implementation of this measure. Please describe the measures that would be implemented to maintain biosecurity in the event Guam is not avoided during tactical approach exercises.
11	27	Under conservation measure A bullet one, we suggest the following revision "The Navy, in compliance with the DoD Defense Transportation Regulations, Chapter 505 protocols, is committed to implementing 100 percent inspection of all outgoing vessels and aircraft with dog detection teams by USDA-Wildlife Services. The Navy, USFWS, USDA-Wildlife Services and CNMI DFW will evaluate training activities on a case-by-case basis to determine how best to meet 100 percent inspection goals for training activities (DoD 2008, page 3). The Service will have approval and quality-assurance authority over proposed brown treesnake interdiction activities. The Navy in cooperation with USDA -Wildlife Services and the Service will develop Standard Operating Protocols for training activities. The protocols will describe brown treesnake interdiction procedures associated with a specific activity, who is responsible for implementing the activity and who is accountable if protocols are not implemented appropriately. The Navy understands that inspection capacity limitations exist within the present USDA-WS interdiction capabilities and 100 percent inspection might not occur. In the event of military units, vehicles, and equipment leaving Guam without inspection, the Navy will notify the point of destination port or airport authorities. In addition, the Navy will route inbound personnel and cargo for tactical approach exercises that require an uninterrupted flow of events direct to CNMI training locations to avoid Guam seaports and airfields to the extent possible. For example, a Hawaii-based unit destined to Tinian for MOUT training will travel

		direct to Tinian and only pass through Guam on the outbound journey. The Navy is committed to implementing redundant inspections, where and when appropriate after discussions with appropriate stakeholders. Redundant inspections include inspections at the receiving jurisdiction for administrative and logistical movements that do not require a tactical approach to complete the training requirements. It is anticipated that redundant inspections would utilize existing quarantine and inspection protocols at receiving ports."
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40	104-105	Chapter 6.3 lists the species for which you made a NLAA determination and provides supporting justification. For the green sea turtle, you indicate that no additional take is needed because take had been authorized at Sumay Cove in previous consultations. However, no take was previously authorized for green sea turtles at Sumay Cove. Instead this take was previously authorized for hawksbill sea turtles. In addition you mention that the previous take is sufficient to account for increased operations at Sumay. For this consultation you have made an NLAA determination for sea turtles; therefore, no take of adult sea turtles or their nests, eggs, or hatchlings will be authorized or allowed for actions implemented under MIRC. Any previous take authorizations from prior biological opinions will be superseded by this consultation.
41	105	As a point of clarification you indicated that the ISR Strike biological opinion determined that the action would not adversely affect the Mariana crow. Instead the biological opinion determined that the action would not jeopardize the survival and recovery of the Mariana crow.
42	105	To fully support your determination of NLAA for Mariana common moorhen, we recommend the inclusion of additional conservation measures as described above (comment 23 and 27).
43	106	To fully support your NLAA determination for Mariana fruit bat we recommend that you incorporate additional conservation measures as described above (comment 16). MIRC will not increase activities beyond those analyzed for the ISR Strike. If an increase is planned, the Navy should coordinate with our office to determine if the conservation measures and amount of take authorized by the ISR Strike is still appropriate.
44	107	The Navy does not expect take of megapodes on Tinian; however, the BA does not specifically mention that the limestone habitat will be avoided during training. We recommend adding limestone forest avoidance as a conservation measure as described above (comment 24).

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1601 Kapiolani Blvd., Suite 1110
Honolulu, Hawaii 96814-4700
(808) 944-2200 • Fax: (808) 973-2941

September 2, 2009

Ms. Nora Macariola-See
Project Manager, CodeEV21
Naval Facilities Engineering Command, Pacific

Dear Ms. Macariola-See:

The National Oceanic and Atmospheric Administration's National Marine Fisheries Service Pacific Islands Regional Office (NMFS) Habitat Conservation Division has reviewed the "Essential Fish Habitat and Coral Reef Assessment for the Mariana Islands Range Complex (MIRC) EIS/OEIS" prepared in May 2009. The document and supporting EIS describe various activities and potential impacts associated with Navy's Marina Islands Offshore Areas. The preferred alternative includes provisions for current training, increased training supported by modernization and upgrades/modifications to existing capabilities, training associated with ISR/strike, and multi-national and/or joint exercises.

NMFS Habitat Conservation Division conducted this review in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. § 662(a)), the Magnuson-Stevens Fishery Conservation and Management Act (MSA), (16 U.S.C. § 1855(b)(2)), Coral Reef Executive Order 13089 and the National Environmental Policy Act. Since this project involves essential fish habitat (EFH), the process is guided by the requirements of our EFH regulations (50 C.F.R. §§ 600.905 - 930), which mandate the preparation of EFH Assessments and generally outline each agency's obligations in this consultation procedure.

FISH AND WILDLIFE COORDINATION ACT /Executive Order 13089

Background. The purpose of the Fish and Wildlife Coordination Act (FWCA) is to ensure that wildlife conservation receives equal consideration and is coordinated with other aspects of water resources development. *See* 16 U.S.C. 661. The FWCA establishes a consultation requirement for federal departments and agencies that undertake any action that proposes to modify any stream or other body of water for any purpose, including navigation and drainage. *See* 16 U.S.C. 662(a). Consistent with this consultation requirement, NMFS provides recommendations and comments to federal action agencies for the purpose of conserving fish and wildlife resources.

Under Executive Order 13089 all federal agencies are obliged to the extent permitted by law to ensure that any actions they authorize, fund, or carry out will not degrade the conditions of U.S. coral reef ecosystems.

Coral reefs are considered special aquatic sites and are afforded protection under a variety of federal statutes. Any adverse impact to these sites must be avoided and minimized to the extent practicable. If impacts can not be avoided, we recommend that a mitigation plan be prepared that compensates for the loss of these resources.

Magnuson-Stevens Fishery Conservation and Management Act

Background. Pursuant to the MSA, the Secretary of Commerce, through NMFS, is responsible for the conservation and management of fishery resources found off the coasts of the United States. *See* 16 U.S.C. 1801 *et seq.* Section 1855(b)(2) of the MSA requires federal agencies to consult with NMFS, with respect to "any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any essential fish habitat identified under this Act." The statute defines EFH as "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity." 16 U.S.C. 1802(10). Adverse effects on EFH are defined further as "any impact that reduces the quality and/or quantity of EFH," and may include "site-specific or habitat-wide impacts, including individual, cumulative or synergistic consequences of actions." 50 C.F.R. § 600.810(a). The consultation process allows NMFS to make a determination of the project's effects on EFH and provide Conservation Recommendations to the lead agency on actions that would adversely affect such habitat. *See* 16 U.S.C. 1855(b)(4)(A).

Essential Fish Habitat

The proposed project site is located in an area that has been identified as essential fish habitat under the following Western Pacific Regional Fishery Management Council (WPRFMC) Fishery Management Plans (FMPs): Pelagics (eggs, larvae, juveniles, adults), Bottomfish (eggs, larvae, juveniles, adults), Crustaceans (eggs, larvae, juveniles, and adults), and Coral Reef Ecosystem (eggs, larvae, juveniles and adults). Potential impacts as a result of this project include direct physical impacts to corals from amphibious landing operations, impacts from turbidity generated by various ship maneuvers and weapons testing, impacts to biota from ingestion or exposure to hazardous materials, and direct physical impacts from "shock waves".

Proposed avoidance/mitigation measures to minimize impacts to EFH include conducting operations in open ocean away from sensitive EFH, avoiding areas of live coral during inshore operations, and restricting amphibious landing to specific areas of designated beaches.

EFH Conservations Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, we recommend that the following measures be implemented to avoid, minimize and mitigate impacts to EFH:

1.) We recommend that further analysis of the impacts of amphibious landings and over the beach insertions/extractions be undertaken. Due to the increased frequency of these events, the impacts are likely to be additive and cumulative in nature. Physical impacts to coral reef habitat will likely be exacerbated by other local anthropogenic impacts. The cumulative impacts of sedimentation caused by landing activities in the harbor in addition to foreseeable development should also be addressed. The Dadi nearshore sandy area (60 to 300 ft depth) beyond the reef margin area is known for garden eels, stingrays and dolphins.
2.) Additional avoidance measures and possibly compensatory mitigation may be required based on this information. Base-line surveys for shallow water detonation site at Tipalao Beach and amphibious landing sites in Tipalao and Dadi Beaches described in the EFH Assessment should be conducted on a scale to accurately characterize the resources. Satellite derived benthic habitat maps are not suitable for the level of detail required. We recommend that charge sizes be limited and appropriately shielded when possible. Detonations should be coordinated with local resource agencies to conduct post detonation inspections.
3.) Recommended avoidance measures for amphibious landings and insertion/extractions (in addition to the sea turtle nesting beach avoidance measures recommended in USFWS B.O. 1-2-98-F-07:
    a. Amphibious landings will occur at high tide to minimize damage to shallow reef habitat.
    b. Amphibious landings will be constrained to specific approaches at each site to minimize impacts. This includes avoiding off-site patch reefs and shoals less than 10ft deep during ingress and regress.
    c. AAV landings will be restricted to an established approach lane and allowed to land only in single file.
    d. LCAC will remain on full cushion until they reach the beach.
    e. Surveys should be conducted before and after each landing and a suitable control site should also be monitored. Surveyors will record coral size frequency data, physical impact to corals, turbidity, fish assemblage and sedimentation rates and topography of each site.
4.) The placement of PUTR transponders in sensitive or coral reef habitat should be avoided This includes Galvez Bank and Santa Rosa Reef, as well as known seamounts and hydrothermal vents that may support deep sea communities.
5.) Due to the increase in hazardous materials being expended, particularly in the W-517 range area, we recommend a risk assessment be conducted to examine the potential for bioaccumulation of heavy metals and other hazardous materials, particularly in food webs supporting fishery management species.
6.) The information provided for the SINKEX is insufficient to evaluate impacts to EFH. This activity has the potential to result in a significant impact to benthic habitat and associated water column due to the size of the vessel, the large amount of weaponry expected to be used in the exercise and the frequency of the exercise. Further analysis will be required to ensure that impacts to EFH are minimized to the extent practicable.

Please be advised that regulations (Section 305(b)(4)(B) of the MSA) to implement the EFH provisions of the MSA require that Federal action agencies provide a written response to this letter

within 30 days of its receipt and at least 10 days prior to final approval of the action. A preliminary response is acceptable if final action cannot be completed within 30 days. Their final response must include a description of measures to be required to avoid, mitigate, or offset the adverse impacts of the activity. If their response is inconsistent with our EFH Conservation Recommendations, they must provide and explanation of the reason for not implementing those recommendations.

Individual actions covered under the EIS may require permitting from the U.S. Army Corps of Engineers. We reserve the right to provide additional comments or conservation recommendations during the Corps permit review process.

NMFS appreciates the opportunity to comment on this project. If you have any questions regarding this determination, contact Mr. Alan Everson at (808) 944-2212 (alan.everson@noaa.gov) in Honolulu or Ms. Val Brown at (671) 735-4032 valerie.brown@noaa.gov in Guam.

Sincerely,

William Robinson
Regional Administrator

Copies Furnished:

Western Pacific Fishery Management Council, 1164 Bishop Street, Suite 1400, Honolulu, HI 96813
U.S. Fish and Wildlife Service, Environmental Services, P.O. Box 50088, Honolulu, HI 96850
U.S. Army Corps of Engineers, Guam Regulatory Branch, PCS 455, Box 188, FPO AP 96540-1088
Guam Environmental Protection Agency, P.O. Box 22439 GMF, Barrigada, Guam 96921
Guam Division of Aquatic and Wildlife Resources, Department of Agriculture, 192 Dairy Road, Mangilao, Guam 96923
Guam Bureau of Planning, Coastal Management Program, P.O. Box 2950, Hagatna, Guam 96932

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2009-F-0345

FEB 2 2 2010

Mr. Larry M. Foster
Department of the Navy
U.S. Pacific Fleet

Subject: Biological Opinion for the Mariana Islands Range Complex, Guam and the Commonwealth of the Northern Mariana Islands 2010-2015

Dear Mr. Foster:

This letter is in response to your July 17, 2009, request for formal consultation for the proposed Mariana Islands Range Complex (MIRC), Territory of Guam and Rota, Tinian, Saipan, and Farallon de Medinilla, Commonwealth of the Northern Mariana Islands (CNMI) (proposed project). The U.S. Navy (USN) is serving as the lead Federal agency for the implementation of the Department of Defense (DoD) military readiness training, increases in training, and infrastructure repairs and improvements to facilitate training associated with MIRC. We received your letter on July 22, 2009. At issue are the potential effects of the proposed project on multiple listed species, critical habitat units, and essential habitat occurring on Guam, Rota, Tinian, Saipan, and Farallon de Medinilla (Table 1; Figure 1). We have reviewed and provided a summary of our concurrence with the determinations made by the USN within this biological opinion. Essential habitat for several listed species is also present on Guam. Per the requirements identified in the Cooperative Agreement between the USAF, USN, and the U.S. Fish and Wildlife Service (USFWS) for the establishment and management of the Guam National Wildlife Refuge (USAF and USFWS 1994, p. 6; USN and USFWS 1994, p. 6), we have provided coordination regarding potential impacts to essential habitat from the proposed project. The findings and recommendations in this consultation are based on: (1) numerous email exchanges, phone calls and meetings with staff from your office; (2) the Draft Environmental Impact Statement for the MIRC dated January 2009 (USN 2009a, 1,444 pp.); (3) the biological assessment for the MIRC dated July 2009 (USN 2009b, 120 pp.); and (4) other information available to us. A complete administrative record is on file in our office. This response is in accordance with section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*).

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Table 1. Endangered and threatened species on Guam and the Commonwealth of the Northern Mariana Islands that may be affected by implementation of the Mariana Islands Range Complex (NE = No Effect; NLAA = May Affect, Not Likely to Adversely Affect; NJ = May Adversely Affect, Non-Jeopardy).

Common Name	Scientific Name	Status	USN ESA Determination
Plants			
Hayun Lagu	*Serianthes nelsonii*	E	NE
No common name	*Osmoxylon mariannense*	E	NE
No common name	*Nesogenes rotensis*	E	NE
Reptiles			
Green Sea Turtle	*Chelonia mydas*	T	NLAA
Hawksbill Turtle	*Eretmochelys imbricata*	E	NLAA
Birds			
Nightingale reed-warbler	*Acrocephalus luscinia*	E	NLAA
Mariana Swiftlet	*Aerodramus bartschi*	E	NLAA
Mariana Crow	*Corvus kubaryi*	E	NJ
Mariana Common Moorhen	*Gallinula chloropus guami*	E	NLAA
Guam Micronesian Kingfisher	*Todirhamphus c. cinnamominus*	E	NE
Guam Rail	*Gallirallus owstoni*	E	NE
Micronesian megapode	*Megapodius laperouse*	E	NJ
Short-tailed albatross	*Phoebastria albatrus*	E	NE
Hawaiian petrel	*Pterodroma sandwichensis*	E	NE
Newell's Shearwater	*Puffinus auricularis newelli*	T	NE
Rota bridled white-eye	*Zosterops rotensis*	E	NE
Mammals			
Mariana Fruit Bat	*Pteropus mariannus*	T	NJ
Critical Habitat Units	**Common Name**	**Size**	**USN ESA Determination**
Guam National Wildlife Refuge Ritidian Point Unit, Guam	Mariana fruit bat, Mariana crow, Guam Micronesian kingfisher	152 hectares (376 acres)	NE
Rota	Mariana crow	2,594 hectares (6,409 acres)	NE
Rota	Rota bridled white-eye	1,602 hectares (3,958 acres)	NE
Essential Terrestrial Habitat	**Common Name**	**Size**	
Guam National Wildlife Refuge Overlay, USAF and USN	Mariana Fruit Bat, Mariana Crow, Guam Micronesian Kingfisher, Guam Rail, Mariana Common moorhen, Mariana swiftlet	22,536 hectares (9,118 acres)	---

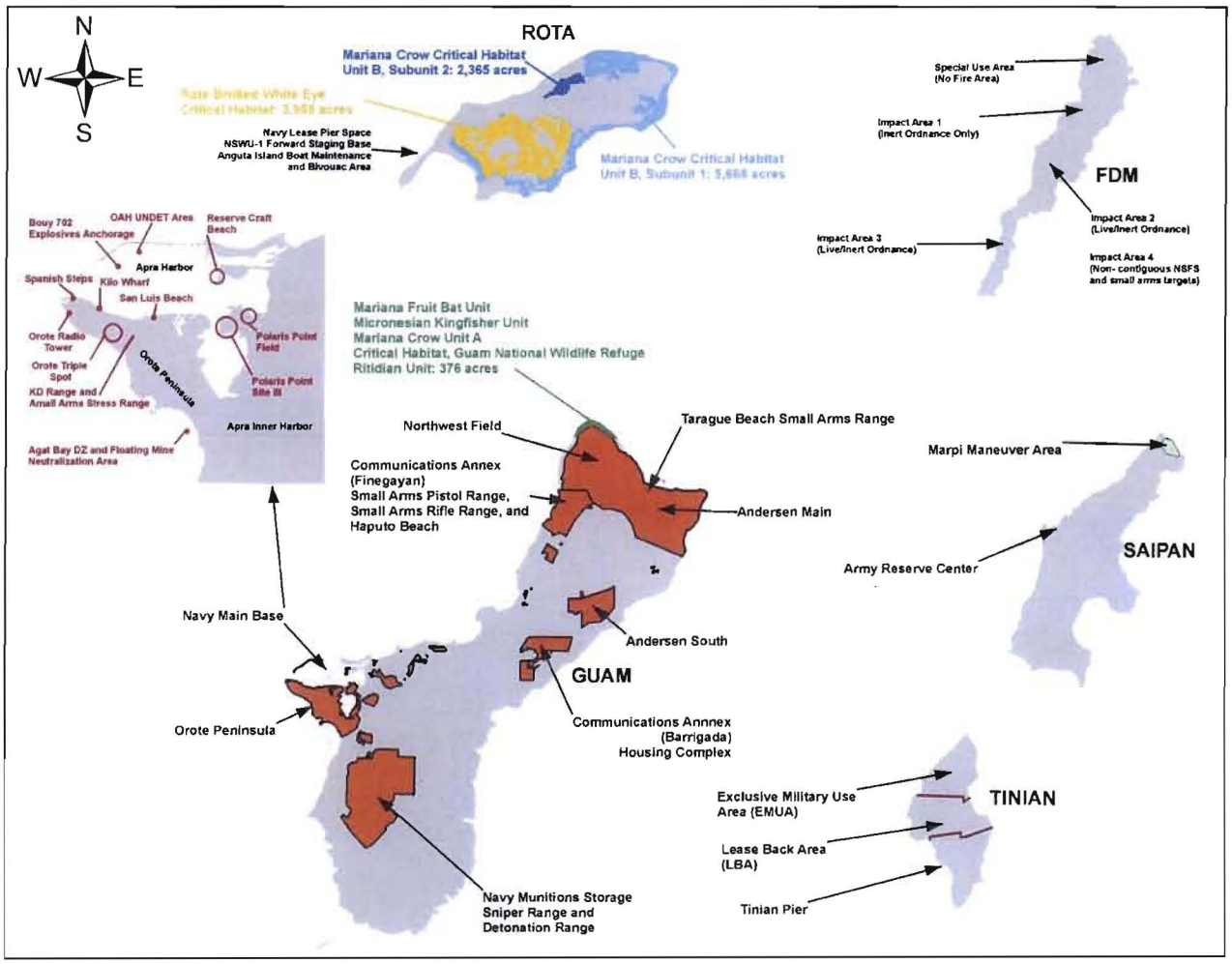

Figure 1. Mariana Islands Range Complex action areas (USN, unpublished).

CONSULTATION HISTORY

January 4, 1999. The USFWS completed the formal consultation for "Military Training in the Marianas" (USFWS 1999, 43 pp).

June 8, 2007. The USFWS received a letter from the USN dated June 1, 2007, that included a copy of the Federal Register document announcing the Notice of Intent for the MIRC and public scoping meetings.

July 30, 2007. The USFWS sent a letter to the USN providing comments on the Notice of Intent to develop an Environmental Impact Statement-Overseas Environmental Impact Statement (Draft EIS-OEIS) for MIRC (USFWS 2007a, 2 pp.).

March 7, 2008. Vanessa Pepi (USN) met with Patrice Ashfield (USFWS) to discuss informal consultation information needs.

March 28, 2008. The USFWS received a letter from the USN dated March 26, 2008, requesting concurrence on a species list for the biological assessment and to establish a date-of-record for requesting informal consultation.

May 2, 2008. The USFWS sent a letter to the USN dated May 2, 2008, concurring with the species list, accepting informal consultation, and providing additional technical assistance (USFWS 2007b, 9 pp.).

June 20, 2008. Vanessa Pepi (USN) met with the USFWS (Patrice Ashfield and Holly Herod) to develop a tentative timeline for the Section 7 consultation.

August 14, 2008. Vanessa Pepi (USN) met with Holly Herod (USFWS) to discuss a preliminary draft version of the biological assessment and information needs.

September 25, 2008. Vanessa Pepi (USN) met with Holly Herod (USFWS) to discuss conservation measures for the proposed action.

October 10, 2008. Vanessa Pepi (USN) and Ed Lynch (USN contractor) attended meetings with USFWS representatives (Patrice Ashfield, Holly Herod, Earl Campbell, and Karl Buermeyer) to discuss conservation measures for the proposed action.

November 10, 2008. Vanessa Pepi (USN) met with Holly Herod (USFWS) to discuss a preliminary draft version of the biological assessment and the need for additional conservation measures.

December 31, 2008. Vanessa Pepi (USN) and Holly Herod (USFWS) met to discuss the preliminary draft version of the biological assessment and additional conservation measures.

March 2, 2009. Vanessa Pepi (USN) provided an update via email to Holly Herod (USFWS) regarding the Draft EIS-OEIS public hearings and site visits to the Songsong area of Rota.

March 16, 2009. The USFWS provided comments to the USN regarding the Draft EIS-OEIS for the MIRC (USFWS 2009a, 19 pp.).

April 2, 2009. Vanessa Pepi (USN) and Earl Campbell (USFWS) held a conference call to discuss the conservation measures specific to brown treesnake interdiction and control.

April 23-24, 2009. Vanessa Pepi (USN) and Holly Herod (USFWS) exchanged emails regarding preliminary determination of effects for Mariana common moorhens at Fena Reservoir and nightingale reed warbler on Saipan.

May 1, 2009. Vanessa Pepi (USN) and Holly Herod (USFWS) exchanged emails to answer questions regarding moorhen utilization of storm water settling ponds at Andersen Air Force Base and beach-specific turtle nesting data for Tinian. Emails were also exchanged to answer questions related to Army Reserve training on Saipan.

June 4, 2009. Representatives of the USFWS (Earl Campbell, Holly Herod, and Karl Buermeyer) met with Vanessa Pepi (USN) and Ed Lynch (USN contractor) to discuss conservation measures related to invasive species control and interdiction.

June 8-19, 2009. Holly Herod (USFWS) attended site visits to MIRC training areas on Guam, Rota, Tinian, and Saipan with USN representatives (Vanessa Pepi, Anne Brooke, and Gretchen Grimm).

June 9, 2009. Ed Lynch (USN contractor) provided to USFWS an organizational chart for the Joint Region. The information provided to USFWS also included USN point of contact information for scheduling brown treesnake coordination meetings.

July 22, 2009. The USFWS received a request from the USN to initiate formal consultation for the MIRC.

August 21, 2009. The USFWS provided the USN with a letter accepting initiation of formal consultation and a table of items needing minor clarification (USFWS 2009b, 10 pp.).

September 3, 2009. Holly Herod (USFWS) and Vanessa Pepi (USN) met to resolve the items for clarification outlined in the initiation letter.

December 18, 2009. The USFWS provided a draft biological opinion to the USN.

February 1, 2010. The USFWS received comments from the USN regarding the draft biological opinion.

February 4, 2010. Holly Herod (USFWS) and Vanessa Pepi (USN) met to resolve outstanding comments related to the draft biological opinion.

February 5 – 18, 2010. Holly Herod (USFWS) and Vanessa Pepi (USN) exchanged multiple emails to resolve all outstanding comments related to the draft biological opinion.

SUMMARY OF THE PROPOSED ACTION

The purpose of the proposed action is to achieve and maintain Department of Defense (DoD) readiness using the MIRC to support and conduct current, emerging, and future training and research, development, testing, and evaluation activities, while enhancing training resources throughout the Pacific. The proposed action does not involve extensive changes to the existing MIRC facilities, activities, or training capabilities, nor does it involve an expansion of the existing MIRC property (USN 2009a, p. 1-2). The proposed action does not involve the redeployment of U.S. Marine Corps, USAF personnel or assets, carrier berthing capability, or deployment of strategic missile defense assets to the MIRC. Instead, the proposed action focuses on the development and improvement of existing training capabilities in the MIRC and will not include any military construction projects, other than repairs and improvements to existing training areas.

Training actions that may affect terrestrial resources can be grouped into the following activities: 1) Strike Warfare; 2) Amphibious Warfare; 3) Expeditionary Warfare; 4) Special Warfare; 5) Special Expeditionary Warfare; and 6) Anti-Terrorism and Force Protection (USN 2009b, p. 8). Appendix A lists each training category, specific actions within the training category, the equipment (platform) and ordnance used, the existing and proposed level of training, and the action areas where the training may occur. See below for a brief list of actions at each training area. One annual Joint Multi-Strike Group Exercise is also proposed. All activities associated with the Joint Multi-Strike Group Exercise are located in open ocean; therefore, this activity will not be considered within this consultation.

ACTION AREA

This consultation reviews anticipated impacts to the listed species using terrestrial areas of the MIRC and will encompass all of Farallon de Medinilla and portions of Saipan, Tinian, Rota, and Guam. Near-shore marine and open ocean activities and the potential impacts to listed species there are not evaluated within this consultation as these species and their habitats are under the jurisdiction of the National Marine Fisheries Service.

Farallon de Medinilla (USN 2009b, pp. 8, 30). The action area on Farallon de Medinilla (FDM) includes the entire island and is approximately 74 hectares (182 acres) in size (Figure 2). Farallon de Medinilla is leased by DoD from the CNMI and is used for live and inert bombing via surface-to-ground and air-to-ground training via strike, amphibious, and special warfare. Three impact areas are targeted: inert ordnance is used in Area 1 and inert and live ordnance is used in Areas 2 and 3. These impact areas total approximately 13.8 hectares (34 acres), which accounts for approximately 20 percent of the island's area. The northern portion of the island is protected from bombardment and training and is referred to by the USN as the "No Drop Zone." The "No Drop Zone" is depicted on Figure 2 as the area above the "No Fire Line."

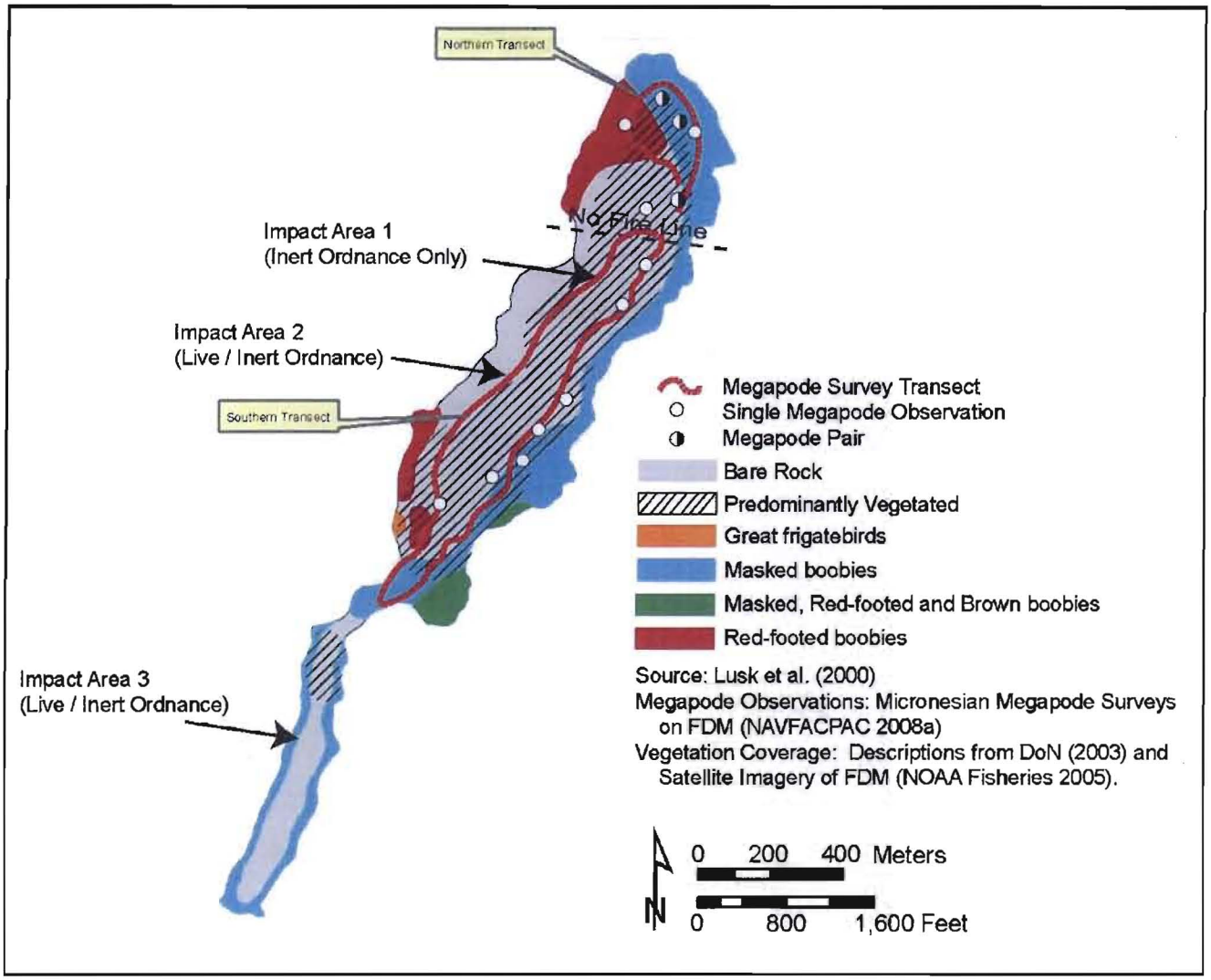

Figure 2. Farallon de Medinilla (USN 2009b, p. 12). The "No Drop Zone" is the region above the "No Fire Line."

Range maintenance will also occur to facilitate target installation and maintenance and reduce potential migration of munitions constituents off-range (USN 2009c, p. 2). To complete range maintenance, vegetation within a section of Impact Area 1 will be cleared (approximately 3.3 hectares; 8.3 acres) to allow adequate safety measures for personnel to conduct clearance operations of range residue (ordnance scrap and target debris which includes unexploded ordnance). Vegetation will be cleared either by the use of herbicides and prescribed burns. Range maintenance will occur as needed and is anticipated to occur once every two to five years.

Saipan (USN 2009b pp. 8-9, 14). Training on Saipan occurs at the Army Reserve Center in Garapan, the Commercial Port (40.5 hectares; 100 acres), and Marpi Maneuver Area (151.5 hectares; 374.5 acres) (Figure 3). The Saipan Army Reserve Center contains an armory, classrooms, administrative areas, maintenance facilities, laydown areas (areas of pavement, dirt, or short grasses) and supports command and control, logistics, anti-terrorism and force

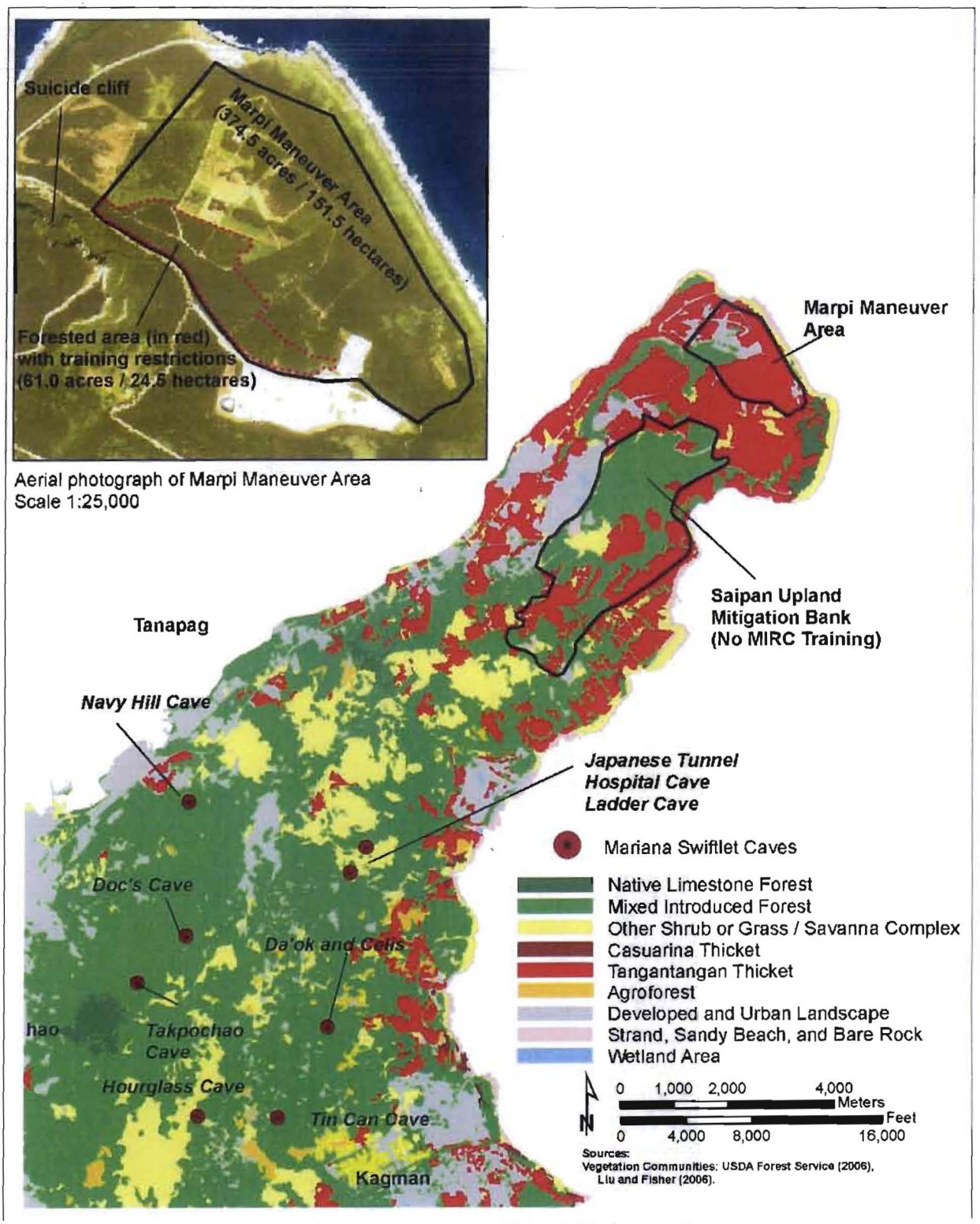

Figure 3. Saipan and the Marpi Maneuver Area (USN 2009b, p. 14).

protection, bivouac, vehicle land navigation, convoy training, and other headquarter activities. The Commercial Port is used for visit-board-search-seizure, anti-terrorism and force protection, and naval special warfare training activities. The Marpi Maneuver Area is used for pedestrian land navigation training.

Tinian (USN 2009b, p. 8). The Tinian Military Lease Area encompasses 6,230 hectares (15,400 acres) on the island of Tinian, leased by DoD from CNMI (Figure 4). Training on Tinian is conducted on two parcels within the Tinian Military Lease area: the Exclusive Military Use Area encompassing 3,080 hectares (7,600 acres) on the northern third of Tinian and the Leaseback Area encompassing 3,150 hectares (7,800 acres) on the middle third of Tinian.

The Exclusive Military Use Area is comprised of North Field and three beaches (Unai Chulu, Unai Dankulo (Long Beach), and Unai Babui). North Field is used for vertical and short field landings, command and control, air traffic control, logistics, armament, fuels, rapid runway repair, other airfield-related requirements, bivouac, and force on force airfield defensive and offensive training. Active live-fire is completed only by snipers using small arms and bullet traps and is associated with North Field World War II structures. Unai Chulu and Unai Dankulo may be used for landing craft air cushion training. Historically, only Unai Chulu has been used for landing craft air cushion training; however, additional use of this beach will require beach repairs. Unai Babui is a rocky beach and may be used for amphibious assault vehicle training.

The Leaseback Area is used for military operations in urban terrain, command and control, logistics, bivouac, vehicle land navigation, convoy training, and other field activities. Active live-fire occurs only within the old Japanese Communications Building using small arms and bullet traps.

One annual Joint Expeditionary Exercise is proposed for Tinian Exclusive Military Use Area. Pyrotechnics are restricted to paved runway areas and vehicles are limited to pavement or existing trails. The purpose of the action is to train a joint task force in crisis action planning for execution and contingency operations. Five annual Marine Air Ground Task Force (MAGTF) Exercises are proposed. An exercise may last up to ten days and is designed to maneuver and seize objectives and conduct self-sustaining operations with logistic support. These actions occur on Tinian and Guam in the action areas described above.

Tinian Harbor is outside of the Military Lease Areas and may be used for amphibious assault, amphibious raid, and humanitarian assistance and disaster relief operation training (USN 2009b, pp. 21-24, 41).

Rota (USN 2009b, p. 9). Training on Rota occurs at Angyuta Island, Songsong Harbor, and on non-DoD lands (Rota International Airport, Songsong Village, other areas in conjunction with local law enforcement) (Figure 5). Angyuta Island is used as a forward staging base and overnight bivouac site. Songsong Harbor is a commercial port facility used for boat refueling and maintenance. Visit-board-search-seizure and insertion-extraction training may occur at the harbor as well. The Rota International Airport is used for high altitude low opening parachute training and may be used for airfield seizure, anti-terrorism and force protection, surveillance

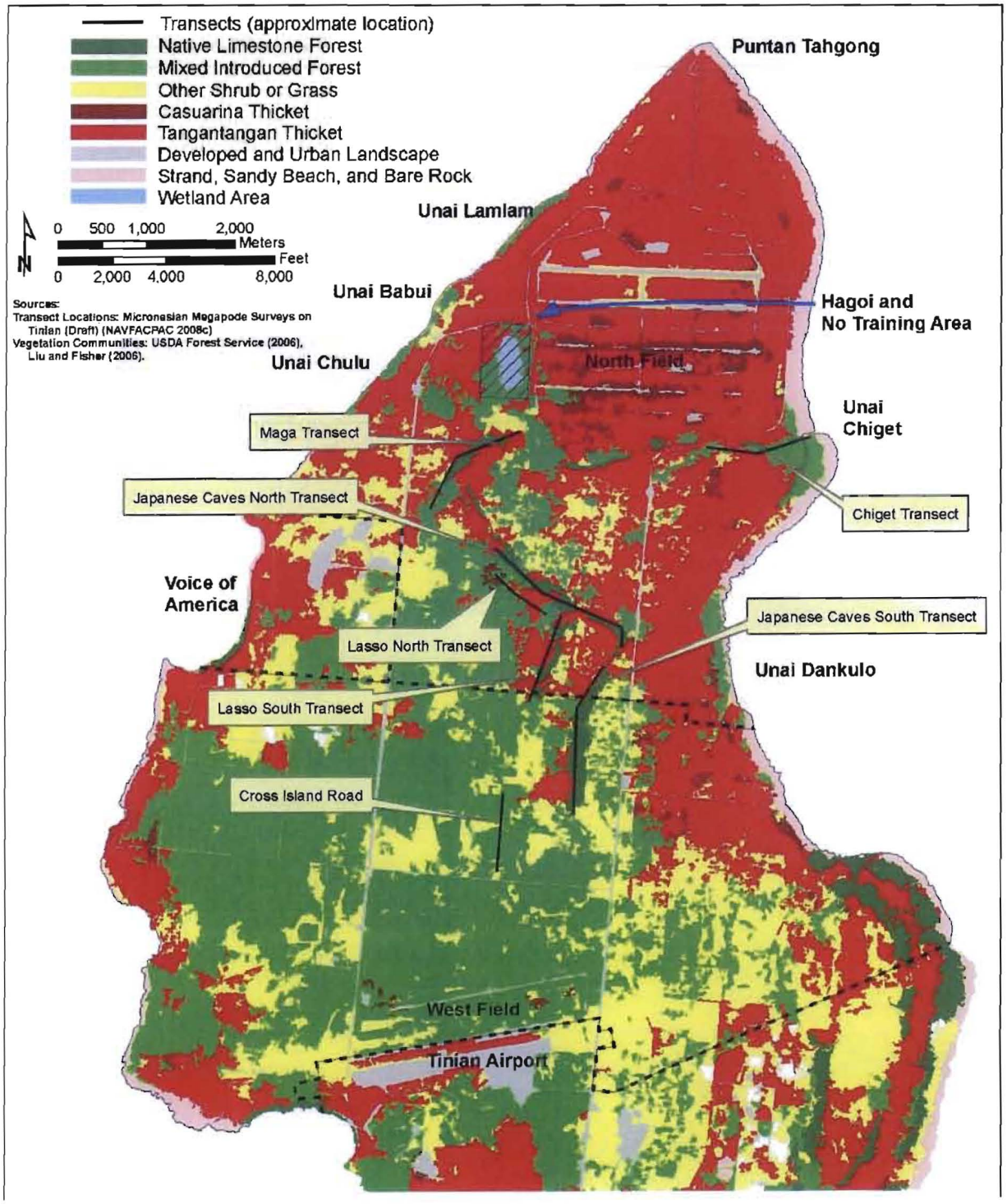

Figure 4. Military Lease Area, Tinian (USN 2009b, p. 13). No training occurs in the "No Training Area" or the native limestone forest.

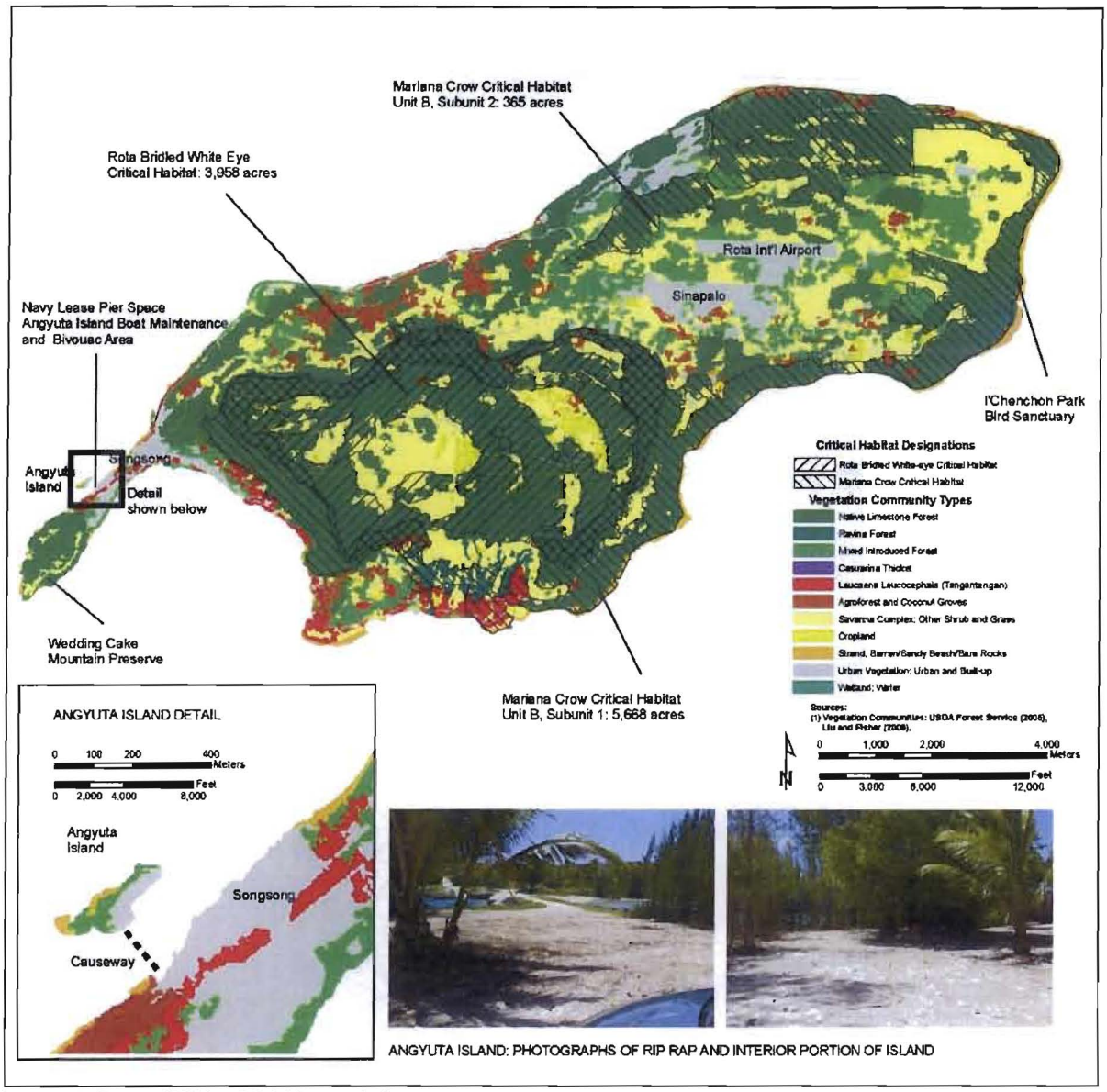

Figure 5. Rota (USN 2009b, p. 15).

and reconnaissance training. Military operations in urban terrain occur in Songsong Village. Other non-DoD lands in the municipality of Rota are used for special warfare training including hostage rescue, anti-terrorism and force protection, surveillance and reconnaissance, noncombatant evacuation operations, and military operations in urban terrain.

Guam (USN 2009b, pp. 9-11). Training on Guam includes multiple locations on DoD lands (Figures 5-9). In addition to routine training at the action areas below, five annual TRUEX (training in urban environment exercise) are proposed which consist of up to three Marine Corps companies training simultaneously with small arms and blanks. TRUEX typically takes place at Andersen South, but may also occur at Finegayan Housing Area, Barrigada Housing, and Northwest Field and is conducted over a period of weeks. Two annual Special Purpose Marine

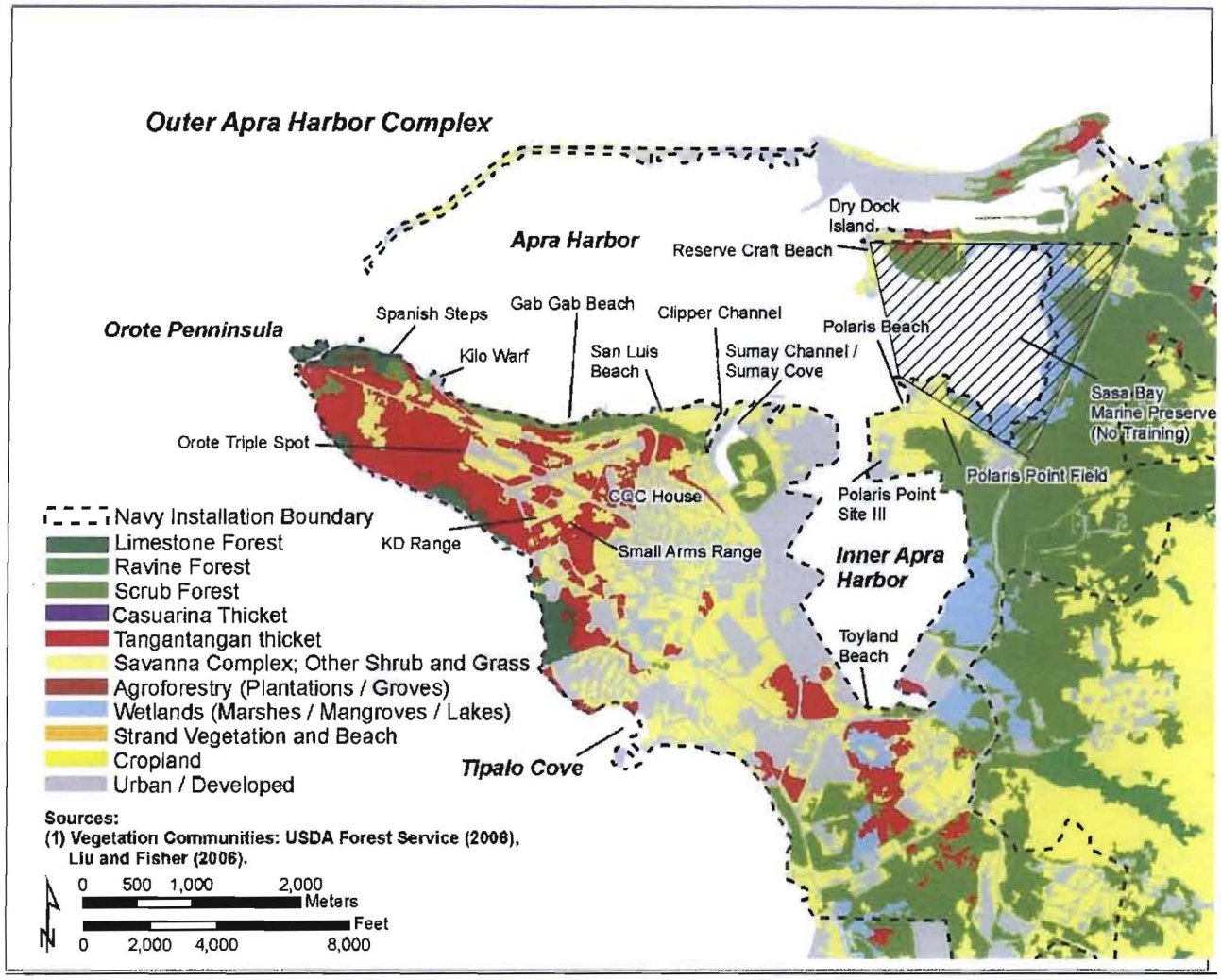

Figure 6. Naval Main Base, Guam (USN 2009b, p. 16).

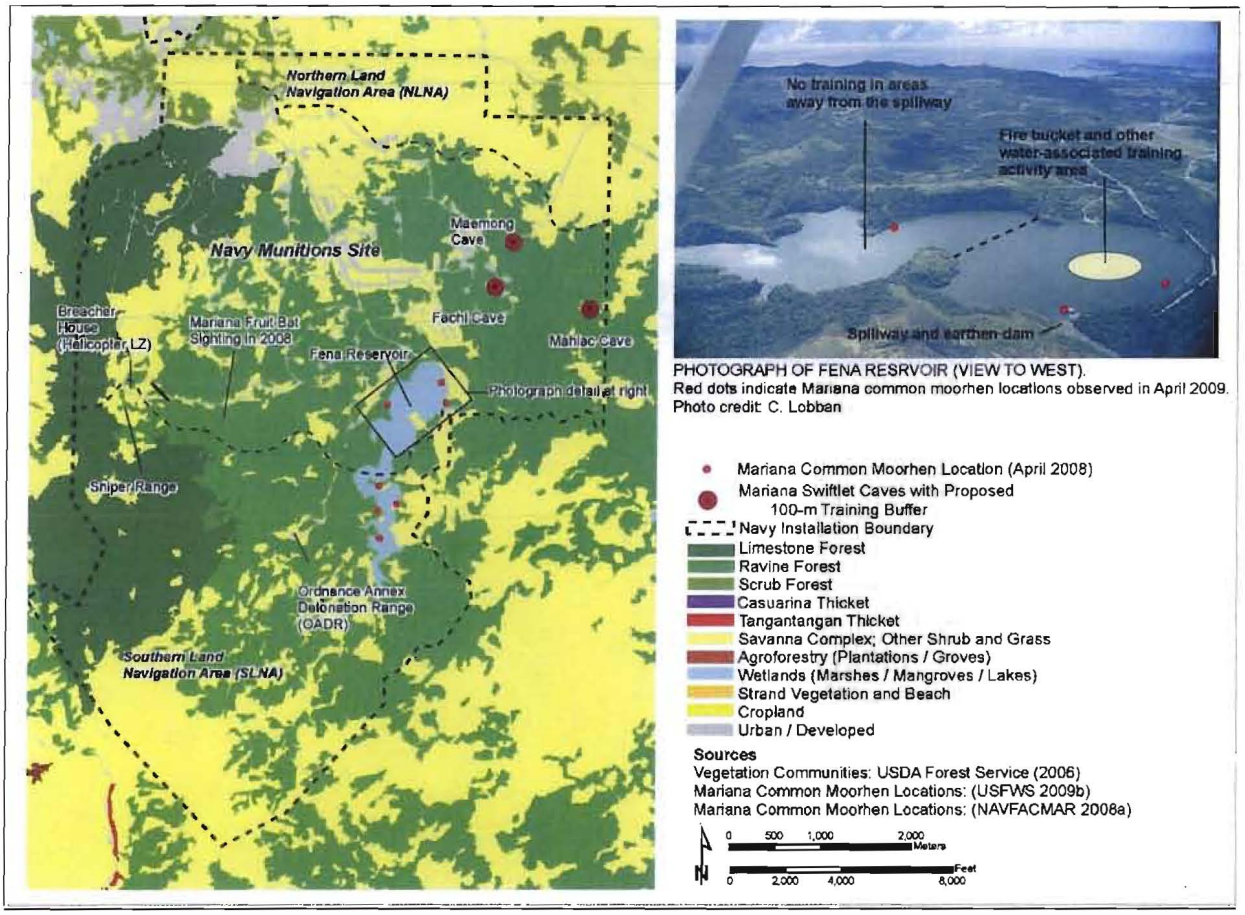

Figure 7. Naval Ordnance Annex, Guam (USN 2009b, p. 17).

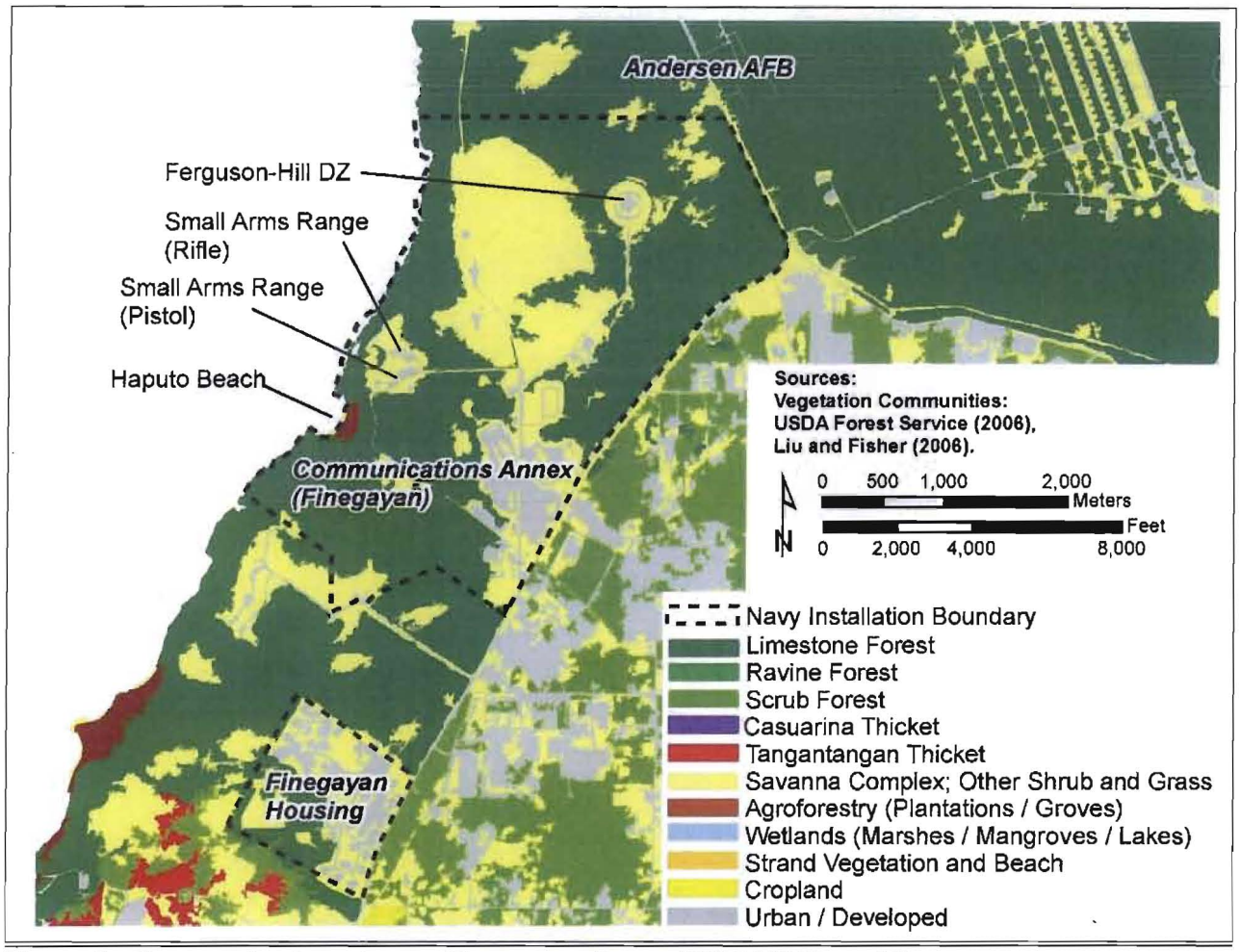

Figure 8. Communications Annex-Finegayan, Guam (USN 2009b, p. 18).

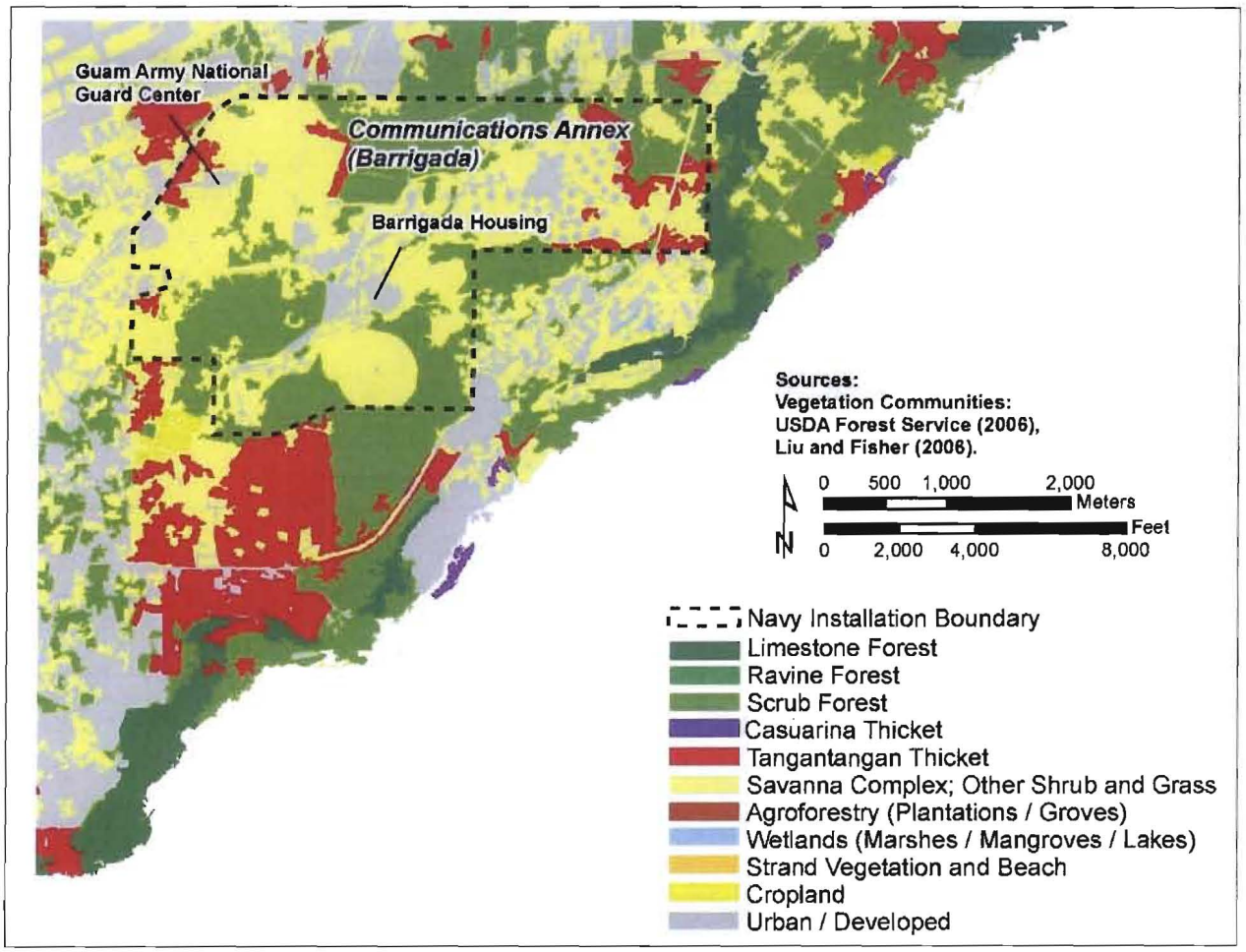

Figure 9. Communications Annex-Barrigada, Guam (USN 2009b, p. 19).

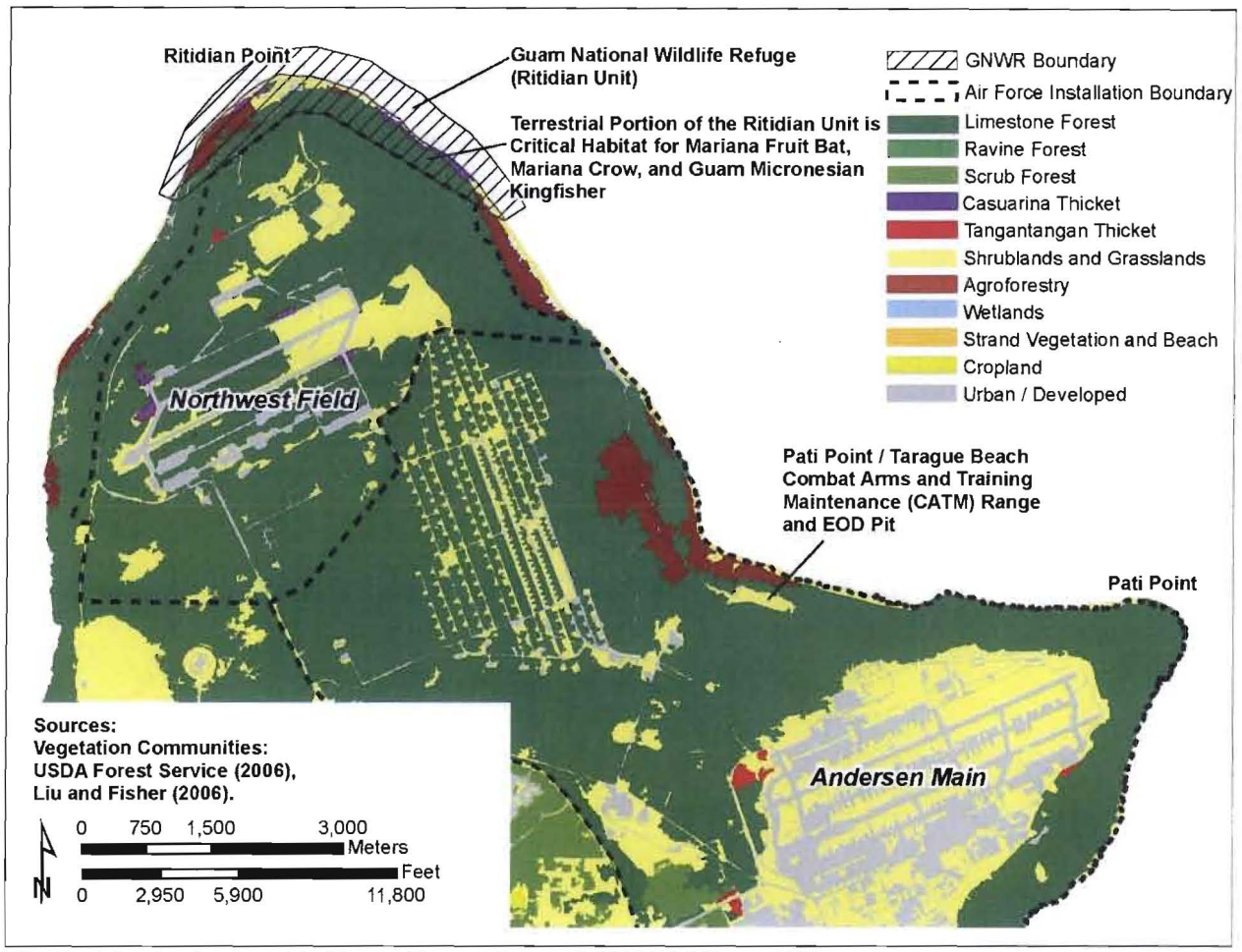

Figure 10. Andersen Air Force Base, Guam (USN 2009b, p. 20).

Air Ground Task Force Exercises are proposed and involve the introduction of forces, evacuation of non-combatants, and a planned withdrawal of all personal and non-combatants. Movement of people includes the use of helicopters, landing craft air cushion or other landing craft and may occur during the day or night at the action areas above.

Apra Harbor Naval Complex and Naval Main Base (2,511 hectares; 6,205 acres)

Tipalao Cove – Has the capability to support landing craft air cushion and amphibious assault vehicles training.

Dadi Beach (USN 2009a, p. 3.8-24) – Has the capability to support landing craft air cushion, landing craft utility, amphibious assault vehicles, combat rubber raiding craft, rigid-hulled inflatable boats, over the beach swimmer insertions, and combat swimmer special training against ships.

Gab Gab Beach – Used primarily for support of explosive ordnance disposal and naval special warfare activities including: military diving, logistics training, small boat activities, security activities, drop zones, and anti-terrorism and force protection. The beach is also used for recreational activities.

Reserve Craft Beach – Used as an offload area for amphibious landing craft including landing craft air cushion, inert explosive ordnance disposal training, military diving, logistics training, small boat activity, security activities and anti-terrorism and force protection.

Sumay Channel and Cove – Provides moorage for recreational and other small boats, and used for insertion-extraction training for naval special warfare, amphibious vehicle ramp activity, military diving, logistics training, small boat activities, security activities, and anti-terrorism and force protection training.

San Luis Beach – Used for explosive ordnance disposal and naval special warfare including: military diving, logistics training, small boat activities, security activities, drop zones, visit-board-search-seizure, and anti-terrorism and force protection. The beach is also used for recreational activities.

Toyland Beach – Is suitable for landing craft air cushion, landing craft utility, amphibious assault vehicles, combat rubber raiding craft, rigid-hulled inflatable boats, over the beach swimmer insertions, and combat swimmer special training against ships.

Polaris Point Field – Used for small field training exercises, temporary bivouac, craft laydown, parachute insertions, assault training activities, anti-terrorism and force protection, explosive ordnance disposal, and special forces training. The beach is also used for recreational activities and provides access to small landing craft.

Polaris Point Beach – Used for military diving, logistics, training, small boat activities, amphibious landings including landing craft air cushion, security activities, drop zones, and anti-terrorism and force protection. The beach is also used for recreational activities.

Orote Point Airfield and Runway – Used for vertical and short field military aircraft, field training exercise, parachute insertions, emergency vehicle driver training, explosive ordnance disposal, and special warfare training.

Orote Point Close Quarter Combat Facility – This is a small, one-story building where small arms, live-fire training occurs in support of military operations in urban terrain activities.

Orote Point Small Arms Range and Known Distance Range – Used for small arms, machine gun training (up to 7.62 millimeter), and sniper training to a distance of 457 meters. This range is a long, flat, cleared area with an earthen berm used as a backstop. The range will be upgraded to an automated scored range system.

Orote Point Triple Spot – This area supports a helicopter landing zone and is used for personnel transfer, logistics, parachute training, and other training activities using helicopter transport.

Ordnance Annex (3,561 hectares; 8,800 acres)

Breacher House – This area supports a concrete structure used for tactical entry (small explosive charge) and a helicopter landing zone used for raid assault activities.

Emergency Detonation Site – This area has a helicopter landing site and is certified to detonate explosives up to 3,000 pounds.

Sniper Range – Open terrain with a natural earthen backstop used to support marksmanship training with sniper rifles (ammunition up to .50 caliber).

Northern Land Navigation Area – This location supports small field exercises and foot and vehicle land navigation training.

Southern Land Navigation Area – This location supports pedestrian land navigation.

Fena Reservoir – This location supports close air support, combat search and rescue, insertion-extraction, and fire bucket training.

Communications Annex-Finegayan (1,214 hectares; 3,000 acres) – This area supports field exercises and military training in urban terrain.

Haputo Beach – is used for small craft landings (combat rubber raiding craft) and over the beach insertions. The training area is part of the Haputo Ecological Reserve Area.

Finegayan Small Arms Ranges – This area is a long, flat, cleared location with an earthen berm that supports qualification and small arms training up to 7.62 millimeters.

Finegayan Housing Area – This area is a group of unoccupied buildings that support company size (200-300 troops) military operations in urban terrain including the use of landing and drop zones.

Ferguson Hill – Is currently used as a landing zone. The use and logistics of a new drop zone is being considered by the Federal Aviation Administration and may be permitted in the future.

Open Fields – These areas are used for command and control, logistics, bivouac, vehicle land navigation, convoy training, and other field activities.

Communications Annex-Barrigada (728 hectares; 1,800 acres) – This location supports field exercise and military operations in urban terrain and consists of unoccupied housing units and open areas (former transmitter sites). Command and control, logistics, bivouac,

vehicle land navigation, convoy training, and other field activities occur in this location. The Army Reserve Center and Guam Army National Guard Center are also located in Barrigada. The Army Reserve Center provides an indoor small arms range (9 millimeter) and the Guam Army National Guard Center contains an armory, classrooms, administrative areas, maintenance facilities, and laydown areas (USN 2009a, p. 2-22).

Northwest Field (1,821 hectares; 4,500 acres) – Northwest Field is an unimproved expeditionary World War II era airfield used for vertical and short field landings. Approximately 280 acres of land are cleared near the eastern end of both runways for parachute drop training (see also USFWS 2008a, 30 pp.). The south runway is used for short field and vertical lift aircraft training and often supports various types of ground maneuver training. Helicopter units use other paved surfaces for confined area landing, simulated amphibious ship helicopter deck landings, and insertions and extractions of small maneuver teams. About 3,562 acres in Northwest Field are used as maneuver training areas for field exercises and bivouacs. Routine training exercises include camp and tent setup, survival skills, land navigation, day and night tactical maneuvers and patrols, blank ammunition and pyrotechnics firing, treatment and evaluation of casualties, fire safety, weapons security training, perimeter defense and security, field equipment training and chemical attack and response. This area also supports Northwest Field Beddown and Training and Support Initiative, which co-located the rapid engineer deployable heavy operations repair squadron engineers, that includes its silver flag training unit, the commando warrior training program, and the combat communications squadron (see also USFWS 2006a, 7 pp.; USFWS 2009c, 5 pp.).

Andersen Air Force Base (AFB) Main Base (4,654 hectares; 11,500 acres) – The base is used for aviation, small arms at bermed, outdoor ranges, and explosive ordnance training. As a working airfield, the base has a full array of operations, maintenance, and community support facilities and supports all U.S. Military aircraft and personnel transiting the Mariana Islands. Facilities are available for cargo staging and inspection.

Andersen South (778 hectares; 1,922 acres) – Andersen South consists of abandoned military housing and open area. Andersen South open fields and wooded areas are used for basic ground maneuver training including routine training exercises, camp and tent setup, survival skills, land navigation, day and night tactical maneuvers and patrols, blank ammunition and pyrotechnics firing, treatment and evaluation of casualties, fire safety, weapons security training, perimeter defense and security, and field equipment training. Vacant single family housing and vacant dormitories are used for military operations in urban terrain and small unit tactics. The current state of the buildings may need some repairs to interior and exterior surfaces (e.g., hanging doors) to be suitable for training (USN 2009a, p. 2-18).

Pati Point Combat Arms Training and Maintenance Rifle Range (8.5 hectares; 21 acres) – This location is used for small arms training with pistols, rifles, machine guns, and inert mortars up to 60 millimeters. Training is also conducted with a 40 millimeter grenade launcher (M203) using inert training projectiles without percussive force.

CONSERVATION MEASURES

The following conservation measures are designed to avoid or minimize effects to listed species and their habitats or further the recovery of the species under review. All conservation measures are proposed in the biological assessment (USN 2009b, pp. 27-35; or as revised during a meeting held September 3, 2009) unless otherwise noted. Conservation measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinitiate this consultation. Implementation of many of the measures included below are already underway. For the actions that are not currently in place, we anticipate that these will be implemented immediately upon finalization of this biological opinion unless otherwise stated.

General Measures These actions will be implemented throughout all MIRC action areas and are intended to avoid and minimize effects and risks to endangered and threatened species and their habitats.

1.0 Invasive Species Interdiction and Control

1.1 Brown Treesnake Interdiction and Control

1.1.1 Per Public Law 110-417, [Division A], title III, Section 316, October 14, 2208, 122 Statute 4410 and per DoD Defense Transportation Regulations, Chapter 505 protocols, the USN commits to implementing 100 percent inspection of all outgoing vessels and aircraft with trained quarantine officers and dog detection teams, which could be supplemented by other pest control expertise (with appropriate U.S. Department of Agriculture Wildlife Services brown treesnake detection training and oversight) to meet 100 percent inspection goals for large scale training activities. As a stakeholder, the USFWS would have input on the USN protocols for implementing brown treesnake interdiction and control strategies. The USN will work cooperatively with USFWS and U.S. Department of Agriculture to seek information in development of protocols for implementation of interdiction and control methods aimed at controlling brown treesnake as related to training activities within the MIRC action area. On an as needed basis, the USFWS, U.S. Department of Agriculture, and USN may request meetings to discuss interdiction and control method protocols as related to military training in the MIRC.

a. In the event military units, vehicles, and equipment accidentally leave Guam without inspection, as soon as possible, the DoD will notify: (1) their inspection contractor and (2) the point of destination port or airport authorities and work with the destination port to resolve the issue. Urgency of notification is a priority so that rapid response or other actions can be implemented to reduce risk.

b. In addition, the USN will route inbound personnel and cargo for tactical approach exercises (that require an uninterrupted flow of events) directly to CNMI training locations to avoid Guam seaports and airfields. If Guam cannot be avoided, USN in cooperation with U.S. Department of Agriculture and USFWS shall identify and USN will implement appropriate interdiction methods that may include redundant inspections (see 1.1.1.c) or other interdiction methods as agreed to by the USFWS, U.S. Department of Agriculture, and USN. Additionally, tactical approach exercises will involve only

cargo equipment that has not originated from areas containing a brown treesnake population or will be 100 percent inspected by certified brown treesnake canine programs. If the U.S. Department of Agriculture develops performance standards for this activity, the USN will adopt those standards, provided they are compatible with military mission.

c. The USN is committed to implementing redundant inspections after discussions with appropriate stakeholders. Redundant inspections include inspections on Guam and at the receiving jurisdiction for administrative and logistical movements that do not require a tactical approach to complete the training requirements. It is anticipated that redundant inspections would utilize existing quarantine and inspection protocols at receiving ports. Appropriate stakeholders include, but are not limited to: the USFWS to ensure the inspections are adequate to reduce risks to trust resources, U.S. Department of Agriculture Wildlife Services, receiving jurisdictions and their supporting agencies with expertise in invasive species control, and other inspection authorities as needed to ensure inspection methods are current and revised as new techniques, technology, or data become available.

1.1.2 The USN will also establish snake-free quarantine areas for cargo traveling from Guam to CNMI and locations outside of the MIRC. These brown treesnake sterile areas will be subject to: (1) multiple day and night searches with appropriately trained interdiction canine teams that meet performance standards under 1.1.b; (2) snake trapping, and (3) visual inspection for snakes. Temporary barriers may be preferable to permanent exclosures because of the variable sizes needed for various training activities. The USN will produce standard operating procedures for temporary barrier construction and use. Standard operating procedures will ensure that temporary barriers will be constructed and maintained in a manner that assures the efficacy of the barrier tool and that staff maintaining and constructing the temporary barriers will receive training related to this activity prior to construction. Standard operating procedures will be developed in cooperation with the USFWS, U.S. Geological Survey Biological Resources Discipline, and the U.S. Department of Agriculture Wildlife Services to ensure risk to trust resources is adequately minimized. If risks are not adequately minimized, recommendations will be provided for incorporation into the protocols until the USN and USFWS mutually agree the risk has been minimized. The USFWS, USN, and other appropriate parties will meet, if necessary, to resolve concerns such that the protocols ensure risk is adequately minimized.

1.1.3 The USN will support rapid response actions to brown treesnake sightings within the CNMI and locations outside of the MIRC (specifically Hawaii) by working with U.S. Geological Survey Biological Resources Discipline to develop procedures and protocols that will support rapid action for a brown treesnake sighting. For example, USN personnel (civilian and uniform) could be trained to augment response teams on Guam and Hawaii or the USN may retain an agreement with trained, local pest control contractors that meet performance. USN will contact the Brown Treesnake Rapid Response Team Coordinator (Coordinator) on Guam (coordinates and runs the Rapid Response Training course) within 90 days of receiving the BO to request the course. The Coordinator arranges the training based on trainers and attendees.

1.2 DoD participation in the Brown Treesnake Control Plan

1.2.1 The USN, working in collaboration with the USFWS, and U.S. Department of Agriculture Wildlife Services and Animal and Plant Health Inspection Service will decide how best to implement the Brown Treesnake Control Plan (BTS TWG 2009, 37 pp.) relevant to MIRC activities.

1.2.2 The USN provides an environmental education program for new arrivals (see a through d, below). Additionally, the current environmental education program may be updated to provide more recent information to ensure each individual has the most up-to-date training.

a. All new service personnel will receive the "Area Training Welcome Aboard Brief."

b. Mandatory viewing of a brown treesnake educational video.

c. Pocket guides with brown treesnake information and personal inspection guidelines will be carried at all times.

d. Assurance that brown treesnake awareness extends from the chain of command to the individual military service member.

1.3 Prevention of Invasive Species Introductions and Spread

1.3.1 All personnel involved in MIRC training will adhere to DoD Instruction 5090.7, which calls for individual troops to be responsible for conducting self inspections to avoid potential introductions of invasive species to Guam and the CNMI. Troops will inspect all gear and clothing (e.g., boots, bags, weapons, pants) for soil accumulations, seeds, invertebrates, and vertebrates). The intent of this measure is to minimize the potential risks and subsequent effects associated with transport of troops and personnel to Guam and to CNMI from areas that contain species that are not native to terrestrial habitats within the MIRC (extra-MIRC travel). In addition, compliance with Instruction 5090.7 will be required for travel to and from training sites within the MIRC (inter-MIRC travel).

1.3.2 In addition to self inspections, each action will undergo a pathway risk analysis as a tool to improve programmatic efficiency while preventing the spread or introduction of invasive species. Actions at risk of transporting invasive species will have prevention tasks identified and implemented to reduce risk. Methods such as Hazard Analysis and Critical Control Point (HACCP) planning (see http://www.haccp-nrm.org) may be utilized to conduct pathway analysis.

1.3.3 The USN is a participating agency in the development of the Regional Biosecurity Plan. Once completed, the Regional Biosecurity Plan will be applicable to MIRC training activities when such procedures do not unduly interfere with military training. The USN will continue to work cooperatively with USFWS and U.S. Department of Agriculture in development of protocols for implementation of interdiction and control methods in accordance with recommendations contained in the Regional Biosecurity Plan aimed at controlling brown treesnake and other invasive species as related to training activities within the MIRC action area. The Regional Biosecurity Plan will coordinate and integrate inter-agency invasive species

management efforts such as control, interdiction, eradication, and research. This plan is currently in development and draft components of the plan will be completed in March 2010. The final plan is anticipated to be completed in January 2011.

1.4 Cooperative Development of Regional Training Standard Operating Procedures and Exercise Planning

The USN will invite the USFWS to participate in the development of regional standard operating procedures and exercise planning to better meet invasive species management needs associated with MIRC training. Current procedures can be found in 5090.10A "Brown Tree Snake Control and Interdiction Plan" (USN 2005, 28 pp.).

1.5 Coordination of Training Events

The DoD Representative will assure that "Area Training" coordinates meetings for brown treesnake interdiction on all training activities for the training execution phase and an after action review phase. If a snake is found during training, the USN policy is to kill the snake and is reported to USN Environmental Staff.

2.0 Erosion Control

2.1 The USN will locate ground-disturbing training activities on previously disturbed sites whenever possible.

2.2 The USN will ensure that all training areas, including transit routes necessary to reach training areas, are clearly identified or marked. Vehicular activities will be restricted to designated and previously identified areas.

2.3 The USN will continue to control erosion through the "Site Approval Process," whereby the USN environmental program reviews each proposed project for its erosion potential and involves the designated installation Natural Resource Specialist in the process.

2.4 The USN will continue to manage erosion in accordance with the applicable storm water pollution prevention plan at each training location.

2.5 The USN will prohibit off-road vehicle use except in designated off-road areas or on established trails.

2.6 The USN will comply with existing policies and management activities to conserve soils, including requirements and restrictions outlined in the Marianas Training Handbook.

3.0 Hazardous Waste

3.1 No aircraft washing activity will occur on Tinian.

3.2 The USN will reduce hazardous materials usage where possible. The USN will establish hazardous materials storage facilities away from catch basins, storm drains, waterways, and forested habitats used by listed species. Liquid hazardous materials will be stored in containers or facilities with an impervious lining.

3.3 The USN will use hazardous chemical warning labels on all hazardous materials. Material Safety Data Sheets for each hazardous material will be carried by all deploying units. The USN will establish and use designated collection points for segregation, packaging, and labeling of hazardous wastes for disposal. This will include the segregation of hazardous waste from general refuse. No hazardous materials or substances will be allowed in trash containers or dumpsters on shore. The USN will dispose of oily waste and bilge water at disposal facilities on Guam or Saipan.

3.4 The USN will report spills in water and in terrestrial habitats immediately. The USN will have available spill containment and cleanup equipment, trained spill response teams, packaging materials for hazardous materials and hazardous waste, wherever hazardous wastes may be spilled or exposed to habitats.

3.5 Emergency fuel release may only be conducted in designated aircraft emergency fuel release areas. If designated emergency fuel release areas are unavailable, fuel may be released as directed at locations at least 12 nautical miles from any land, sea mound or island, in depths greater than or equal to 1,000 fathoms (6,000 feet) of water and at an altitude safe for flight or as directed to ensure complete evaporation of the fuel.

3.6 Ordnance may be jettisoned in designated emergency jettison areas only. If designated emergency jettison areas are unavailable, ordnance may be jettisoned at locations at least 12 nautical miles from any land, sea mound or island, in depths greater than or equal to 1,000 fathoms (6,000 feet) of water and at an altitude safe for flight or as directed.

3.7 The USN will collect and haul away all expended brass, clips, and lead rounds from military operations in urban terrain.

Island Specific Measures

4.1 Farallon de Medinilla

On Farallon de Medinilla, restrictions are in place to minimize adverse effects such as decreasing wildfire potential, decrease direct strike potential of Micronesian megapodes and to limit degradation of habitat.

4.1.1 Vessels and aircraft will observe the following restrictions:

a. Targeting of ship and aircraft live-fire and aerial bombardment will be limited to only the interior portions of Farallon de Medinilla and no targeting of cliffs on the eastern coast of the island will occur (see Figure 1). Firing direction is from the west only towards the island.

b. No firing will occur north of a designated "No Fire Line." Three impact areas are used for training and have targets for training. Impact Areas 1 and 2 occur on the interior plateau of the island and Impact Area 3 occurs on the southern peninsula. Inert ordnance is used in Impact Area 1. Live and inert ordnance is used in Impact Areas 2 and 3.

c. Targets will be placed within the impact areas to avoid habitat and reduce fire risk.

d. Cluster bombs, live cluster weapons, and live scatterable munitions are prohibited.

e. Bombs greater than 2,000 pounds, all fuel-air explosives, and all incendiary devices are prohibited.

4.1.2 Range maintenance will use both herbicide and prescribed burn treatments on Farallon de Medinilla (USN 2009c, 12 pp.).

a. A visual survey for megapodes will be conducted in the area by a qualified biologist, prior to each vegetation removal event, that may include: herbicide application, fire retardant application, or prescribed burning.

b. Precautions (see conservation measures 1.3.1 and 1.3.2) will be taken to help prevent the accidental introduction of invasive species including plant seeds during range maintenance (i.e., during vegetation removal, conex box removal and replacement). All equipment will be washed prior to shipment and personnel will clean all personal gear (boots, clothing, equipment, etc.) of soils and seeds prior to embarking from Saipan.

c. Personnel will not stay overnight on Farallon de Medinilla but will fly back to Saipan each evening by helicopter. If food is brought to Farallon de Medinilla, then all trash and any uneaten food will be removed from the island daily or stored in rodent-proof containers.

d. Edges of the prescribed treatment area will be marked using GPS or flagging tape.

e. Aerial or manual (backpack) application of a registered herbicide will begin on the windward side of treatment area and all label restrictions will be followed. A dye marker solution will be used to ensure only the targeted area is covered and excess herbicide is not applied.

f. Prior to implementing the prescribed burn, personnel will ensure ground conditions conducive to conducting the prescribed burn so that a burn would most likely result in a low intensity ground fire. Methods will follow all precautions outlined in the range maintenance plan (USN 2009c, 12 pp.).

g. Fire retardant powder, foam or gel will be applied aerially, south of the "No Drop Zone" before the prescribed burn to prevent escape.

h. Seawater will be used to assist with extinguishing and controlling the fire. Devices (e.g., helicopter bucket, disposable bladders) will be available in the event fire control is required.

i. After the completion of the controlled burn, erosion control may be necessary until ground conditions stabilize. If erosion control is necessary (i.e., remaining vegetation is inadequate to prevent erosion), a straw wattle sediment control system will be installed. The straw wattle will be free of invasive pests.

j. Personnel will be advised of the presence of the Micronesian megapode and be cautioned to not interact with (e.g., harass, attempt to feed) any individual birds. However, because the personnel applying the herbicide may not be wildlife experts; personnel will be instructed to avoid any birds, nests, or eggs.

4.1.3 Nesting sea turtles are not expected; however, it is possible that a sea turtle may be basking on beaches or resting in holes or caves (USN 2009b, p. 52 and references within). Therefore, if a sea turtle is seen on a beach by participating aircraft, training will be altered until the sea turtle leaves the beach and nearby waters (USFWS 1997, 17 pp.).

4.1.4 The USN will conduct an island-wide rat eradication on Farallon de Medinilla. Diphacinone has recently been approved for conservation purposes by U.S. Environmental Protection Agency for rat eradications (USEPA 2007, 4 pp). If use of other toxicants is desired, then the USN will reinitiate this consultation as only the use of Diphacinone has been evaluated within the effects analysis. This action will provide direct benefits to nesting seabirds (eggs and nesting substrate) and indirect benefits to Micronesian megapodes by increasing vegetation on certain portions of the island, limiting competition, and by reducing predation risk. Line item funding (project specific funding) for this action has been requested for FY12. The USN policy is to contract actions to appropriate qualified contractors as quickly as possible once funding has been received.

4.1.5 The USN proposes to conduct research on the life history of the Micronesian megapode on Saipan and Sarigan. The data collected will include: identification and habitat evaluation of breeding sites; observations on breeding behaviors; number of eggs laid per female; duration of egg and juvenile phases, survival ratios for egg and juvenile phases; genetic data and other information necessary to evaluate population viability (restricted to Saipan and Sarigan). These data will be used to better recover the species by: estimating a minimum viable population, understanding behaviors in a "large" and a "small" population, and describing potential interactions between island populations. Line item funding (project specific funding) for this action has been requested for FY12. The USN policy is to contract actions to appropriate qualified contractors as quickly as possible once funding has been received.

4.1.6 The USN will conduct megapode surveys on Farallon de Medinilla to estimate density and abundance for this population every five years. These surveys will follow existing transects and methods established during prior surveys (Vogt 2009a, 12 pp.). Surveys will be conducted in coordination with other range management activities. These surveys will evaluate population trends, affects from military training, and the success of the avoidance, minimization, and conservation measures implemented on Farallon de Medinilla. Line item funding (project specific funding) for this action has been requested for FY12. The USN policy is to contract actions to appropriate qualified contractors as quickly as possible once funding has been received.

4.1.7 Seabird population monitoring will occur quarterly at Farallon de Medinilla. Surveys will be conducted using aerial observation (Vogt 2009b, 13 pp.).

4.2 Saipan

4.2.1 Training events as described under the MIRC will be conducted within areas of Saipan that are not near known occupied Mariana swiftlet caves, the two major wetland areas that support Mariana common moorhen, or beaches that could be used by sea turtles.

4.2.2 Training in the Marpi Maneuver Area is expected to be infrequent and limited to pedestrian land navigation training.

a. Training will be limited to open areas (i.e., grasslands; no forest or mixed shrub and scrub habitats) to minimize impacts to nightingale reed-warblers, Mariana fruit bat, and Micronesian megapodes.

b. The individual Commanding Officer conducting the training under guidance of the DoD representative will restrict training in the Marpi Maneuver Area to the nightingale reed-warbler non-peak breeding seasons (April through June; and October through December). If these training restrictions cannot be accommodated, the USN will contact the CNMI government, including Division of Fish and Wildlife regarding avoidance measures.

c. There will be no digging in the soil or cutting of vegetation along the southern border of the Marpi Maneuver Area in the mixed limestone forest (see Figure 2). No ground disturbance or vegetation removal of any kind is permitted in this area to avoid impacts to the Micronesian megapode and Mariana fruit bat. No habitat will be removed for any training activity on Saipan.

d. Smoking is not permitted during training activities and fire-safe portable receptacles for cigarette butts are used during periods of rest between training activities. No fires are permitted during bivouac activities.

e. If other areas are needed for training, the USN will contact the USFWS regarding the need for reinitiation of this biological opinion.

4.3 Tinian

Existing conservation measures for MIRC training are associated with limiting potential effects to sea turtles, Mariana common moorhen, Micronesian megapode, and Mariana fruit bat from aircraft training, amphibious landings, bivouac training, and vehicle and pedestrian land navigation within the Military Lease Area.

4.3.1 The USN will implement training restrictions at Unai Chulu, Unai Babui, and Unai Dankulo to avoid and minimize effects to sea turtles.

a. Biologists, trained in identifying sea turtle nests, will survey landing beaches no more than six hours prior to the first craft landing or use of other beach landing equipment. Any potential sea turtle nests will be flagged and avoided by landing craft and personnel.

The buffer zone will have a radius of 6 meters from the edge of the nesting activity (area disturbed by the turtle) to ensure complete avoidance.

b. Beach training activities will be coordinated with the monthly monitoring (see 4.5.4, below). If an active nest has been discovered, night-training will not occur once a pre-hatch hole is detected. (A pre-hatch hole indicates that the nest will hatch that evening.) Evening training may resume five days after the pre-hatch hole is discovered.
c. Further, each landing activity has a "beach master" that would stop vehicle approaches if sea turtles or sea turtle nests were observed on the land.

d. At Unai Chulu, the USN recognizes that surge waves generated by slow moving landing craft could break off coral heads and cause beach scour, degrading foraging habitat and resulting in erosion of nesting habitat for sea turtles. To minimize the surge effect, air cushioned landing craft use on Tinian is scheduled for high-tide and craft stay on-cushion until clear of the water. Landings occur only within a designated craft landing zone.

e. Within the craft landing zone, air cushioned landing craft come off-cushion onto an offload and vehicle traffic area. The USN recognizes ruts resulting from vehicle traffic on beaches may prevent sea turtle hatchlings from reaching the water and expose them to predation or desiccation. Although vessels and expeditionary vehicle traffic typically do not leave ruts, some compaction of sand in vehicle tracks is possible. If compaction occurs, beach topography will be restored within three days using non-mechanized methods (e.g., rakes, hand tools).

f. Amphibious assault vehicle landings at Unai Babui are restricted to an established approach lane and land at high tide one vehicle at a time.

g. The USN will ensure that protective measures are developed for amphibious landings and other training activities at implemented at Tinian beaches. Protective measures incorporate the restrictions within this biological opinion (and referenced documents) and are applied to a detailed training constraints map to be used by military service personnel.

h. Improvements to any beaches to facilitate training, will be coordinated with the USFWS if the action may affect listed species.

4.3.2 The USN currently implements and will continue to implement training restrictions near wetlands to avoid and minimize impacts to the Mariana common moorhen.

a. Lake Hagoi and adjacent areas are designated by the USN as a "No Training Area" (see Figure 3). Within a "No Training Area" ground disturbance or vegetation removal of any kind is prohibited. Training only occurs on existing roads and trails; therefore, the Mahalang and Bateha wetlands are avoided as well as there are no roads or paths that access these features.

b. The USN restricts helicopter training over Tinian wetland areas. Helicopters must maintain a minimum altitude of 305 meters (1,000 feet) above ground level during training exercises that require flights over Hagoi. The USN avoids flights over Mahalang wetland and Bateha wetlands.

4.3.3 The USN implements training restrictions within some forested areas to avoid and minimize impacts to the Micronesian megapode and Mariana fruit bat.

a. Limestone forest habitat on Tinian is a "No Wildlife Disturbance Area." Therefore the following actions are prohibited: cross-country, off-road vehicle travel, vehicle parking unless it is on cleared shoulders of existing roads or trails; pyrotechnics, demolitions, or breaching charges; digging or excavation without prior approval; open fires; mechanical vegetation clearing; live ammunition; firing of blanks; flights below 305 meters (1,000 feet) above ground level; and helicopter landings except in designated landing zones..

b. Maneuver units are tactical and will not have support camps.

c. Within the Federal Aviation Administration mitigation area, low-impact training may occur so long as it is compatible with the habitat and living conditions of the Tinian monarch (USN and CNMI 1999, p. 2).

d. If additional training areas outside the USN leased lands on Tinian are needed, the USN will coordinate with the USFWS.

4.3.4 The USN implements fire prevention and management within the Military Lease Area to benefit all listed species and their habitats.

a. No live-fire or tracer rounds will be used on Tinian. Use of pyrotechnics, flares, blank fire, and other potential fire-starting activities must be conducted on existing cleared runways and in accordance with the Fire Prevention Plan. The area authorized for open fires and pyrotechnics is restricted to the North Field and West Field on hardtop surfaces only (except for actual emergency signaling).

b. Cooking by individuals is not authorized in outdoor training areas (except for heating tabs and mechanisms in "meals ready to eat"). Large scale training exercises may include field kitchens in North Field in areas authorized for open fire.

c. North Field's existing runways and taxiways act as fire breaks and fire access roads, and the vegetation is primarily characterized by tangantangan (*Leucanena leucocephala*) thickets. Standard Operating Procedures for all exercises include fire response measures that must be implemented.

d. To date, no wildland fire has been ignited from MIRC training activities on Tinian (or on other DoD lands in the Mariana Islands). However, to further minimize risk and augment military fire response efforts, the Tinian Fire Department maintains a 300-gallon pump truck and fire crew to respond to wildland fires. The Tinian Fire Department also

maintains a 750-gallon pumper truck and crew in San Jose to respond to and provide fire service for the southern Tinian and backup Crash-Fire-Rescue support to West Field. The USN will request the use of Tinian Fire Department assets for major exercises. The request will be made through the West Field command post. The USN will maintain airfield crash-fire-rescue equipment and crews at North Field for the duration of the exercise. Any military related fires will be controlled prior to the loss of any wetland or native limestone forest habitat is burned. Any military related fires in tangantangan will be controlled prior to the loss of five acres tangantangan habitat.

4.3.5 The next iteration of the Integrated Natural Resources Management Plan (INRMP) for DoD lands on Tinian and Farallon de Medinilla will include a management plan specific to Lake Hagoi and other wetlands within the Military Lease Area. The management plan will benefit the Mariana common moorhen and provide additional protection for these unique wetland areas.

4.3.6 The USN will continue monitoring Mariana common moorhen at Lake Hagoi to evaluate population trends and to determine success of avoidance and minimization measures described above (Vogt 2008, 10 pp.).

4.3.7 The USN will continue to monitor limestone forest habitats for the Micronesian megapode, Mariana fruit bat, and other native species to evaluate population trends and to determine success of avoidance and minimization measures described above (Vogt 2008, 10 pp.).

4.3.8 The USN will continue monitoring all sandy areas within Military Leased Lands on Tinian on a monthly basis (approximate) (Vogt 2008, 10 pp.). During the monthly sea turtle surveys, crawls, nests, potential nests, body pits, and hatchling tracks are noted. In addition, any beach erosion and compaction will be recorded during these surveys. Monitoring occurs at Unai Dankulo (Long Beach), Unai Chulu, Unai Masalok, and Unai Lamlam. These data are used to assess species trends, evaluate affects from military training, and the success of the avoidance, minimization, and conservation measures implemented on Tinian.

4.4 Rota

4.4.1 No maneuver training will occur on Rota.

4.4.2 The USN will not initiate any action requiring the removal, trimming, or pruning of any tree (or other vegetation) known to support nesting, roosting, or foraging habitat for the Mariana crow, Mariana fruit bat or Rota bridled white-eye.

4.4.3 No training activities will occur near or within critical habitat, habitat occupied by listed species, or other habitats designed for conservation use. If such activities are planned in the future, the USN will consult with the USFWS pursuant to section 7 of the ESA.

4.5 Guam

4.5.1 To avoid and minimize impacts to Mariana crow and Mariana fruit bat, DoD will continue to implement all the conservation measures and terms and conditions from the Northwest Field Beddown (USFWS 2006a, 7pp.; USFWS 2009c, 5 pp.; USFWS 2009d, 6 pp.) and the ISR Strike Establishment projects (USFWS 2006b, 73 pp.) consultations.

4.5.2 Areas identified within the Northwest Field Beddown and ISR Strike Establishment projects as mitigation areas will be designated as "No Training and Wildlife Disturbance Areas" to avoid effects to essential habitat and mitigation areas.

4.5.3 DoD will implement the following restrictions at all action areas on Andersen Air Force Base:

a. No vegetation clearing except: maintenance required to keep paved surfaces, landing zones, and the drop zones in a safe and useable condition and for bivouac purposes in the bivouac area. Tree species greater than 4-inches in diameter used for foraging, roosting, or nesting of bats and crows will not be removed.

b. Motorized vehicles shall be driven only on prepared surfaces, in the drop zone and landing zones as required and only rubber-tired vehicles will be allowed; no digging is allowed except in the Northwest Field bivouac area; and no harassment or killing of native wildlife is allowed.

c. Use of pyrotechnics and other incendiary devices is limited to paved surfaces, ground pits, or ceramic-lined rooms (USFWS 2006a, p. 2).

4.5.4 DoD will maintain helicopter and fixed-wing flight restrictions associated with training over portions of Northwest Field and Pati Point (USN 2009b, p. 33)

a. At Northwest Field, helicopter overflights north of the South Runway are prohibited below 305 meters (1,000 feet) above ground level.

b. Overflights of the Munitions Storage Area are prohibited below 305 meters (1,000 feet) above ground level.

c. Overflights within 915 meters (3,000 feet) of Pati Point are prohibited below 488 meters (1,600 feet) mean sea level, except for flights from the end of the Andersen Main runways.

4.5.5 DoD will implement Training Schedule Modifications (see also USFWS 2006b, 73 pp.) on Andersen AFB for post-typhoon actions and during Mariana crow nesting periods. After a typhoon event, food resources for the Mariana crow and Mariana fruit bat may be severely reduced, and therefore these species are under greater physiological stress. After a typhoon, the USAF implements the following modifications to training schedules:

a. If crows are nesting within an (approximate) 1,800-meter (5,906-feet) radius of cratering exercises and within 500 meters (1,640 feet) of small arms firing, no crater charges will be detonated within two to three months of a typhoon event.

b. If Mariana crows are nesting within these buffer areas within one to two months of a typhoon event, no cratering charges will be detonated, and no M2, M115A, and M116A munitions will be used.

c. If crows are nesting within these buffer areas within one month of a typhoon event, no training events will occur in the Northwest Field training areas.

d. The DoD will coordinate with Guam Division of Aquatic and Wildlife Resources on training schedules to avoid and minimize effects to solitary roosting bats or foraging bats after typhoon events.

4.5.6 The USN implements helicopter and fixed-wing flight restrictions associated with training over portions of the Naval Munitions Site to avoid and minimize effects to Mariana swiftlets, Mariana common moorhen, and Mariana fruit bat.

a. Helicopter bucket training at Fena Reservoir occurs in deeper waters towards the center of the reservoir, and avoids emergent vegetation areas in the shallower portions of the reservoir used by Mariana common moorhen.

b. The USN prohibits flights over the Naval Munitions Site below 305 meters (1,000 feet) above ground level for fixed-wing aircraft and 153 meters (500 feet) above ground level for helicopters (except at designated landing and drop zones) to minimize disturbance to Mariana fruit bat, Mariana common moorhen, and Mariana swiftlet.

c. The USN is coordinating with the Federal Aviation Administration regarding the development of a new drop and landing zone in the Communications Annex-Finegayan area named Ferguson Hill. If FAA determines that Ferguson Hill is an acceptable location for a new drop and landing zone, the USN will coordinate with the USFWS to determine if overflight restrictions or other avoidance and minimization measures are needed to reduce effects to listed species and their habitats. Overfight restrictions will not be included at the landing zone approaches which must be approached at heights above ground level consistent with training and safety.

4.5.7 Riparian wetlands are dispersed throughout the Northern and Southern Land Navigation Area. Currently these areas do not serve as habitat for Mariana common moorhen. However, if these wetlands become suitable (i.e., the area begins to supports palustrine, open water), no maneuver and navigation training will occur in these areas unless the action is reviewed pursuant to section 7 of the ESA.

4.5.8 The USN will establish a 100-meter (328-feet) "No Training Buffer Zone" around the three known Mariana swiftlet caves within the Naval Munitions Site.

a. Within the "No Training Buffer Zones" the following actions are prohibited: use of live ammunition, the firing of blanks, open fires, pyrotechnics, demolitions, training demolition or breaching charges, digging or excavation without prior approval, mechanical vegetation clearing, flights below 305 meters (1,000 feet) above ground level, helicopter landings except in designated landing zones, and cross-country and off-road vehicle travel except specifically authorized administrative troop and vehicle movement on designated trails or existing paved roads.

4.5.9 The USN implements restrictions at beach and boat ramp locations to minimize impacts to sea turtles and their habitats.

a. The USN maintains restrictions on landings and launches, such as the use of the concrete boat ramp at Sumay Cove which is across from potential sea turtle nesting habitat.

b. The USN implements speed restrictions to avoid creating wakes, the use of the Sumay Cove ramp avoids and minimizes effects to sea turtle nesting sites.

c. Currently, training does not occur on other Guam beaches that support sea turtles. Should the USN decide to use other Guam beaches for amphibious landings, the USN will implement the measures described above for sea turtles (see 4.3.1 and 4.3.8).

4.5.10 The USAF implements training and operation restrictions at the Combat Arms Training and Marksmanship (CATM) range at Tarague Beach, Guam to minimize effects to sea turtles, Mariana crow, and Mariana fruit bat.

a. Night-training occurs at the CATM range; therefore night-lighting is installed. The lighting configuration at this location is maintained with four flood lights, located below the tree canopy level that are directed inland and parallel to the coast. Lighting in this configuration will avoid impacts to nesting and hatching sea turtles and Mariana fruit bats.

b. The CATM range allows for training with small arms, inert mortars to 60 millimeter, and 40 millimeter grenade launchers. These weapons do not produce percussive force and no weapons that produce percussive force can be used at this facility.

4.5.11 The U.S. Forest Service has developed a fire management plan that the USN will use to develop a Naval Base Guam Wildland Fire Management Instruction to implement at the Naval Munitions Site and other USN lands on Guam (U. S. Forest Service 2008). The plan includes fire danger modeling of different fuel loadings within the Naval Munitions Site and determines if new fuel breaks are needed to protect personnel and infrastructure. These protections should benefit endangered and threatened species and their habitats. Any military related fires will be controlled prior to the loss of any wetland, native forest, or mixed limestone forest habitat.

4.5.12 To address the loss of potential breeding and foraging habitat from the Northwest Field Beddown (USFWS 2006a, 7pp.; USFWS 2009c, 5 pp.; USFWS 2009d, 6 pp.) and the ISR Strike Establishment projects (USFWS 2006b, 73 pp.) the USAF will continue to implement all conservation measures and terms and conditions from these previous consultations.

4.5.13 An ungulate management plan and an Environmental Assessment for USN and USAF are currently in development and upon implementation will provide a long-term program and methods for a sustained reduction of ungulates on DoD lands. Implementation is anticipated beginning FY12.

4.5.14 The USN will monitor behavior of moorhens at Fena Reservoir during the first three training exercises. If any behavioral changes are detected that could lead to take (i.e., changes that suggest a bird may alter foraging, breeding, or nesting behaviors), the USN action will cease all activities until additional section 7 consultation is completed.

4.5.15 The USN will continue (per their INRMP) to trap brown treesnakes in areas surrounding the Mariana swiftlet caves to reduce or prevent brown treesnake predation on the swiftlets and will continue to monitor swiftlet population trends on Guam to evaluate success of avoidance, minimization, and conservation measures described above.

4.5.16 The USN will monitor the Mariana fruit bat at the Pati Point colony and at other locations above and below the cliff line to determine if the Pati Point colony is shifting from its historical location. These data will be used to assess the current population size at the colony and determine if additional adaptive management actions are needed to minimize impacts associated with ISR Strike and MIRC.

SPECIES STATUS AND ENVIRONMENTAL BASELINE

Below is a summary of the biology and ecology of each species, critical habitat, and essential habitat considered within this consultation (refer to Table 1). Species and habitat for which a "no effect" or "may affect, not likely to adversely affect" are discussed as our concurrence relies upon proper implementation of the conservation measures proposed within the project description above. Failure to implement the conservation measures would result in a non-concurrence determination and consultation would need to be reinitiated. The environmental baseline describes the status of the species and factors affecting the environment of the species or critical habitat in the proposed action area during the consultation process. The baseline includes state, local, and private actions that affect a species at the time the consultation begins. Unrelated Federal actions that have already undergone formal or informal consultation are also a part of the environmental baseline. Federal actions within the action area that may benefit listed species or critical habitat are also included in the environmental baseline. The environmental baseline describes the species' health at a specified point in time, and it does not include the effects of the action under review in this consultation.

No Effect Determination

Plants

Osmoxylon mariannense and *Nesogenes rotensis* are two endangered plant species restricted to the island of Rota. *Serianthes nelsonii* (Hayun lagu) is an endangered tree that occurs on both Rota and Guam. The USN made a no effect determination for these three species because the training associated with MIRC will not overlap spatially with any of the known locations of these plants or in habitats where unknown specimens could occur on Rota (USN 2009b, p. 3). Training will overlap with suitable habitat for *Serianthes nelsonii* on Guam; however, the USN made a no effect determination because training actions are at least 300 meters from known locations of this species (USN 2009b, p. 3; see conservation measures 4.5.2 and 4.5.3). Additionally, the USN has proposed conservation measures as a part of the MIRC project description that will reduce the risk of introduction, spread, and establishment of non-native invasive species due to MIRC actions as additional introduction or spread of invasive species

could adversely affect these very rare plants (see conservation measure 1.0). We believe that avoidance of the plants and their suitable habitats along with the implementation of the invasive species interdiction and control conservation measures are key in supporting a no effect determination. Failure to implement these conservation measures would result in a non-concurrence determination from our office.

Terrestrial birds

The USN made a no effect determination for the Guam Micronesian kingfisher (*Todirhamphus cinnamominus cinnamominus*), Guam rail (*Gallirallus owstoni*), and Rota bridled white-eye (*Zosterops rotensis*). Guam Micronesian kingfisher is endemic to Guam and is no longer extant in the wild. The Guam rail is no longer extant in the wild on Guam; however, the species is currently extant on Rota. The Rota bridled white-eye is endemic to Rota. The training associated with MIRC will not overlap spatially with known locations or habitats on Rota that support the Guam rail or the Rota bridled white-eye (USN 2009b, 101; see conservation measures 4.4). Additionally, the USN has proposed conservation measures as a part of the MIRC project description that will reduce the risk of introduction, spread, and establishment of non-native invasive species due to MIRC actions as additional introduction or spread of invasive species could adversely affect these birds on Rota (see conservation measure 1.0). We believe that implementation of the avoidance measures and invasive species interdiction and control measures are key in supporting a no effect determination. Failure to implement these conservation measures would result in a non-concurrence determination from our office.

Although the rail and kingfisher are extirpated from the wild on Guam, essential habitat for the recovery of these species is located on Guam. Per the requirements identified in the Cooperative Agreement between the USAF, USN, and the U.S. Fish and Wildlife Service (USFWS) for the establishment and management of the Guam National Wildlife Refuge (USAF and USFWS 1994, p. 6; USN and USFWS 1994, p. 6), we have provided coordination regarding potential impacts to essential habitat from the proposed project. See Essential Habitat for a summary of effects to essential habitat.

Seabirds

The ocean surface and undersea areas of the MIRC extend from waters south of Guam to north of Pagan (CNMI) and from the Pacific Ocean east of the Mariana Islands to the middle of the Philippine Sea, encompassing 501,873 square nautical miles (1,299,851 square kilometers) of open ocean and coastal areas (USN 2009a, p. 1-7). However, the USN has made a no effect determination for endangered and threatened species using the open ocean that are under the jurisdiction of the USFWS (short-tailed albatross, *Phoebastria albatrus*; Hawaiian petrel, *Pterodroma sandwichensis*; and Newell's shearwater, *Puffinus auricularis newelli*) because these species are only occasionally sighted flying through the action area. To reduce impacts to these and other seabirds protected under the Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*), as amended, the USN will implement multiple conservation measures (see 4.1.1; 4.1.4; and 4.1.7 within this biological opinion and USN 2009a, pp. 3.10-32, 3.11-66, 3.11-67). Therefore, actions occurring on the ocean surface, undersea, and the airspace above the open ocean will not be discussed further within this biological opinion.

Critical Habitat

There are three critical habitat units within the action area of the MIRC. Ritidian Point on Guam provides critical habitat for the Mariana fruit bat, Mariana crow, and Guam Micronesian kingfisher. Critical habitat on Rota is comprised of two units: one for the Mariana crow and one for the Rota bridled white-eye. The training associated with MIRC is spatially separated from the locations of each of these critical habitat units; therefore, the USN has made a no effect determination (USN 2009b, p.98). Additionally, the USN has proposed conservation measures as a part of the MIRC project description that will reduce the risk of indirect effects resulting in erosion, hazardous waste contamination, and the introduction, spread, and establishment of non-native invasive species due to MIRC actions (see conservation measures 1.0; 2.0; and 3.0). We believe that the implementation of these conservation measures are key in supporting a no effect determination, as additional erosion, contamination, or introduction or spread of invasive species could adversely affect these habitats such that the primary constituent elements could become non-functional (i.e., loss or destruction of foraging or roosting trees; loss of diverse structure; increased exposure to human activity or increased edge) (USFWS 2004, pp. 62,947 – 62,949). Failure to implement these conservation measures would result in a non-concurrence determination from our office.

Listed Species and Critical Habitats that Occur Outside Guam and the Commonwealth of the Northern Mariana Islands

We did not evaluate listed species or designated critical habitat in areas outside the MIRC action area that may support the movement of troops, materials, or equipment to and from action areas within MIRC (e.g., transporting troops from Guam to California or from California to Guam). We made this decision based upon conservation measures proposed by the USN as a part of the MIRC project description that will reduce the risk of introduction, spread, and establishment of non-native invasive species due to MIRC actions (see conservation measure 1.0). We believe that the implementation of invasive species interdiction and control is essential to prevent invasive species risks, as additional introduction or spread of invasive species could adversely affect listed species and their habitats. Failure to implement these conservation measures may result in the need to consult on additional species or action areas.

Not Likely to Adversely Affect Determination

Sea turtles – General

The USFWS and the National Marine Fisheries Service (NMFS) share ESA responsibilities for sea turtles. The USFWS addresses all issues involving sea turtles using terrestrial habitats; whereas, NMFS addresses sea turtles and their habitats in the marine environment. Therefore, we reviewed the proposed action for its potential impacts on eggs, hatchlings, nesting, and basking sea turtles, using terrestrial sea turtle habitat only. The following sea turtle biology section is summarized from recovery plans and five-year status reviews developed by the NMFS and USFWS and the references within (NMFS and USFWS 1998a, 95 pp.; 1998b, 95 pp.; 2007a, 105 pp.; 2007b, 93 pp.). Sea turtles are highly migratory, globally distributed, and generally found in tropical and subtropical waters along continental coasts and islands between 30° North and 30° South. The geographic range of sea turtles includes the Caribbean Sea, Atlantic, Pacific, and Indian Oceans and associated bodies of water.

Sea turtles use oceanic beaches for nesting. Upon hatching, sea turtles dig upward out of the sand, follow the light reflection from the moon and stars to reach the water, and then migrate to the open ocean. Emergence generally occurs at night and new hatchlings are strongly photopositive. Thus, they can be disoriented from the water if artificial lighting is present. Post-hatchling sea turtles then enter a primarily pelagic life stage of which little is understood. They are thought to drift along major current systems for several years, where they are assumed to forage at or near the surface along converge zones. Juvenile green and hawksbill sea turtles recruit to near-shore foraging habitats upon reaching a carapace length of about 35 centimeters. When sexually mature, sea turtles begin making breeding migrations that may span thousands of kilometers between their resident foraging grounds and their nesting areas.

Time from the hatchling stage to reproductive maturity may be as long as 20 to 50 years. Female sea turtles have high site fidelity to their hatching (natal) beaches, returning close to their own hatching site to lay their nests. Females crawl up the beach until a suitable area for nesting is found and dig a hole in the sand to lay their eggs. Nests are buried in the sand along the upper edge of the beach, often in the vegetation. Newly laid nests can be detected prior to beach disturbance by the presence of turtle "crawl" tracks in the sand or a characteristic depression in the sand where the nest is buried. Nest digging, egg laying, and nest burial can take several hours. Females may nest multiple times over a given nesting season. Nesting seasons typically occur at semiregular intervals, with inter-nesting intervals ranging between two to more than five years depending on the species. In addition to nesting, green sea turtles may also use beaches to haul out and bask, although this behavior has never been documented in Guam or the CNMI (CNMI) (Kelly 2009, pers. comm.; Wusstig 2009, pers. comm.).

Green sea turtle

Green sea turtles (*Chelonia mydas*) are regularly recorded in the waters surrounding Guam, Tinian, Rota, and Saipan (Kolinski *et al.* 2004, p. 110; Kolinski *et al.* 2001, p. 55; Kolinski *et al.* 2006, p. 509). Turtles have been detected around most of the northern islands within the CNMI (Ilo and Manglona 2002, p. 4), although in lesser abundance than in the southern islands (Kolinski *et al.* 2005, p. 290). Approximately 1,000 to 2,000 green sea turtles inhabit island reef areas in Guam and the southern CNMI (Rota, Tinian, Aguiguan, Saipan, and Farallon de Medinilla) (Kolinski *et al.* 2004, pp. 98, 111). In 1995 and 2001 (Tinian), 1999 (Saipan) and 2003 (Rota), the majority of individuals observed in the surrounding waters were juveniles or subadults (Kolinski *et al.* 2001, pp. 59, 66; Kolinski *et al.* 2004, p. 107; Kolinski *et al.* 2006, pp. 514, 517; Pultz *et al.* 1999, p. 92). The relationship or mixed stock analysis between the foraging population surrounding Guam and CNMI and source rookeries is not yet defined (Kolinski *et al.* 2004, p. 118; Kolinski *et al.* 2006, pp. 517 -518). The resident foraging population of green sea turtles at Tinian and Saipan is much greater than the number of turtles that may nest at these islands (Kolinski *et al.* 2004, p. 113). As is typical of other sea turtle populations, the nesting population on Tinian is likely a separate population from the turtles that forage there and are present all year (Pultz *et al.* 1999, p. 92). The foraging of genetically distinct populations (i.e., recruits from different nesting beaches) in the same waters has been documented for green sea turtles (and other species) suggesting that green sea turtles may randomly recruit to regional feeding populations (Bowen 1995, pp. 530, 532 and references within). Pultz *et al.* (1999, p. 92) also indicated that green sea turtles are known to have distinct foraging and nesting grounds, which are often thousands of kilometers apart. One foraging turtle

tagged at Tinian was found nesting in the Philippines. Post-nesting green sea turtles have been documented to migrate between Guam and Kume Shima Island, Japan; the Philippines; and Indonesia (Wusstig 2009, pers. comm.). Therefore, it is unlikely that the population of juveniles and subadults found in the waters surrounding Guam and the CNMI contribute to the nesting population of the archipelago. NMFS is continuing to build rookery data to complete a stock assessment of foraging and nesting turtles within Guam and the CNMI (Kelly 2009, pers. comm.).

The status of some breeding green sea turtle populations in the Pacific (Hawaii, Australia and Japan) are increasing (Chaloupka *et al.* 2008, p. 299; NMFS and USFWS 2007a, p. 13); however, population trend data that may be available for other breeding concentrations do not span a full generation for the species (NMFS and USFWS 2007a, pp. 12-14). The nesting population on Guam is currently considered stable (NMFS and USFWS 2007a, p. 13). Nesting beaches on Guam include: Adotgan Dangkolo, Adotgan Dikiki, Waterfront Annex of Naval Base Guam, Kilo Wharf area, Spanish Steps, Cocos Island, Asiga Bay, Nomnia area, Deley Beach, Turtle Cove to Togcha Beach, Tagachan Beach, Andersen Air Force Base (Tarague Beach, Sirena Beach, Pati Point), Jinapsan Beach, Cetti Bay, Sella Bay, Inarajan Beach, Acho Bay, Guam National Wildlife Refuge, Haputo area, Urano area, Tumon Bay, and Cabras area (Sea Plane Beach) (Wusstig 2009, pers. comm.; Grimm and Farley 2008, p. 1).

Population trends for nesting green sea turtles within the CNMI are unavailable and surveys for nesting sea turtles have not been conducted in the northern islands within the CNMI with the exception of Anatahan (Ilo and Manglona 2002, p. 5). At the time of their survey, Anatahan did not support nesting habitat due to the rocky shoreline (Ilo and Manglona 2002, p. 5); however, since the volcanic eruption in early 2003, ash has been deposited forming potentially suitable nesting habitat (Kessler 2009a, pers. comm.). Pagan and Agrihan also have black sand beaches that may support sea turtle nesting (Kessler 2009a, pers. comm.). The suitability of nesting habitats within the northern islands has not been quantified. However, the other northern islands have steep volcanic slopes and rock beaches that would likely not support nesting (Kelly 2009, pers. comm.; Kessler 2009a, pers. comm.). Nesting of green sea turtles likely occurs on all beaches on Tinian (Pultz *et al.* 1999, p. 85); five beaches on Saipan (Unai Fanonchuluyan (Bird Island Beach), Unai Halaihai (Tang Beach), Unai Obyan, Unai Makpe (Wing Beach) and Laulau Beach (Ilo *et al.* 2005, p. 6; Kolinski *et al.* 2001, p. 59); and may occur on 11 beaches on Rota (Songton beach, Teteto beaches, Mochong beaches, Sagua (Kokomo Beach), Gagani (Coral Garden Beach), Okgok, Apanon, and Gaonan (the Cave Beach), Uyulan Beach, Tatgua Beach, and Latte Stone (Lalayak or I Batko) (Ilo and Manglona 2001, p. 9).

Nesting activity on Guam occurs throughout the entire year and peaks between April and July (Grimm and Farley 2008, p. 1); occurs from April through August on Saipan (Kolinski *et al.* 2001, p. 57); and occurs from January through mid-July on Tinian (Pultz *et al.* 1999, p. 86). Though nesting is known to occur, only low-level nesting has been reported for Saipan, Tinian, Rota, and Guam (Kolinski *et al.* 2001, p. 59; Pultz *et al.* 1999, pp. 84, 87; Kolinski *et al.* 2004, p. 113; Grimm and Farley 2008, p. 3). For example, green sea turtle nesting activity has been documented on Saipan with 4 to 18 nests laid per year, by an estimated 1 to 4 nesting females, respectively (Kelly 2009, pers. comm.). Female green sea turtles may nest four to five times over a given nesting season, with approximately 12 to 14 days between each nesting event (Kelly

2009, pers. comm.; Wusstig 2009, pers. comm.). Though, one large female on Guam was observed to deposit six clutches during one nesting season (Wusstig 2009, pers. comm.). Clutch data (n = 7 nests) from Guam during 2005, indicated that the total number of eggs within a nest ranged from 19 to 124 (Mean = 83 eggs) (Wusstig 2008a, pers. comm.). Hatching success of these nests was 84 percent and approximately 93 percent of the hatchlings emerged successfully (Wusstig 2008a, pers. comm.). Incubation periods on Guam may range between 50 and 90 days (Grimm and Farley 2008, p. 1). On Tinian, mean clutch size was 91 eggs, incubation period was 62 days, and hatching success was 89 percent for successful nests (Pultz *et al.* 1999, p. 85). One nest on Saipan was observed to hatch after 63 days and hatchlings were first detected on the island in late June (Kolinski *et al.* 2001, p. 59).

Hawksbill sea turtle

Hawksbill sea turtles (*Eretmochelys imbricata*) are frequently sighted in the near shore waters surrounding Guam (Grimm and Farley 2008, p. 1) and have been detected near Anatahan (Ilo and Manglona 2002, p. 5). This species was not observed during marine and terrestrial surveys between 1999-2003 at Tinian, Aguiguan, and Saipan (Kolinski *et al.* 2004, p. 110; Kolinski *et al.* 2001, p. 55; Kolinski *et al.* 2006, p. 509). However, two hawksbill turtles were captured by the in-water monitoring program around Saipan in 2009 (Kelly 2009, pers. comm.). Foraging hawksbills may occur in relatively high numbers around the Northern Mariana Islands and have been sporadically detected in the waters surrounding Farallon de Medinilla and possibly Rota (Kolinski *et al.* 2004, p. 110 and references within). During 2001, a single hawksbill sea turtle was observed in the waters surrounding Rota; however, the observation was not confirmed (Ilo and Manglona 2001, p. 4).

The status of breeding hawksbill sea turtles is generally decreasing globally; however, there has been a recent increase in reproductive effort within the Atlantic Ocean basin and at one location (Hawaii) in the Pacific Ocean basin (NMFS and USFWS 2007b, pp. 19-20 and references within). These data should be viewed with caution as they are a rough estimate of total reproductive output, not all sites have been surveyed, and some data represent single years only (NMFS and USFWS 2007b, p. 20). On Guam, the population is thought to be declining, with less than ten females expected to nest per season (NMFS and USFWS 2007b, p. 19). No trend data are available for the CNMI. Although anecdotal information suggests that hawksbill nesting occurred historically within the CNMI, no nesting activity has been documented in recent years (Kelly 2009, pers. comm.). As described for the green sea turtle above, hawksbill sea turtles also recruit to foraging grounds that may be hundreds or thousands of kilometers from their natal beaches (Bowen 1995, p. 532) and as such the CNMI may support only a foraging population of hawksbill sea turtles.

Hawksbill sea turtles were reported nesting in June and July at Tarague Beach, Guam; however, this is based on only one year of data (Wusstig 2008a, pers. comm.). Between 1991 and 1994, hawksbill sea turtles nested in Sumay Marina, Guam, during varying months – October, December, February, and March (Wusstig 2008b, pers. comm.). An average of 55 days (51 to 58 days; 4 nests) was documented from the time of nest discovery to nest hatch. Clutch sizes ranged from 81 to 121 eggs. Hatchling data is incomplete; however one clutch of 121 eggs produced 70 hatchlings. In 2008, four nesting attempts at Adotgan Dikiki, Guam were attributed to the hawksbill sea turtle (Grimm and Farley 2008, p. 3).

The MIRC activities on Saipan and Rota do not overlap with known sea turtle nesting areas (see conservation measures (4.2.1 and 4.4). Sea turtles have been detected in the marine environment surrounding Farallon de Medinilla (Vogt 2009b, pp. 2, 9-10) while basking turtles have not been documented on Farallon de Medinilla, basking could occur. Nesting does not occur on Farallon de Medinilla as the beach is submerged by high tide (Lusk *et al.* 2000, p. 24). Conservation measures (see 4.1.3) will be implemented to avoid a direct strike or excess noise generation while sea turtles may be basking on Farallon de Medinilla. Sea turtles do not feed while on shore and will therefore, not be exposed to toxicity from rodenticide for conservation use (see conservation measure 4.1.4).

Tinian training areas that are known to support sea turtle nesting are: Unai Chulu, Unai Dankulo (Long Beach), Unai Babui, Barcinas Beach, and Unai Lam Lam (Vogt 2008, p. 7; Ilo *et al.* 2005, p. 7). Guam training areas that may or are known to support sea turtle nesting are: Haputo Beach, Kilo Wharf area (Spanish Steps), Gab Gab Beach and San Luis Beach, (both near Sumay Cove), Sumay Cove, and Sirena Beach. The MIRC activities that may impact sea turtles in terrestrial habitats include noise from explosions at the EOD pit near Tarague Beach; nest disturbance or destruction and beach erosion from the use of landing craft air cushion, landing craft utility, amphibious assault vehicles, combat rubber raiding craft, rigid-hulled inflatable boats on nesting beaches; and nest disturbance or destruction and beach erosion from over the beach swimmer insertions, combat swimmer special training, diving and anti-terrorism and force protection activities (USN 2009a, pp. 2-4 through 2-7, 2-18 through 2-19). Conservation measures (see 2.0; 4.3.1; 4.3.8; 4.5.9; and 4.5.10) will be implemented to avoid affects (direct strike, nest trampling, excess noise, lighting, etc.) to basking adults, nesting adults, nests, hatching events and hatchlings on Tinian and Guam. Furthermore, these conservation measures will be implemented to prevent erosion of beach habitats such that training does not impact the suitability of beaches to support future nesting. Based upon the conservation measures that will be implemented to avoid adults, nests, and hatchlings and to prevent impacts to their nesting habitats, we concur with your determination that the proposed project may affect, but is not likely to adversely affect, the green sea turtle or the hawksbill sea turtle.

Nightingale reed-warbler

The nightingale reed-warbler (*Acrocephalus luscinia*) is endemic to the Mariana Islands and is known historically from five islands in the Mariana archipelago: Guam, Aguiguan, Saipan, Alamagan, and Pagan. The nightingale reed-warbler is also known prehistorically from Tinian (Steadman 1999, pp. 337-340). The nightingale reed-warbler has been extirpated from Guam since the 1970s (Reichel *et al.* 1992, p. 47, and references within). Surveys conducted on Aguiguan in 2008, did not detect nightingale reed-warblers (Camp *et al.* 2009, p. 12). The last documented sighting of the nightingale reed-warbler on Aguiguan occurred in 1995 (USFWS 1998a, p. 5). The Pagan subspecies was extirpated from Pagan prior to 1981 (Reichel *et al.* 1992, pp. 50-51). Therefore, the current distribution and estimated population of the nightingale reed-warbler includes Saipan (1,686 to 3,956 individuals) and Alamagan (240 to 454 individuals) (CNMI DFW 2000a, p. 10; Camp *et al.* in press, p. 30). The species is now extirpated from over half of its native range and population estimates indicate that the nightingale reed-warbler has declined on Saipan and may be declining on Alamagan (Camp *et al.* in press, p. 30; CNMI DFW 2000a, p. 11).

On Saipan, the nightingale reed-warbler is found in areas of dense understory, including reed marshes, wetland-edge vegetation, forest edge and openings, mixed tangantangan-grassland habitat, mixed tangantangan-secondary forest, and tangantangan forest. While this species is largely absent from mature native forest, beach strand, and swordgrass savannah, it has been detected in limestone forests, near golf courses, and in residential areas (Craig 1992, p. 440; USFWS 1998a, p. 12; Camp *et al.* in press, pp. 12-13). However, these habitats are considered less suitable and statistically significant declines in nightingale reed-warbler densities have been documented in residential areas and at golf courses (Camp *et al.* in press, pp. 12-13).

Training on Saipan is limited to developed areas or relatively open savanna areas, including the Marpi Maneuver Area (USN 2009b, p. 90). The Marpi Maneuver Area is approximately 176 hectares (436 acres) and contains mostly tangantangan thickets, grasslands, mixed secondary forest (151.5 hectares; 374.5 acres); and mixed limestone forest (24.5 hectares; 61 acres). Nightingale reed-warblers are known to use the Marpi Maneuver Area for breeding, feeding, and sheltering; however, densities of the species on the site are unknown. Average home range in upland tangantangan thickets is 4.19 ± 2.1 hectares (10.4 ± 5.2 acres, n = 13) (calculated from Mosher 2006, p. 100). Therefore, we estimate the Marpi Maneuver Area could support approximately 36 pairs of nightingale reed-warblers (151.5 hectares of tangantangan thickets, grasslands, mixed secondary forest divided by 4.19 hectares per pair of birds).
Training within the Marpi Maneuver Area is expected to be infrequent and limited to pedestrian land navigation training in open areas (USN 2009b, p. 90). Pedestrian land navigation training in the Marpi Maneuver Area may cause temporary behavioral disturbances in the nightingale reed-warbler using these habitats for shelter or forage. However, the nightingale reed-warbler is not known to breed in open grassland areas. The USN proposes to implement conservation measures to minimize potential effects by scheduling training to avoid the peak breeding seasons (January through March and July through September) on Saipan (see conservation measure 4.2.2). To reduce the likelihood of wildland fire hazard, smoking by soldiers during training activities will not be allowed (see conservation measures 4.2.2). Additionally, the USN has proposed conservation measures as a part of the MIRC project description that will reduce the risk of introduction, spread, and establishment of non-native invasive species due to MIRC actions (see conservation measure 1.0). We believe that the implementation of invasive species interdiction and control measures reduces the risk of additional habitat degradation from invasive plants and predation from new invasive species within the Marpi Maneuver Area. Training operators within the MIRC may enter into new agreements with private landowners or CNMI land authorities to use additional lands for training purposes (USN 2009b, p. 39). Future agreements to train on private or CNMI lands will be reviewed for potential effects to listed species and their habitats (see conservation measure 4.2.2). Based on these conservation measures, we concur with your determination that the MIRC may affect, but is not likely to adversely affect, the nightingale reed-warbler.

Mariana common moorhen

The Mariana common moorhen is endemic to the Mariana archipelago and was known to occur on the islands of Guam, Saipan, Tinian, Pagan and Rota (prehistoric evidence) (USFWS 1991a, p. 3; Stinson *et al.* 1991, p. 38 and references within). The Mariana common moorhen is believed to be extirpated from Pagan due to the volcanic eruption in May 1981 and destruction of vegetation by feral ungulates (Stinson *et al.* 1991, pp. 41-42). Artificial wetlands (ponds for a

waste water treatment plant and a golf course) were constructed on Rota in 1994, and were subsequently colonized by a small number of adults, chicks, and juveniles (Worthington 1998, p. 414). Therefore, the current distribution (and approximate population size) includes Guam (n = 90), Saipan (n = 154), Tinian (n = 41), and Rota (n = 2) (Takano and Haig 2004a, p. 247).

The Mariana common moorhen prefers wetlands with diverse, non-persistent, emergent vegetation, containing deep and shallow water areas with equal areas of cover and open water (Stinson *et al.* 1991, p. 39; Ritter and Savidge 1999, p. 286) and avoids wetlands with dense monocultures (e.g., *Phragmites karka*) (Ritter and Savidge 1999, pp. 285-286). Edge and emergent vegetation is used for breeding, nest building, and escape cover (USFWS 1991a, p. 17 and references within; Ritter 1994, p. 129). Primary habitats (as defined in the Recovery plan) include: Agana marsh, Fena Valley reservoir, and the Naval Station Marsh, Guam; Lake Hagoi on Tinian; and Lake Susupe, Puntan Muchot, and Garapan wetlands on Saipan (USFWS 1991a, pp. 4-16). Several secondary wetland habitats were identified on Guam and Saipan; while only one secondary wetland on Tinian was considered important for the recovery of the species (USFWS 1991a, pp. 4-16).

MIRC activities will not spatially overlap with the Mariana common moorhen distribution on Rota or Saipan (see conservation measures 4.2.1 and 4.4). On Tinian, an index survey of Mariana common moorhen at Lake Hagoi indicates a slight increasing trend in the number of moorhens detected between 1999 and 2007 with a maximum of 18 individuals counted (Vogt 2008, pp. 2-5). Nest and egg production have been and continue to remain low which may be the result of predation by monitor lizards (Vogt 2008, pp. 2-5). The secondary wetlands on Tinian are not routinely monitored for the presence or abundance of moorhen. To avoid and minimize effects to the Mariana common moorhen on Tinian, the USN has established an 87-hectare (215-acre) "No Training Area" around Lake Hagoi and no MIRC activities will occur near the secondary wetlands on Tinian (see conservation measure 4.3.2; 4.3.5; and 4.3.6). The "No Training Area" is bounded by existing roads, with the closest road within 75 meters of the wetland. The only military training activities in a "No Training Area" are troop and vehicle movements along these established boundary roads.

On Guam, moorhens use Fena Reservoir, an approximately 82-hectare (203-acre) wetland located within the USN Munitions Site. Fena reservoir is used more in the dry season than the wet season (October through December) when moorhens typically disperse to other wetlands or rivers (Ritter and Savidge 1999, p. 286; Takano and Haig 2004b, p. 656). Recent survey data indicate the number of Mariana common moorhen routinely detected at Fena Reservoir during the dry season (when maximum abundance is anticipated) has declined since surveys were initiated in 1987 (Brooke and Grimm 2008, p. 3 pp.). Though surveys have been sporadic since 2004, breeding and recruitment appear to be low to none at Fena Reservoir, as the last nest was detected during January 2004, and the last juveniles were detected in July 2005 (Brooke and Grimm 2008, p. 3). Recently (April 2009), only six moorhen were observed at Fena Reservoir (Eggleston 2009, p. 1). The reduced numbers of moorhens and the lack of breeding and recruitment at Fena Reservoir has been hypothesized to correlate with the loss of *Hydrilla verticillata*, a non-native invasive aquatic plant that forms extensive mats, which was used as foraging and nesting habitat by the moorhen (Brooke and Grimm 2008, pp. 1-2). Moorhen also use Apra Harbor Naval Complex and USN Main Base, Guam. Mariana common moorhen have

not been documented using the riparian wetlands within the northern and southern land navigation training areas (see conservation measure 4.5.7).

Training will not occur near wetlands on Apra Harbor Naval Complex or USN Main Base, Guam (USN 2009b, pp. 9-10). At Fena Reservoir, helicopter-based fire bucket training occurs on a regular basis in the center of the northern portion of the reservoir approximately 300 meters from the Fena Spillway (estimated from USN 2009b, p. 17). Frequent helicopter overflights occur over the entire reservoir. Noise from helicopter overflights may mask predator approaches and mating calls or cause flushing. Mariana common moorhens have been documented to halt vocalizations during routine overflights (estimated height of 244 to 305 meters; 800 to 1000 feet above ground level) of small airplanes above Lake Hagoi (USFWS 1996, p. 9). Conversely, the moorhens have increased vocalizations, including loud shrieks and honks in response to gun shots (USFWS 1996, p. 9). However, neither of these responses appears to have resulted in changes to breeding or foraging behaviors nor do these actions appear to alter predation rates (Vogt 2008, pp. 2-5). To minimize impacts from MIRC training at Fena Reservoir, the USN will implement overflight restrictions and restrict fire bucket training to deeper areas of Fena Reservoir away from areas typically used by moorhen (see conservation measures 4.5.4; 4.5.6 and 4.5.14).

Training (foot and vehicle land navigation, sniper training, small field exercises) in other areas of the USN Munitions site could start a wildfire; however, the use of incendiary training materials is limited such that fires in forested habitats are unlikely and a fire management plan has been developed by the U.S. Forest Service to minimize impacts associated with wildland fires (see conservation measures 4.5.11). To date, no wildland fires have been ignited within the Ordnance Annex due to military activity. Fires that have burned areas within the Ordnance Annex have originated off USN properties and are generally associated with trash burning (USN 2009b, p. 95). The wildland fire management plan will minimize impacts from any wildland fires. In addition, the existing configuration of firebreaks and road networks generally confines fires to upland savanna portions of the USN Munitions site so that they do not reach the wetland habitats (USN 2009b, p. 92). Additionally, the USN has proposed conservation measures as a part of the MIRC project description that will reduce the risk of introduction, spread, and establishment of non-native invasive species due to MIRC actions (see conservation measure 1.0). We believe that the implementation of invasive species interdiction and control measures reduces the risk of additional habitat degradation from invasive plants and predation from new invasive species within the USN Munitions site. Based upon the avoidance of wetlands on Tinian, Saipan, and Rota, and the conservation measures described above for Guam, we concur with your determination that the MIRC may affect, but is unlikely to adversely affect, the Mariana common moorhen.

Mariana swiftlet

The Mariana swiftlet (*Aerodramus bartschi*) is endemic to Guam and the CNMI (Cruz *et al.* 2008, p. 233). A population was also established on Oahu, Hawaii between 1962 and 1965 (Wiles and Woodside 1999, p. 57). The Mariana swiftlet currently occurs on Guam (in three known caves within the USN Munitions site), Aguiguan (in nine known caves), and Saipan (ten known caves), and is considered extirpated from Tinian and Rota (Cruz *et al.* 2008, pp. 235-236; Grimm 2008, p. 1; USFWS 1991b, pp. 8, 13-14; Engbring *et al.* 1986, pp. 58-59). The current

Mariana swiftlet range (and population estimates) includes: Guam (n = 1,150); Aguiguan (n = 267); Saipan (n = 5,382); and Oahu (n = 66) (Cruz *et al.* 2008, pp. 237, 240; Grimm 2008, p. 1; Wiles and Woodside 1999, p. 59).

The species nests and roosts in limestone caves with the following characteristics: entrances typically a minimum of 2 meters (6.2 feet) high; chambers with dark zones; and fresh air (USFWS 1991b, p. 2). Mariana swiftlets are insectivorous and capture prey while flying. Foraging has been observed to occur over a wide variety of habitat types but they appear to favor ridge crests and open grassy savanna areas (USFWS, 1991b, p. 6). No information is available on preferred prey species. Mariana swiftlets have been documented to flush or fail to enter their caves when humans are near or within their caves (Wiles and Woodside 1999, pp. 57, 61). Their sensitivity to human presence has resulted in injuries to chicks and adults and could result in damage to eggs (Wiles and Woodside 1999, p. 61).

DoD will be training (foot and vehicle land navigation, sniper training, small field exercises) in areas known to support foraging swiftlets and their roosting and nesting caves. However, no training will occur within 100 meters of a cave entrance on Guam, no training will occur within or near caves on Saipan (see conservation measures 4.2.1 and 4.5.8). No foraging habitat (forests or grasslands in which they fly over to capture insects) will be removed due to training and overflight restrictions are in place over primary foraging areas (see conservation measure 4.5.3 and 4.5.6). The use of incendiary training materials is limited such that fires in forested habitats are unlikely (see conservation measures 4.2.2 and 4.5.11). The USN has proposed conservation measures as a part of the MIRC project description that will reduce the risk of introduction, spread, and establishment of non-native invasive species due to MIRC actions (see conservation measure 1.0). We believe that the implementation of invasive species interdiction and control measures reduce the risk of additional habitat degradation from invasive plants and predation from new invasive species within the Ordnance Annex. Additionally, the USN implements recovery actions to increase the population numbers of Mariana swiftlets on Guam (see conservation measure 4.5.15). Therefore, we concur that the proposed action may affect, but is not likely to adversely affect, the Mariana swiftlet.

Essential Habitat

Essential habitat for sea turtles, Mariana common moorhen, Mariana crow, Guam rail, Guam Micronesian kingfisher, Mariana fruit bat, and the Mariana swiftlet is also present on Guam and Per the requirements identified in the Cooperative Agreement between the USAF, USN, and the U.S. Fish and Wildlife Service (USFWS) for the establishment and management of the Guam National Wildlife Refuge (USAF and USFWS 1994, p. 6; USN and USFWS 1994, p. 6), we have provided coordination regarding potential impacts to essential habitat from the proposed project. Training will continue to occur throughout the Guam National Wildlife Refuge Overlay and includes all activities listed in the action areas for the USN Ordnance Annex; Communications Annex-Finegayan, Andersen Air Force Base Northwest Field. Training in these areas is ongoing and will increase with implementation of MIRC. The proposed project will not remove any habitat (other than that authorized through previous consultations); however, the increased frequency in use could result in the inadvertent introduction or spread of non-native invasive species, vegetation trampling, soil compaction or erosion, and increased fire risk. The USN has proposed to implement multiple conservation measures to reduce the risk of

introduction, spread, and establishment of non-native invasive species due to MIRC actions; limit or prohibit activities that may ignite fire, implement a wildland fire management plan and will work to prevent erosion and impacts from hazardous waste (see conservation measures 1.0; 2.0; 3.0; 4.5.2; 4.5.3; 4.5.11; 4.5.12; and 4.5.13). However, based upon the implementation of these conservation measures, we believe that the proposed action will not result in negative impacts to essential habitat within the Guam National Wildlife Refuge Overlay.

May Affect, Likely to Adversely Affect

Mariana Crow

The Mariana crow is endemic to Rota and Guam and was listed as endangered in 1984. Approximately 152 hectares (376 acres) were designated as critical habitat for the species on Guam, and 2,552 hectares (6,033 acres) of critical habitat were designated on Rota (USFWS 1984, pp. 33,881-33,885; USFWS 2004, pp. 62,944-62,990). Though not designated as critical habitat, habitat essential to the long-term conservation of this species is present within the Guam National Wildlife Refuge Overlay on military lands in northern and southern Guam (USAF and USFWS 1994, p. 1; USN and USFWS 1994, pp. 1-2; USFWS 2004, pp. 62,953-62,967). Mariana crow use primary and secondary limestone forests, coastline forest, ravine forest, agricultural forests, and coconut plantations for foraging, and shelter; while nests have only been located in native tree species (USFWS 2005a, pp. 12-15). Breeding likely occurs all year on Rota, while peak nesting activity generally occurs between August and February (USFWS 2005a, p. 18).

In 1976, Mariana crows were considered relatively common and widely distributed on Rota (Pratt *et al.* 1979, p. 234). The first island-wide survey for crows on Rota was conducted in 1982, and resulted in a population estimate of 1,318 individuals (Engbring *et al.* 1986, p. 95). Subsequent surveys in 1995 and 1998 indicated the population had declined to 592 individuals and 234 breeding adults, respectively (Fancy *et al.* 1999, p. 3; Plentovich *et al.* 2005, p. 211). Currently, the population is estimated to be approximately 120 breeding adults (Ha *et al.* 2008, p. 9).

Mariana crows were also once considered abundant and widely distributed throughout Guam (Baker 1951, p. 246). However, by the mid-1960s, Mariana crows had disappeared from the southern region of Guam, and by the mid-1970s, they were absent from central Guam (Jenkins 1983, p. 32). By 1981, the population was restricted to northern Guam and consisted of less than 400 individuals (Engbring and Ramsey 1984, p. 30). Ten years later, in 1991, fewer than 50 individuals were found on Guam (Wiles *et al.* 1995, p. 34). Between 1997 and 2003, a total of 31 Mariana crows were translocated from Rota and released on Guam (USFWS 2005a, pp. 45-46). Currently, the Guam population consists of only two male crows (Quitigua 2009, pers. comm.). The recent decrease in population size after the translocations is not believed to be related to military training.

No training will occur on Rota in areas supporting Mariana crow or its critical habitat (see conservation measure 4.4). Effects to designated critical habitat and essential habitat were reviewed above. The ISR Strike biological opinion reviewed potential impacts to the Mariana crow from the proposed action and determined that project implementation would not jeopardize the survival and recovery of the Mariana crow (USFWS 2006b, 73 pp.). Conservation measures

and terms and conditions were incorporated into the ISR Strike biological opinion to minimize impacts to the crow and its essential habitat. While the ISR Strike biological opinion anticipated the loss of essential habitat for the crow, no take of individual crows was expected or authorized. The MIRC project description incorporates the ISR Strike biological opinion (including the conservation measures and terms and conditions) by reference. No additional activities are planned or authorized beyond those already considered within the ISR Strike biological opinion and MIRC will follow all the requirements within the ISR Strike biological opinion (see conservation measures 4.5.1; 4.5.2; 4.5.3; 4.5.4; 4.5.5; 4.5.11; and 4.5.12). Therefore, we concur that the non-jeopardy determination from the ISR Strike biological opinion is still appropriate because: the analysis completed within the ISR Strike biological opinion is still accurate; all requirements within the ISR Strike biological opinion will be followed by MIRC; and there are no additional anticipated impacts to the Mariana crow from the implementation of MIRC. Therefore, the Mariana crow will not be considered further within this biological opinion.

Mariana Fruit Bat

The Guam population of the Mariana fruit bat (Mariana flying fox) (*Pteropus mariannus mariannus*) was federally listed as endangered in 1984 (USFWS 1984, p. 33,881). However, in 2005, the subspecies was listed as threatened throughout the Mariana archipelago and downlisted to threatened on Guam (USFWS 2005b, pp. 1,190-1,191). Approximately 152 hectares (376 acres) of land was designated as critical habitat for the Mariana fruit bat on Guam (USFWS 2004, p. 62,944). Though not designated as critical habitat, habitat essential to the long-term conservation of this species is present within the Guam National Wildlife Refuge Overlay on Military lands in northern and southern Guam (USAF and USFWS 1994, p. 1; USN and USFWS 1994, pp. 1-2; USFWS 2004, p. 62,953-62,967). The Recovery Plan for the Mariana fruit bat was finalized in 1990 (USFWS 1990, 63 pp.); however, this recovery plan is currently in revision. A five-year status review was completed in 2007 (USFWS 2007c, 4 pp.).

The Mariana fruit bat is endemic to the Mariana archipelago (Guam and the CNMI), where it is found on most of the fifteen major islands. General population data are available but should be considered with caution as survey methods have varied by island. The following represents the species range (and approximate number of individuals): Guam (less than 100); Rota (1,600); Aguiguan (40 – 60); Tinian (transient bats only); Saipan (50); Farallon de Medinilla (transient, only one bat has been observed); Anatahan (1,000); Sarigan (300 – 400); Guguan (550); Alamagan (100); Pagan (1,500); Agrihan (1,000); Asuncion (800); Maug (50) (Boland 2009, pers. comm.; Brooke 2008, p. 1 and references within; Brooke 2009a, p. 1; CNMI DFW 2000b, p. 4; CNMI DFW 2000c, p. 35; Johnson 2001, p. 19; USN 2009b, p. 89; Wiles and Johnson 2004, p. 585). There are no known records of the presence of Mariana fruit bats on Uracas (as Farallon de Pajaros in Wiles *et al.* 1989, p. 69).

The Mariana fruit bat uses several forest types for foraging, roosting, and breeding, including native primary and secondary limestone forest, volcanic (or ravine) forest, old coconut plantations, and groves of *Casuarina equisetifolia* (Glass and Taisacan 1988, pp. 6-13; Worthington *et al.* 2001, pp. 137-138; Wiles and Johnson 2004, pp. 589-591). Most of these habitats are dominated by a variety of native trees, with introduced trees present in lower abundance. On islands inhabited by humans, bat colonies usually occur in remote sites, especially near or along cliff lines. *Pteropus* bats are strong fliers and traverse long distances

(Eby 1991, p. 554; Wiles and Johnson 2004, p. 593 and references within). The Mariana fruit bat likely flies between islands in the archipelago (Wiles and Glass 1990, pp. 2-4; Wiles and Johnson 2004, p. 593 and references within). Reproduction in Mariana fruit bat may occur throughout the year (Glass and Taisacan 1988, p. 6). Juveniles are flightless and females carry their young after the young are born (Eby 1991, pp. 547-548; Esselstyn *et al.* 2006, p. 535). Once the juveniles are too large to carry, they are left at their roost at night while the majority of adult bats leave the roost to forage (Eby 1991, p. 548). These juveniles are still flightless and dependent upon the female until nursing ceases (Eby 1991, p. 548).

The Marina fruit bat is considered transient on Farallon de Medinilla because it has been observed only once on the island and the habitat available is considered unsuitable for supporting Mariana fruit bat populations (USN 2009b, pp. 37, 89; Wiles *et al.* 1989, p. 71). Mariana fruit bats have been observed to fly between islands and could rest upon Farallon de Medinilla after a catastrophic event (e.g., typhoon, volcanic eruption) affects other northern islands within the Marianas (USN 2009b, p. 89). The USN cannot train shortly after a catastrophic event due to safety conditions. We anticipate that any bats using Farallon de Medinilla after a catastrophic event will have left the island in search of food sources by the time the USN safety conditions have been met. Therefore, we expect that any potential affects to Mariana fruit bat from training on Farallon de Medinilla are extremely unlikely to occur.

Saipan supports a small population of Mariana fruit bats. The bats are typically seen as a few individuals at multiple sites, rather than a colony at a single site, and are likely using forested habitats across the island (Johnson 2001, p. 4). The mixed limestone forest area along the southern border of the Marpi Maneuver Area provides suitable habitat for the Mariana fruit bat and is near areas known to be used by the bat (Saipan Upland Mitigation Bank, Tanapag, As Matuis) (CNMI DFW 2009, p. 6; Johnson 2001, p. 4). Training in the Marpi Maneuver Area is infrequent and limited to pedestrian land navigation training that occurs within the open areas and (USN 2009b, p. 90). Conservation measures for this area (see conservation measures 1.0 and 4.2.2) will avoid and minimize impacts to Mariana fruit bats and the habitats they use.

Mariana fruit bats are considered transient on Tinian and have been observed in the Kastiyu Forest, the cliff line forest near Maga, and flying over the island (USN 2009b, p. 72). Transient bats have been observed using the native limestone forest within the MIRC action area on Tinian (i.e., cliff line forest near Maga). MIRC training activities that occur in the native limestone forest habitats within the Tinian action area are restricted as this is a "no wildlife disturbance area" (see 4.4.3) in the native limestone forest habitats within the Tinian action area and therefore effects from training will be avoided or minimized (see conservation measures 1.0, 4.3.3 and 4.3.4).

Rota supports a large population of Mariana fruit bats; however, MIRC will not initiate any action requiring the removal, trimming, or pruning of any tree (other vegetation species) known to support breeding, roosting, or foraging habitat for the bat. No training activities will occur near or within habitats that may be suitable for endangered or threatened species (see conservation measures 1.0 and 4.4). Effects to critical habitat on Rota were reviewed previously in this document.

Guam supports a small population of Mariana fruit bats. Individuals have been detected at multiple locations within the MIRC action area on Guam, including all of Andersen Air Force Base, Naval Computer and Telecommunications Station Finegayan, and Naval Munitions Site (USN 2009b, pp. 71-71, 89; Brooke 2008, p. 1). Suitable habitat within the MIRC action area is also present on the USN Main Base, and USN Barrigada and may support solitary bats that were not detected due to survey limitations (Brooke 2008, p. 1). One colony persists on Guam at Pati Point, Andersen Air Force Base (Brooke 2008, p. 2). Effects to critical habitat and essential habitat on Guam were reviewed previously in this document.

Sightings of bats in the USN Munitions site and Naval Computer and Telecommunications Station Finegayan is limited to a few individuals flying during daytime or low light conditions (Brooke 2008, p. 1). While these sightings are not representative of a population count, it is unlikely that large numbers of bats are using these areas due to their accessibility by the public (Brooke 2008, p. 1; Wiles 1987, pp. 153-156). The MIRC training activities in these areas will produce noise; however, it is unlikely that an individual bat will be using a specific training area. If a bat is present it is likely to be solitary and capable of flying to another area that is not within the disturbance zone. The flushing of a solitary bat from these areas, is not likely to increase the risk of predation, poaching pressure, or stress such that take in the form of harassment occurs. Flight restrictions are also in place over the USN Munitions site which will further minimize impacts to the bat (see conservation measure 4.5.6).

Effects to Mariana fruit bat individuals and the colony from training on Andersen Air Force Base (i.e., Northwest Field and Andersen Main Base) were reviewed under the ISR Strike biological opinion (USFWS 2006b, 73 pp.). Conservation measures and terms and conditions were incorporated into the ISR Strike biological opinion to minimize impacts to the bat and its essential habitat and a non-jeopardy determination was made for the proposed project. The ISR Strike biological opinion authorized take of 21 fruit bats from Guam and 36 bats from Rota (all residing at the Pati Point colony). The MIRC project description incorporates the ISR Strike biological opinion (including the actions, conservation measures, and terms and conditions) by reference (see conservation measures 4.5.1; 4.5.2; 4.5.3; 4.5.4; 4.5.5). Recent monitoring at the Pati Point colony (2009 data) indicates the colony is ranging in size from 12 to 30 individuals (mean = 21); however, the bats appear to have shifted their roost location and additional bats have been detected flying around the cliff from the traditional roosting area (Brooke 2009b, pers. comm.). Using these data we estimate that up to 19 Mariana fruit bats may have been taken from implementation of the ISR Strike (i.e., estimated maximum colony size at the time of the ISR Strike biological opinion minus the average number of bats detected during 2009, equals the estimated take [40-21 =19]). The average number of bats detected is used to estimate take because of the variability in count data. Based upon these data, we do not believe the take authorized in the ISR Strike biological opinion has been exceeded. However, the ISR Strike is not fully implemented at this time and additional take may occur. To ensure that take does not exceed that previously authorized, the UASF will continue to monitor the population as outlined in the ISR Strike biological opinion and the USN has proposed to further assess the behavioral changes in the bat colony (see conservation measure 4.5.16).

All training areas have the risk of invasive species being unintentionally transported among them which could affect the Mariana fruit bat by increasing predation or by altering their forging,

breeding, or roosting habitats. The USN has proposed conservation measures as a part of the MIRC project description that will reduce the risk of introduction, spread, and establishment of non-native invasive species due to MIRC actions (see conservation measure 1.0). We believe that the implementation of invasive species interdiction and control reduces the risk of additional habitat degradation from invasive plants and predation from new invasive species within Mariana fruit bat habitats in the MIRC action area.

No additional activities are planned or authorized on Andersen Air Force Base beyond those already considered within the ISR Strike biological opinion and MIRC will follow all the requirements within the ISR Strike biological opinion. Therefore, we concur that the non-jeopardy determination from the ISR Strike biological opinion is still appropriate because: the analysis completed within the ISR Strike biological opinion is still accurate; all requirements within the ISR Strike biological opinion will be followed by MIRC; and there are no additional anticipated impacts to the Mariana fruit bat from the implementation of MIRC on Andersen Air Force Base. Additionally, there is a low likelihood that any one individual will be present in the other action areas on Guam and within the CNMI during training. The low likelihood of presence in conjunction with the conservation measures proposed for those action areas should adequately avoid or minimize any potential affects to the species such that they are extremely unlikely to occur. Therefore, the Mariana fruit bat will not be considered further within this biological opinion.

Micronesian megapode

The Micronesian megapode (*Megapodius laperouse laperouse*), once referred to as LaPerouse's megapode, was federally listed as endangered in 1970 (USFWS 1970, p. 8,496). No critical habitat has been designated for this species. The recovery plan for the Micronesian megapode was finalized in 1998 (USFWS 1998b, pp. 62) and a five-year status review is currently underway (USFWS 2008b, p. 23,264).

The Micronesian megapode is endemic to Guam, CNMI, and Palau. Populations on Guam and Rota are considered extirpated (USFWS 1998b, p. 3; Stinson 1992, p. 220; Amidon and Kessler, 2009; pers. comm.). The population on Anatahan appears to have been extirpated due to recent and ongoing volcanic activity (Kessler 2006, p. 3; Kessler 2009b, pers. comm.). Currently megapodes from Micronesia and Palau are considered different races of the same species, *M. l. laperouse* and *M. l. senex*, respectively (USFWS 1998b, p. 4-5).

In general, the population status and range-wide trends of the Micronesian megapode are difficult to assess, in that population data have been collected and estimates made using a variety of methods at differing time periods. Increases and decreases in population numbers may be indicative of population trends or may reflect detection bias from implementing different survey and data analysis methods. Currently only a few individuals persist on Saipan and individuals on Tinian are likely transient (Radley 2009, pers. comm.; Camp *et al.* 2009, p. 12; USFWS 2009e, p. 124; USFWS 1998b, p. 19; Mosher 2009 pers. comm.; SWCA and MES 2008, pp. 10-12). On Alamagan, only two individuals were detected during recent surveys; however, juvenile and adult megapodes were singing and calling in ravine forest areas that were not surveyed (CNMI DFW 2000a, pp. 9-12). No recent survey data are available for Maug. Farallon de Medinilla and Aguiguan have moderate sized megapode populations that are likely stable with the reported

increase in the population largely being attributed to improved survey methods and differences in data analysis (USFWS 2009e, p.124; Vogt 2009a, p. 3). However, it is also possible that the increase on Farallon de Medinilla is due to dispersal from Anatahan due to the recent volcanic eruptions (Vogt 2009a, p. 4). Large numbers of Micronesian megapodes occur only on the islands of: Sarigan, Guguan, Pagan, and Agrihan where changes in population estimates may be a function of sampling method or, in the case of Sarigan, a result of ungulate eradication improving potential megapode habitat (CNMI DFW 2008, pp. 3-26 through 3-38; CNMI DFW 2000c, p. 11; CNMI DFW 2000d, p. 10; CNMI DFW 2000e, p. 11-12). The Micronesian megapode was incidentally observed once on the island of Uracus (USFWS 1998b, p. 35). The island does not support forest habitat and experiences volcanic activity on a sporadic basis, thus the likelihood of the island supporting a population is low (USFWS 1998b, p. 35). Based upon these data, we have estimated the total population of the Micronesian megapode to be a minimum of 1,585 individuals.

Micronesian megapodes can use a variety of habitat types. Typically, native and secondary forest are considered the primary habitats for foraging while nesting may occur in forests, open fields, cinder and ash fields, and coastal strand edges with sand substrates. The Micronesian megapode is generally restricted on Saipan and Tinian to native limestone forest remnants along and below cliff lines and in secondary forest adjacent to limestone forest (USFWS 1998b, p. 11). However, the association with cliff lines is likely an artifact of the location of the native forest as these uneven areas are generally the only native forest strands that were not disturbed during the long history of habitat removal on Saipan and Tinian (USFWS 1998b, p. 11). Micronesian megapodes were also observed using tangantangan forests on Saipan (Glass and Aldan 1988, p. 142). On Aguiguan, megapodes are typically found in limestone and secondary forests, and have been observed in *Lantana* sp. scrub, but not in open areas of weeds (USFWS 1998b, p. 11; Amidon and Kessler 2009; pers. comm.). On Farallon de Medinilla there are stunted trees (2 to 4 meters) but no forest habitat (Vogt 2009a, p. 5). Micronesian megapodes were detected on Farallon de Medinilla wherever tree or shrub cover was present (Vogt 2009a, p. 5). Megapodes on islands north of Farallon de Medinilla are found in forested habitats, including coconut forest and other native vegetation (USFWS 1998b, pp. 11-12).

The Micronesian megapode is vocal and has been documented to duet (USFWS 1998b, pp. 5-6 and references within). Duetting in birds is correlated with year-round territoriality and prolonged monogamous pair bonds (Farabaugh 1982, p. 93). Duetting for the Micronesian megapode has been observed in each month of the year (USFWS 1998b, p. 6 and references within; Amidon and Kessler 2009; pers. comm.). Glass and Aldan (1988, p. 141) reported that megapodes on Saipan appeared to remain together throughout the year in territories that are advertised and defended at least part of the year. Territory size was estimated between one hectare (2.47 acres) and approximately 3.8 hectares (9.4 acres) depending on habitat type (Glass and Aldan 1988, pp. 141-142; USFWS 2009e, p. 124 and 126). Dispersal between islands of the CNMI is not well documented. On Palau, megapodes are known to fly several kilometers between islands (Pratt *et al.* 1980, p. 121) and other species of megapodes are considered strong fliers (Dekker 1989, p. 317 and references within). We expect that the Micronesian megapode could fly between Saipan and Tinian (4.6 kilometers; 2.9 miles) or Tinian and Aguiguan (8.9 kilometers; 5.5 miles) (USFWS 1998b, pp. 9-10). The northern islands are 30 to 60 kilometers (18 to 37 miles) apart. Regular migrations of this distance are not documented (USFWS 1998b,

pp. 9-10). Glass and Aldan (1988, p.135) indicated that megapodes may have been transported by humans between islands within the CNMI, which may have assisted in maintaining the widespread distribution.

The Micronesian megapode is omnivorous and forages under ferns, branches, and leaf litter on the forest floor and in trees within bird's nest ferns (*Asplenium nidus*) (Glass and Aldan 1988, p. 142). Diet includes seeds and other plant matter, beetles, ants, ant larvae, and other insects and crabs (Glass and Aldan 1988, p. 142; Pratt *et al.* 1980, p. 121; Stinson 1992, p. 230).

The reproductive cycle of the Micronesian megapode is not well understood. Megapodes, including the Micronesian megapode, do not incubate their nests with their own body heat. Instead, megapodes will construct burrows or mounds at beaches and cinder fields, or at geothermal sites. Micronesian megapodes will also make burrows or mounds in between the roots of trees and in soil with decomposing vegetation where heat generated from decomposing organic materials incubates the eggs (Decker *et al.* 2000, p. 2; Wiles and Conry 2001, p. 270; Glass and Aldan 1988, pp. 135-137). Micronesian megapodes lay large eggs (approximately 18 percent of the female body weight); however, the total number of eggs per breeding season, interval between laying eggs, and the incubation period are unknown (USFWS 1998b, p. 9 and references within). Other species of megapodes lay between 10 and 13 eggs per year (USFWS 1998b, p. 9 and references within). Eggs are laid one at a time, with each egg laid between 9 and 13 days apart (USFWS 1998b, p. 9 and references within). Megapode chicks are precocial and able to fly upon emergence from the egg and nest (USFWS 1998b, p. 9).

Breeding has been observed (eggs, chicks, and juveniles) on Anatahan, Sarigan, Guguan, Pagan, Agrihan, and Maug during all months except October, November, and December (USFWS 1998b, pp. 6-7 and references within; Amidon and Kessler 2009; pers. comm.). The absence of breeding activity in October, November, and December is more likely a reflection of the lack of surveys during these months, and difficulty in finding megapodes during traditional avian surveys (Amidon and Kessler 2009; pers. comm.).

The Micronesian megapode is threatened by habitat loss and degradation due to agriculture, military operations, urban development, volcanic activity, wildfire, invasive vegetation species, overgrazing by feral ungulates (USFWS 1998b, pp. 35-38); predation by dogs, cats, monitor lizards, pigs, and possibly rats (Dekker 1989, pp. 318-320; Dekker *et al.* 2000, p. 5 and references within; USFWS 1998b, p. 37); and human exploitation (Dekker *et al.* 2000, p. 2; USFWS 1998b, p. 37; Vogt 2009c, p. 5; Amidon and Kessler 2009; pers. comm.). Threats from competition and disease are not well understood, but are possible. Competition for nesting and foraging areas would be possible if introduced game birds and domestic or feral chickens (which forage on the same prey items as megapodes) become established in megapode habitats (USFWS 1998b, p.38; Vogt 2009c, p. 6). Additionally, the import of game birds or chickens and existing feral chicken colonies (on Rota, Tinian, Saipan, Anatahan, Alamagan, and Pagan) could expose megapodes to avian diseases (USFWS 1998b, pp. 38-39), as many of these species are susceptible to west Nile virus (UC Davis 2009, pp. 2-3).

Farallon de Medinilla is leased by the DoD from the CNMI and is approximately 73 hectares (183 acres) in size (USN 2009a, p. 3.11-29). Habitat used by the Micronesian megapode on

Farallon de Medinilla is characterized as predominantly dense herbaceous communities, scrubby brush, stunted trees, grasslands, and bare earth and include the following plant species: *Wollastonua biflora*, *Mariscus javanicus*, *Capparis spinosa*, *Ipomoea pes-caprae*, *Boerhavia* spp., *Portulaca lutea*, *Operculina ventricosa*, and stunted *Pisonia grandis* (Lusk *et al.* 2000, p. 24; USN 2009a, p. 3.11-30). The habitat is maintained in a low to mid-successional stage due to wind conditions (northern portion) and previous military readiness training (middle and southern portion) (USN 2009a, p. 3.11-61). A small population of Micronesian megapodes occurs on Farallon de Medinilla. An estimated 21 pairs and 4 individuals (46 total individuals) are currently present on Farallon de Medinilla (Vogt 2009a, pp. 3-5; USN 2009b, p. 89). These data include the observation of a chick and a juvenile, indicating reproduction may be occurring on the island (Vogt 2009a, pp. 3, 5). Based upon the size of Farallon de Medinilla and potential territory size, Vogt (2009a, p. 4) estimated that the island could likely support a population of 50 megapodes.

On Saipan, the Army Reserve Center and Commonwealth Port Authority actions areas do not support habitat for the Micronesian megapode, nor have megapodes been detected within these action areas. The Marpi Maneuver Area is located on the northern portion of the island approximately one mile north and below the cliff line from the Saipan Upland Mitigation Bank (USN 2009a, p. 3.11-24). Craig (1993, pp. 99-100) summarized the habitat disturbance on Saipan and noted the Marpi area, except some of the limestone escarpments, was cleared for sugarcane (*Saccharum officinarum*) cultivation and developed for military operations during World War II. In areas where vegetation was allowed to re-grow post World War II, non-native species are the dominant vegetation. Currently, the Marpi Maneuver Area is still characterized by elephant grass (*Pennistum purpureum*) meadows and tangantangan thicket (USN 2009a, p. 3.11-24 through 3.11-25) and a remaining area of limestone forest (USN 2009b, p. 14) and is used to support recreation and tourism, agricultural leases, and homesteads. Between the cliff line and the Marpi Maneuver Area is a 17.4-hectare (43-acre) Micronesian megapode protected area (USEPA 2009, pp. 2, 8). The protected area is known to support at least one Micronesian megapode (Rounds 2009; pers. comm.). Other areas including tangantangan thickets adjacent to limestone forests and elephant grass meadows adjacent to the Marpi Maneuver Area are known to support Micronesian megapodes as well (Mosher 2009; USFWS 2002, p. 8; CNMI DFW 2009, p. 5). The Micronesian megapode may be using scattered tangantangan strands within the Marpi Maneuver Area for feeding, resting, and as a corridor between limestone forests. Because of recent observations in the Marpi Maneuver Area and continued sightings of the Micronesian megapode in adjacent limestone forest, we have determined that the Micronesian megapode is reasonably certain to occur within the Marpi Maneuver Area on Saipan.

The action area on Tinian includes the Exclusive Military Use Area which consists of 3,080 hectares (7,600 acres) of land in the northern one-third of Tinian (USN 2009a, p. 3.11-26). The Exclusive Military Use Area is leased by DoD from the CNMI. The action area on Tinian also includes the Military Lease Back Area which includes the central one-third of the island and consists of 3,150 hectares (7,800 acres) (USN 2009a, p. 3.11-27). Habitats on Tinian pre-World War II were extensively altered for agriculture. Military actions (both bombing during World War II, reconstruction, and ongoing training), fire, and invasive vegetation species encroachment continue to shape the habitat. Currently, both military areas support lowland habitats consisting of native forest, tangantangan thickets, secondary growth forests, and open fields (USN 2009a,

pp. 3.11-26, 3.11-28). Although Micronesian megapodes were not detected on Tinian during 2008 (USFWS 2009e, p. 124), both action areas on Tinian support foraging and roosting habitat for the Micronesian megapode (USN 2009a, pp. 3.11-26, 3.11-44). Incidental reports and regular sightings (1995 to 2005) of the Micronesian megapode on Tinian indicates that either a small but persisting population of Micronesian megapodes exists on Tinian or that Micronesian megapodes routinely use habitats on Tinian when flying between Aguiguan and Tinian or Tinian and Saipan (USFWS 1998b, pp. 10, 18; USN 2009a, p. 3.11-44). Due to the presence of suitable habitat and the occasional but routine observations of Micronesian megapodes on Tinian, we have determined that the Micronesian megapode is at least transient and reasonably certain to occur within the Military Lease Area on Tinian.

Micronesian megapodes were extirpated from Guam and Rota in the ninetieth and early twentieth centuries (USFWS 1998b, p. 3 and 15) and are not expected to be in the action areas. Therefore, we will not consider effects to megapode from training on Guam and Rota within this biological opinion.

STRESSORS AND EFFECTS FROM THE ACTION

The USN expects that the implementation of MIRC may produce multiple stressors to Micronesian megapodes and their habitats within the action areas on Farallon de Medinilla, Saipan, and Tinian (USN 2009b, pp. 83-85). Specifically, implementation of the MIRC may result in: direct strike; pedestrian and vehicular disturbance that can alter habitats or crush nests; habitat degradation, fragmentation, and loss; increased noise; increased risk of non-native invasive species introductions and spread; wildfire and prescribed burning. Toxicants (herbicides and pesticides) will also be used during the implementation of MIRC.

Direct Strike

Military training can result in direct strike of wildlife and their nests with munitions (including ultrasound waves, percussive force) (Demarais *et al.* 1999, p. 387; Larkin *et al.* 1996, p. 12). Direct strike of wildlife also routinely occurs with civilian and military aircraft and civilian vehicles (Klope 2009, p. 1; Huijser *et al.* 2008, p. 57; Erickson *et al.* 2005, pp. 1,030-1,031); and therefore, it is possible for vehicular strike to also occur from military trucks, tanks, and other vehicles used for maneuver and convoy training. Micronesian megapode nests will not be impacted due to vehicle or pedestrian navigation (trampling or crushing a burrow or mound) or from support activities that involve earth moving (trenching, bivouac, etc.). No direct strikes to Micronesian megapodes have been reported from either civilian or military training vehicles. The USN has proposed conservation measures to reduce the likelihood of direct strike to the Micronesian megapode from vehicles (see conservation measures 4.2.2 and 4.3.3). Military vehicles used in convoy and maneuver training travel at a slow pace and will be used only on existing roads and trails on Tinian. No training occurs in the limestone forest on Tinian where the Micronesian megapode has been previously detected. Because the megapode is considered transient on Tinian, we do not expect nesting to occur on Tinian; therefore, we do not anticipate any nest destruction due to military training on Tinian. No vehicle maneuver training occurs on Saipan or Farallon de Medinilla. On Saipan, pedestrian land navigation training and earthmoving activities will not occur in the limestone forest habitats, thereby avoiding the risk of damaging potential nests.

Bird aircraft strikes are not expected to occur between Micronesian megapodes and military aircraft. The training areas on Tinian subject to aircraft takeoffs and landings are on established runways that are a minimum of 300 meters (984 feet) from the limestone forest area where Micronesian megapodes were last sighted. Overflights above Farallon de Medinilla are at altitudes greater than Micronesian megapodes have been observed to use during flight (Kessler 2009c, pers. comm.).

Approximately five pairs of Micronesian megapodes (extrapolated from survey data) may be using the area around the inert and live-fire target areas on Farallon de Medinilla and are at risk for a direct strike from ordnance (USN 2009b, p. 89). Explosions within close proximity of megapodes are expected to produce shock waves, shrapnel, and fire blasts, all of which would result in mortality of an individual. Cratering in a nesting area would destroy the nest; however, no nesting is suspected below the "No Drop Zone" on Farallon de Medinilla. Shock waves from sonic booms are not likely to break eggs or reduce hatching success (Larkin *et al.* 1996, p. 50 and references within). The USN has proposed conservation measures to minimize the potential for direct strike from munitions by protecting the northern portion of the island and by implementing targeting and weapons restrictions (see conservation measure 4.1). Therefore, we anticipate that five Micronesian megapode pairs (ten individuals) may be taken as a result of inert and live-fire training on Farallon de Medinilla.

Habitat Degradation, Fragmentation, and Loss

Habitat degradation is the primary cause of extinction and endangerment of wildlife (Groom and Vynne 2006, p.173). Habitat degradation and loss is caused by various human activities including: agriculture, mining, forestry, fisheries, aquaculture, groundwater extraction, fires, infrastructure development, dams, urbanization, industry, pollution (including light, noise, and toxic chemicals), and changes in community and ecosystem structure due to invasive species (Groom and Vynne 2006, p. 174). Habitat fragmentation is a change in habitat configuration with the remaining habitat occurring in patches among areas of non-habitat (Noss *et al.* 2006, p. 213) and can occur via the activities listed above. When vegetation is affected by activities, edges (a type of habitat fragmentation) are created. Edges form the boundary of a habitat and have differing properties than the habitat itself. For example, edges often have different microclimate patterns which are drier, less shaded, and warmer than forest interiors. Edge habitats are generally areas of increased predation and the entry point for invasive vegetation, pests, and pathogens to encroach within native habitats (Noss *et al.* 2006, p. 228). Habitat degradation, fragmentation, and loss can result in localized extinctions, shifts in community composition (including increases in invasive species), increased predation, and can result in suitable habitat becoming unsuitable due to pollution, invasive species, physical size (for species that are area-sensitive), or barriers blocking access to habitats (including distance or lack of corridors and stepping stones, etc.) (Noss *et al.* 2006, 38 pp.; Groom and Vynne 2006, p. 174). Habitat loss on Saipan and Tinian has occurred due to agriculture development and military operations during World War II (USFWS 1998b, p. 35). More recently, habitats on Tinian and Saipan are being converted to more urbanized and agricultural landscapes. Since listing, the USFWS has reviewed development projects on Tinian (n = 2) and Saipan (n = 4) that may affect the Micronesian megapode; however, the projects' proponents agreed to avoid loss of native forests to minimize degradation, fragmentation, and loss of habitat for the Micronesian megapode. Anatahan, Guguan, Alamagan, Pagan, Agrihan, Asuncion, and Uracus are all subject

to volcanic activity (Glass and Aldan 1988, p. 134) and recently habitat has been lost on Anatahan and Pagan due to volcanic activity (USFWS 1998b, p. 27; USFWS 2009e, p. 120). While Tinian, Saipan, and Farallon de Medinilla are not subject to volcanic activity, other natural phenomena (drought and typhoon activity) may contribute to habitat loss as well. For example, drying of nesting soils or thick vegetative growth after a typhoon can limit the suitability of megapode nesting habitat. In addition, the forest habitat on Tinian and Saipan has been degraded from overgrazing by feral ungulates. Overgrazing changes vegetation communities (increases opportunities for growth of non-native vegetation), increases erosion, and changes soil moisture content (Kessler 2002, pp. 132, 137-139), all of which can reduce nest site potential and change the forage community available for megapodes (USFWS 1998b, p. 35).

In addition to agriculture, urbanization, and other natural phenomena, military training and preparation can result in habitat degradation, loss, and fragmentation, (Machlis and Hanson 2008, p. 732 and references within). Habitat on the northern portion of Farallon de Medinilla is considered low quality and is somewhat stunted due to excessive wind (Lusk *et al.* 2000, p. 32 and references within; Vogt 2009a, p. 4). Habitat degradation and loss has also occurred on Farallon de Medinilla due to previous military bombardment on the central and southern portions of the island. During the Vietnam era, as much as 22 tons of ordnance per month was dropped on Farallon de Medinilla for training purposes (Lusk *et al.* 2000, p. 32 and references within). Surveys of the island in 1997, after a recent training activity, revealed up to 50 fresh bomb craters and a large section of the island burned to bare earth (Lusk *et al.* 2000, p. 32 and references within). These surveys demonstrate the ability of active training with live and inert ordnance to alter the habitat from a medium-height, relatively closed canopy forest, to one dominated by open areas with intermittent patches of low forest (Lusk *et al.* 2000, p. 32). Demarais *et al.* (1999, p. 387 and references within) summarized disturbances and effects caused by military training which are described below in the context of actions proposed by MIRC on Tinian, Saipan, and Farallon de Medinilla.

Mechanized maneuver regimes are designed to simulate actual mechanized combat and will be used on Tinian and Saipan. These types of activities are characterized by vehicle movements across the terrain. Constructed defenses typically include anti-tank ditches to prevent vehicles from crossing an area. Trucks, heavy vehicles, and tracked vehicles, primarily result in altered soil conditions leading to soil compaction, erosion, and pulverizing surface particles. Soil compaction reduces soil aeration and nutrient uptake and can limit root growth and seedling emergence. Vegetation can be impacted by breaking limbs and branches, uprooting, crushing or otherwise damaging or destroying trees, shrubs, and grasses. Frequent, short-term, minor events can result in trampling of vegetation and soil compaction such that soils and plants do not recover rapidly, if at all. This type of vegetation disturbance can result in existing habitat becoming unsuitable for foraging, nesting, or roosting. On Tinian, mechanized maneuvers will include vehicle land navigation and convoy training. No mechanized maneuver training will occur within the Marpi Maneuver Area on Saipan or on Farallon de Medinilla.

Infantry maneuver training is designed to train infantry units to fight in dispersed formations and often results in cutting vegetation for camouflage, digging fox holes, and pedestrian navigation. Pedestrian land navigation will occur within the Marpi Maneuver Area on Saipan and force-on-force airfield defensive and offensive training will occur on Tinian. No infantry maneuver training will occur on Farallon de Medinilla.

Command and support training includes staging areas for headquarters, supplies, maintenance, and other non-combat support systems, typically in bivouac positions. Bivouac activities generally result in soil excavation for fortification of the position, soil compaction, removal of low-level vegetation, and damage or removal of trees. On Tinian, command and support activities include command and control training, air traffic control, logistics, and bivouac. No command and support training will occur within the Marpi Maneuver Area on Saipan or on Farallon de Medinilla.

Engineering regime training is used to construct and destroy obstacles, and implement other construction activities (bridge building, use of earth moving equipment, and explosives for demolitions). On Tinian, armament, fuels, rapid runway repair, and other airfield-related engineering requirements will be implemented. No engineering regime training will occur in the Marpi Maneuver Area on Saipan on Farallon de Medinilla.

Live and inert fire training uses a variety of ordnance including demolitions, grenades, small arms, mortars, missiles, cannons, artillery, and bombs. These munitions often contain high explosives, chemical obscurants, ball ammunition, and illumination rounds. Large quantities of ordnance can lead to contamination of soils, groundwater, vegetation (Machlis and Hanson 2008, p. 731), unexploded ordnance issues, soil displacement (e.g., cratering), erosion, vegetation damage, and fires. Contamination of soils and vegetation from munitions waste can result in harm and mortality to wildlife (Machlis and Hanson 2008, p. 731). No live-fire or inert ordnance training occurs on Saipan. On Tinian, military operations in urban terrain activities and live-fire occur only within North Field World War II structures and the old Japanese Headquarters Building using small arms and bullet traps. Large quantities of live and inert ordnance will be used on Farallon de Medinilla through ship-to-shore bombing and aerial bombardment.

The USN has proposed multiple conservation measures for Tinian and Saipan to avoid and minimize impacts from mechanized maneuvers, infantry maneuvers, command and support training, engineering regimes, and live-fire to limestone forest habitats that could be used by Micronesian megapodes resting, foraging, and nesting. These measures include: invasive species interdiction and control, best management practices for erosion control and hazardous waste management, training restrictions within native limestone forest habitats, and fire prevention and management (see conservation measures 1.0; 2.0; 3.0; 4.2; 4.3.3; 4.3.4; and 4.3.7). We anticipate the implementation of these measures will ensure that these limited habitats remain physically the same size (i.e., no loss or further fragmentation) and in similar quality so that they will continue to be suitable for foraging, resting, and potentially nesting. Therefore, we do not anticipate the implementation of MIRC will result in any population-level effects (i.e., further range reductions, decreases in fitness, reduction in reproductive success) because we do not expect habitat degradation, fragmentation, or loss on Tinian or Saipan. We also anticipate that the existing habitat for Micronesian megapodes will not be at any greater risk of degradation, fragmentation, or loss from the indirect effects of natural disasters (typhoons and droughts) than currently, due to the implementation of these conservation measures.

On Farallon de Medinilla, Micronesian megapodes use habitats within the target areas (estimated five pairs) and the "No Drop Zone" (estimated 16 pairs) (USN 2009b, p. 89; Vogt 2009a, p. 3). We also believe that megapodes are reproducing on Farallon de Medinilla, due to the presence of

a chick, a juvenile, and habitat manipulation that is suggestive of megapode burrows within the "No Drop Zone" (see Lusk *et al.* 2000, p. 29). The USN has proposed multiple conservation measures for Farallon de Medinilla to reduce the degradation and loss of habitat including: invasive species interdiction and control, best management practices for erosion control and hazardous waste management, target and weapons restrictions, range maintenance, and the continued implementation of the "No Drop Zone" (see conservation measures 1.0; 2.0; 3.0; and 4.1). Additionally, the USN will implement rodent eradication on Farallon de Medinilla as rodents likely rely on the vegetation for a food source, water source, and nest materials. Removing the rodents is expected to improve habitat conditions on the island especially within the "No Drop Zone"; however, we anticipate that habitats within the inert and live-fire target areas will continue to be degraded, fragmented, and possibly lost due to MIRC training as described above and the potential for wildfire and prescribed burns as described below. We also expect that training will make habitats within the inert and live-fire areas more prone to the confounding effects from drought and typhoons. Therefore, we anticipate habitat for approximately five pairs (10 individuals) of Micronesian megapodes will become unsuitable or lost through MIRC training activities. This habitat is that associated with the same five pairs (10 individuals) that we anticipate may be taken through direct strike.

Due to the implementation of the conservation measures, we anticipate that the "No Drop Zone" will remain in the same condition or possibly improve due to rodent control and may be able to support additional pairs of megapodes (i.e., those that were displaced or new recruits). We also anticipate that the "No Drop Zone" will continue to be suitable (or suitability may increase) for foraging, resting, and potentially nesting. Therefore, we do not anticipate population-level effects (i.e., further range reductions, decreases in fitness, reduction in reproductive success) will occur as a result of habitat degradation, fragmentation, and loss due to MIRC. We also anticipate that the existing habitat for the Micronesian megapode within the "No Drop Zone" will not be at any greater risk of degradation, fragmentation, or loss from the indirect effects of natural disasters (typhoons and droughts) than currently, due to the implementation of these conservation measures.

Noise

The proposed training will result in noise (i.e., vibrations at differing frequencies) from the use of a variety of vehicles (fixed-wing aircraft, helicopters, trucks, tanks, other convoy vehicles) and weapons (demolitions, grenades, small arms, mortars, missiles, cannons, artillery, bombs), fire suppression, and loud voices. Micronesian megapodes on Tinian, Saipan, and Farallon de Medinilla will be exposed to varying levels of noise due to the different types of training. Therefore, the information below is presented as a background of noise impacts, and then a summary of exposure to the megapode by action areas.

Wildlife can be very sensitive to sounds in some circumstances and insensitive to sounds in other situations. Larkin *et al.* (1996, 107 pp.) in a recent literature review summarized the research related to effects from noise associated with military training to wildlife. Larkin *et al.* (1996, pp. 12-18, and references within) describes audio frequencies (i.e., the range of sound we can hear between infrasound and ultrasound), ultrasound, and infrasound. High frequency sounds (or ultrasound) diminishes very rapidly in air with distance from the source and terrestrial animals that are close enough to be adversely affected by the ultrasound produced by military training are

likely close enough to be adversely affected by shrapnel, flying rock, or direct strikes. Therefore, ultrasound receives little attention in the terrestrial environment and we will assume that birds close enough to experience impacts from ultrasound will be directly affected by weapons use (i.e., direct strike). Effects from direct strike are analyzed above.

Infrasound (present in blast and helicopter noise, but not heard by humans) attenuates less in air than audible sound which means these noises can affect wildlife at longer distances. Birds may use infrasound for communication; however, the extent to which birds are affected by infrasound is speculative. Infrasound can result in damage to the ears which may affect the species' ability to hear and may also mask biologically meaningful infrasonic communication between individuals.

Noise can result from impacts (one object striking another), blasts (explosions which result in shock waves), bow shock waves (pressure waves from projectiles flying through the air), and substrate vibrations (combinations of explosion, recoil, or vehicle motion with the ground). Noise may be continuous (i.e., lasting for a long time without interruption) or impulse (i.e., short duration). Continuous impulses (helicopter rotor noise, bursts from rapid-fire weapons) represent an intermediate type of sound and, when repeated rapidly, may resemble continuous noise. These types of sound are distinguished here as they differ in their effects. Continuous sounds can result in hearing damage while impulses typically elicit physiological or behavioral responses.

Additionally, continuous or repetitive loud noise appears to cause stress and vascular alteration (including structural damage) in the ear and could be harmful when animals are already under metabolic stress. Sound levels over 85 A-weighted decibels (dBA) are considered harmful to inner ear hair cells; 95 dBA is considered unsafe for prolonged periods; and extreme damage occurs as a result of brief exposure to 140 dBA (Hamby 2004). Hearing loss in birds is difficult to characterize because birds, unlike mammals, regenerate inner ear hair cells, even after substantial loss (Corwin and Cotanche 1988, pp. 1,772-1,774; Stone and Rubel 2000, pp. 11,714-11,721). Recovery from metabolic ear stress can often occur after ten hours (mammals) post loud impulse noise, even before ear structures are fully recovered. Repeated trauma may prolong the course of hearing sensitivity recovery; however, longer-term recovery from hearing loss is generally expected in birds due to cell regeneration. However, lifelong hearing loss (threshold shifts) can occur in birds and about half the duration of noise is needed to produce a threshold shift in birds as opposed to mammals.

Severe noise, even if the noise is short in duration, can result in tympanum rupture, bone fracture, other damage to the ear, and deterioration of brain cells. These impulse noises can cause physical damage at lower intensity than continuous or rapidly-repeating noises due to the ear reflex mechanism. For example, common canaries (*Serinus canaria*) exposed to continuous loud noises experienced changes in hearing thresholds, especially at high frequencies (Larkin *et al.* 1996, p. 30, and references within). While a study with budgerigars (*Melopsittacus undulates*) indicated that a permanent threshold shift (lifelong hearing loss) was experienced at low frequencies only and nearly absent at higher frequencies (Larkin *et al.* 1996, p. 30, and references within). Many birds appear to tolerate noise that can cause pain in humans, for example: seabirds at airports, wild turkeys (*Meleagris gallopavo*) near a rocket testing plant in

Florida, and ospreys (*Pandion haliaetus*) at the Naval Surface Warfare Center, Dahlgren (Larkin *et al.* 1996, p. 31, and references within).

These varied responses are often attributed to habituation, where after a period of exposure to a stimulus, an animal stops responding to the stimulus. In general, a species can often habituate to human-generated noise when the noise is not followed by an adverse impact. Even when a species appears to be habituated to a noise, the noise may produce a metabolic or stress response (increased heart rate results in increased energy expenditure) though the response may or may not lead to changes in overall energy balance.

In addition to physical damage to the ear, noise also produces other physiological and behavioral responses. The behavioral effects of military related noise to wildlife have been investigated numerous times with mixed results (VanderWerf *et al.* 2000, p. 3) and it is therefore difficult to generalize predictions about potential responses of Micronesian megapode to noise based upon other species. The following information is summarized from Larkin *et al.* (1996, p. 21-52), unless otherwise stated and is meant to provide an overview of the types of responses that have been documented for avian species from military noise or related noise (i.e., commercial fixed wing flights vs. military fixed-wing flights).

Noise from small arms is unlikely to affect animals in terms of hearing loss; however, those species that are commonly hunted will likely demonstrate behavioral (e.g., flushing, startle response) or physiological responses (e.g., increased heart rates, increased respiration rates). However, blast noise includes shock waves. Red-cockaded woodpeckers (*Picoides borealis*) successfully raised young near an active bombing range in Mississippi; while other birds at other sites did not. Oahu elepaio (*Chasiempis sandwichensis ibidis*) did not respond in statistically significant or biologically meaningful ways to noise generated by training with 155 and 105 millimeter howitzers, 60 and 81 millimeter mortars, hand grenades, and demolition of unexploded ordinance (VanderWerf *et al.* 2000, pp. 18-19). Prairie falcons (*Falco mexicanus*) responded to blasts from ongoing civilian construction where the nests sites were not normally exposed to blasting; however, one northern harrier (*Circus cyaneus*) appeared to preferentially hunt near a location where 24-pound bombing occurred. Anecdotal observations indicate the burrowing owl (*Athene cunicularia floridana*) continues to be persistent at Eglin Air Force Base on a bombing range where a variety of inert ordnance (rockets, missiles, and bombs including the MOAB [a 21,700-pounds massive ordnance air blast bomb]) has been used over the last 24 years (Hagedorn 2009, pers. comm.).

Noise from helicopters is complex and wildlife response may depend on the model of the helicopter. Touch-and-go landings, bombing runs, helicopter sorties, and artillery practice are impulse activities that repeat at short enough intervals to constitute a continuous exposure. In a literature review of waterfowl response to aircraft, avian response to aircraft was (cautiously) generalized as more intense with helicopters than fixed-wing aircraft, and stronger with slower fixed-wing aircraft than fast fixed-wing aircraft (Plumpton 2006, p. 3-1, 3-2). Increasing horizontal distance resulted in lower response than increasing altitude (Plumpton 2006, p. 3-1, 3-2). Raptors have varied behaviors in response to helicopters and responded similarly to explosions: by remaining on a nest, flushing from an area, and attacking the helicopter. American black ducks (*Anas rubripes*) reacted to 39 percent of military aircraft overflights on

their first day of exposure, but after two weeks they responded only six percent of the time (Conomy *et al.* 1998, pp. 1,135-1,142). However, wood ducks (*Aix sponsa*) in the same study continued to respond to aircraft noise (Conomy *et al.* 1998, pp. 1,135-1,142). Survival of captive black duck chicks was lower in a noisy area than control area; however adults were largely unaffected. Sandhill cranes (*Grus canadensis*) were noted to stay on their nests when helicopter activity was within 40 meters above them and bald eagles remained on their nests until helicopters approached closely (distance not defined). On Farallon de Medinilla, adult birds (presumably various species of seabirds) flushed from their nests in response to helicopter landings; however, some returned to their nests within 15 minutes after the disturbance stopped (Lusk *et al.* 2000, p. 32).

Vehicles also differ from one another in sound and appearance. Vehicle noise impacts to wildlife are difficult to quantify as other factors (emissions, topography, and vegetation, etc.) generally confound analyses. Vegetation and topography can reduce vehicle traffic noise. In one study, when traffic increased, burrowing owls exhibited alert responses or moved. Though these behaviors did not result in changes to nesting productivity. A study of sandhill cranes noted that the birds nested within 4 meters of a road, while in a study of off-road vehicles, birds (species not defined) flushed and flew distances of 3.2 kilometers at the sound of approaching vehicles. As summarized in Larkin *et al.* (1996, 107 pp.) other studies have noted species-specific decreases in breeding densities close to roads.

Human-produced noise also elicits responses in birds. Incubating herring gulls (*Larus argentatus*) and great black-backed gulls (*L. marinus*) habituated to the continual presence of humans, but were disturbed when they perceived a human walking directly toward their nests (Burger and Gochfeld 1981, pp. 242-267). On Farallon de Medinilla, Micronesian megapodes flushed in response to humans (Lusk *et al.* 2000, p. 29). Upon flushing, the birds called and flew 30 to 50 meters before dropping back into thick vegetation (Lusk *et al.* 2000, p. 29).

As demonstrated above, noise can produce a variety of physiological impacts and behavioral responses in wildlife. The response to noise not only affects an individual but can affect the overall population as well. Hearing impairment, both temporary and permanent, can decrease viability or reproductive success particularly when mate attraction and territory protection depend on calling or singing normally. Hearing impairment can also decrease the ability to detect and warn others of predators. Behavioral responses (startle response, alert or alarm response, and flushing) to noise are often examined as these response actions result in: birds expending excess energy that is not directed towards reproduction; nest exposure increasing the risk of predation, nest cooling or nest heating which can result in egg and juvenile mortality; or accidently kicking eggs or juveniles out of the nest. Behavioral responses can also include lower breeding densities in suitable habitats that are subject to noise; therefore, suitable habitat may become otherwise unsuitable due to noise. Wildlife response to noise may also be more intense at night, if the species rely more on auditory cues than visual cues at night. Additionally, young animals may be more susceptible to hearing loss from noise exposure than adults; however, an experiment with common canaries did not show a differential response with age (Larkin *et al.* 1996, p. 25, 30 and references within). Response of Micronesian megapode to noise has not been evaluated under scientific investigation. Micronesian megapodes are vocal and presumably find mates and defend territories by duetting (USFWS 1998b, pp. 5-6 and references within).

Therefore, noise may affect the Micronesian megapode if it physically damages the ears such that: an individual cannot hear and locate a mate; produces abnormal calls (hearing impaired learning) and cannot attract a mate; or is unable to defend a territory.

Other concerns from noise impacts to avian species are related to nesting and impacts to eggs or chicks (i.e., mortality through kicking eggs or young out of the nest during flushing, exposing young to temperature changes, failing to feed and care for young during nest flushing, exposing eggs and young to increased predation). Micronesian megapodes generally bury their eggs in mounds in which temperature is controlled by sources other than the bird (Decker *et al.* 2000, p. 2; Wiles and Conry 2001, p. 270; Glass and Aldan 1988, p. 135-137). Chicks are precocial and are able to fly upon emergence from the egg and do not require parental care (USFWS 1998b, p. 9). Therefore, behavioral responses typical to other avian species are not likely to result in adverse impacts to eggs, chicks, or juveniles of Micronesian megapodes.

On Tinian, Micronesian megapodes are transient and when present, typically use the native limestone cliff habitat in the Military Lease Area. As a conservation measure, this area is designated as a "No Wildlife Disturbance Area" where the following activities are prohibited: cross-country, off-road vehicle travel, vehicle parking unless it is on cleared shoulders of existing roads or trails; pyrotechnics, demolitions, or breaching charges; digging or excavation without prior approval; open fires; mechanical vegetation clearing; live ammunition; firing of blanks; flights below 305 meters (1,000 feet) above ground level; and helicopter landings except in designated landing zones (of which there are none in the megapode habitat). No training occurs within the limestone forest habitat and live-fire is limited to small arms. Therefore, we would expect noise from adjacent land navigation training (vehicle and pedestrian), fixed-wing and helicopter overflights, small arms use, and humans. Only one road abuts the limestone forest habitat. The majority of roads and trails are greater than 100 meters (328 feet) from the forest edge. Additionally, the megapode habitat is on the cliff line and elevated plateaus and not on the same plane as the roads. As stated above, altitude of overflights is restricted.

Micronesian megapodes are unlikely to be present on Tinian during training due to their transient behaviors. However, if they were present, we would expect noise to attenuate to a level that does not cause physical harm to the Micronesian megapode due to the distance from the training; the reduction of noise due to vegetation; and topography (Larkin *et al.* 1996, p. 41 and references within).

On Saipan, at least one Micronesian megapode has been detected in the limestone cliff forest across the road from and within the Marpi Maneuver Area and in the tangantangan habitats within the Marpi Maneuver Area. Only pedestrian land navigation training occurs in the Marpi Maneuver Area and no training will occur in the native limestone forest habitat (see conservation measure 4.3.2). Pedestrian land navigation training is designed for the service member to navigate to a location undetected; thereby the goal is to produce as little noise as possible. Civilian traffic, tour buses, tourists and homesteads are all present around the action area and the native limestone forest. We anticipate that land navigation training noise will be implemented such that noise impacts to the human environment are low. We also expect training noise to attenuate through the forest. Therefore, we do not anticipate that noise from training in the Marpi Maneuver Area will result in adverse affects or physical harm to Micronesian megapodes.

Training on Farallon de Medinilla involves numerous overflights of fixed-wing planes while firing inert and live-fire ordnance from air to shore and ship to shore (USN 2009b, p. 26). The ordnance varies in size (small arms to bombs under 2,000 pounds) and all will generate noise. Most ordnance used is expected to generate shock waves. Training, including the use of approximately 2,000 live and inert ordnance has been occurring on a routine basis on Farallon de Medinilla since at least 1999 (USFWS 1999, 43 pp.). The proposed training is of the same nature (type of ordnance, aircraft, and ships); however, ordnance use will increase to 3,000 munitions per year. Farallon de Medinilla supports a dense population of Micronesian megapodes within the "No Drop Zone". Training restrictions are in place on Farallon de Medinilla (see conservation measures 4.1) to reduce training impacts to Micronesian megapodes, mainly by avoiding the "No Drop Zone" and using only inert ordnance in Target Area 1 below the area "No Fire Line."

Densities of Micronesian megapode in the northern portion of Farallon de Medinilla are comparable to other islands in the CNMI with large megapode populations and no military training or human populations. Though no studies have been implemented to determine population status and trends on Farallon de Medinilla, we believe the Micronesian megapode population is reproducing on the island based upon observation of chicks and juveniles (Vogt 2009a, p. 3) and the presence of possible megapode burrows (Lusk *et al.* 2000, p. 29) rather than maintaining the population through immigration. Although chicks are capable of flying they have not been documented to fly long distances (i.e., between islands). During routine monitoring of megapodes on Farallon de Medinilla, individuals responded to playback calls as expected based on surveys on other islands and no abnormal calls were detected (Vogt 2009d, pers. comm.). These anecdotal data indicate that no hearing loss which affects observable behaviors has occurred. However, the megapode could be experiencing hearing loss through temporary or permanent threshold shifts that have not resulted in observable behavioral differences.

We expect that the vegetation provided by the "No Drop Zone" is acting as an effective barrier for noise attenuation. Therefore, based upon high Micronesian megapode densities, no observable behavioral changes associated with hearing impairment, and noise attenuation in vegetation, we do not believe temporary or permanent hearing impairment (harm or injury), changes in population dynamics, or mortality will occur from training noise within the "No Drop Zone". We do anticipate that noise may harm or injure the five pairs (ten individuals) of Micronesian megapodes that may be using the area around the inert and live-fire target areas, although the megapodes occupying this area have not demonstrated behavioral characteristics indicative of hearing damage. We determined injury or harm from noise is more likely to occur in this area and it is within the direct line of strike and vegetative noise buffers are generally not present. These five pairs (ten individuals) of Micronesian megapodes are the same pairs we believe will be adversely affected from direct strike and habitat loss.

Invasive Species Pathways

Along with the implementation of MIRC, there is an associated risk of introducing or spreading non-native terrestrial and aquatic invasive species including plants, animals, and microbes. Pathways associated with anthropogenic activities have a relative risk of introducing and dispersing non-native invasive species. Hulme *et al.* (2008, 14 pp.) described three broad

mechanisms for non-native species introductions: importation as a commodity (e.g., purposeful importation as biocontrol, pet trade), arrival via transport vector, and natural dispersal. Of these mechanisms, Hulme *et al.* (2008, 14 pp.) further described a framework for introductions that is supported by six principal pathways of which two could potentially occur via the implementation of MIRC: contaminant of a specific commodity and stowaway (independent of a commodity, like ballast water or airfreight). The pathways of contaminant and stowaway include, but are not limited to species transported via: construction equipment, personal protective equipment, delivery of materials or goods, foot traffic, vehicles or vessel traffic. Invasive species introduced as contaminants and stowaways are done so because of inadequate harborage, sanitation, and inspection prior to movement. The repeated or routine movement of equipment and people is a transportation route which allows for repeated introductions over time and this pressure increases the potential for a non-native invasive species to become established.

The results that follow the introduction and spread of a non-native invasive species can be difficult to predict (Courchamp *et al.* 2003, 37 pp.); however, there is scientific documentation of the impacts to threatened and endangered species due to invasive species. These studies suggest that the threats and impacts related to invasive species are second only to the impacts from habitat destruction (Wilcove *et al.* 1998, p. 609). Non-native invasive species could have impacts that alter the existing terrestrial ecosystem and may then expand out into adjacent areas after the initial introduction. Impacts that have been documented for non-native invasive species generally include direct predation; habitat alteration; illness, injury, or death due to disease; and competition for resources. The types of impacts are determined by characteristics of the native species as well as the non-native species. Below we have provided examples of impacts from non-native invasive species (mammals, reptiles, invertebrates, and disease) introductions to avian and other species to highlight the risk and potential impacts from accidental invasive species introductions.

Introduced rats have affected island wildlife. During field trials on the uninhabited island of Surprise Island, New Caledonia, Caut *et al.* (2008, p. 434) documented predation by the black rat (*Rattus rattus*) on ground nesting seabirds. The authors noted a dietary shift in the rats when seabird eggs and chicks were not present. As the abundance in seabird eggs and chicks declined, predation by black rats shifted to skinks, sea turtles, and insects (Caut *et al.* 2008, 10 pp).

On Guam, the non-native invasive brown treesnake has been documented as a predator on various species of vertebrates. Wiles *et al.* (2003, 11 pp.) examined bird data from Guam and stated that 22 out of 25 species of birds were affected by the brown treesnake. Of these species, 17 of the 18 native bird species were severely impacted, and 12 species have been extirpated from Guam. In addition, Wiles *et al.* (2003, pp. 1,355-1,356) provided reference to observations of Mariana swiftlet predation by brown treesnakes on Guam as a regular event. The brown treesnake has been linked to the extirpation or extinction of numerous bird, bat, and reptile species on Guam (Fritts and Rodda 1998, p. 114).

Another example of a non-native invasive species with documented impacts to avifauna is the red imported fire ant (*Solenopsis invicta*). The northern bobwhite quail (*Colinus virginianus*) is a ground-nesting and ground-foraging bird in North America. Allen *et al.* (1995, 8 pp.) describe impacts from red imported fire ant observed during field experiments with northern bobwhite

quail in Texas. Red imported fire ant preyed upon pipping chicks. Other impacts to chicks included weight loss from exposure to red imported fire ant venom. Red imported fire ants also affect insect communities through competition which indirectly affected the diet of northern bobwhite quail resulting in lowered fitness of chicks and adult females (Allen *et al.* 1995, pp. 632, 636 and references within).

Mosquitoes have also been associated with the decline of biodiversity of species, especially birds. Specific accounts and historical documentation of the introduction and spread of mosquitoes and various bird diseases in the Hawaiian islands is covered in great detail by Warner (1968, 20 pp.). In particular, the vectors (differing mosquito species) and avian diseases are illustrated by authoritative accounts and field trials. Warner (1968, p. 116) discusses the ability for certain bird species to inhabit higher elevations (i.e., above 600 meters) where it is mosquito-free and thus allows some bird species to persist. Juliano and Lounibos (2005, 24 pp. and references within) provide an overview of mosquito species, invasiveness, pathways for introduction, and associated impacts of these species on human and wildlife populations.

It is important to understand that the "risk" of introduction and establishment of invasive species is highly variable across taxa and habitats. Identifying and analyzing risk for all the species that could be moved via MIRC activities is not practicable. Instead, a more efficient approach is to address pathways where numerous species from different taxa may be inadvertently introduced and implement prescriptive measures to control risks from the pathways. A pathway risk assessment will provide a structure for assessing where the greatest "risk" for a non-native species introduction occurs and locations where managing ingress or egress of these species is most efficient for control. Pathways must be controlled because repetition of an action has a direct effect on propagule pressure which as stated above increases the likelihood of a species to become established.

The Micronesian megapode and its habitats are subject to the risk of effects from the introduction and spread of existing and novel invasive species via MIRC. To reduce the risk of introduction and spread of non-native, invasive species via MIRC activities, the USN has proposed to implement a variety of conservation measures (see conservation measures 1.0) throughout all the MIRC action areas. The USN has targeted specific actions to prevent the spread of the brown treesnake from Guam to other islands (100 percent inspection of outgoing vessels and aircraft, quarantine areas, research to enhance snake detection procedures, and environmental education of all personnel). The USN will also require each individual service member (or other employee or contractor associated with range maintenance activities, biological surveys, etc.) to complete self inspections (including equipment and gear) to avoid movement of invasive species between different islands and within different areas of the same island. The USN will also conduct a pathway analysis for each activity (or type of activity training, range maintenance, etc.) conducted under MIRC to determine and implement appropriate risk avoidance procedures. The USN will develop Standard Operating Procedures for each activity (or type of activity) that incorporate the appropriate risk avoidance procedures and will conduct after action reviews to assess and revise Standard Operating Procedures and avoidance procedures to ensure the risks from invasive species introductions are addressed. Additionally, the USN commits to implementing actions from the Regional Biosecurity Plan

(once developed) that will further reduce or eliminate risk of transporting invasive species via MIRC activities.

With the possible exception of rats (see below), we are not specifically aware of any non-native invasive species that are currently impacting the Micronesian megapode or its habitat. We believe implementation of the conservation measures proposed for invasive species interdiction and control should reduce the risk of invasive species adversely affecting the Micronesian megapode or its habitat.

Wildfire and Prescribed Burning

Military training with live-fire and incendiary materials, bivouacing with campfires, cigarette smoking, and vehicular malfunctions can result in the ignition of wildfires. The USN plans to conduct prescribed burns on Farallon de Medinilla to clear vegetation in order to complete range maintenance activities (USN 2009c, p. 2). Fires can lead to a variety of direct, indirect, and interrelated affects to wildlife and their habitats.

Direct effects to birds from fires are not routinely documented (Epanchin *et al.* 2002, p. 139). However, eggs, nestlings, ground nesting birds and flightless birds (including waterfowl during wing molt) are susceptible to fire (Erwin and Stasiak 1979, pp. 247-248). In general, adult birds fly away from fire (Vogl 1973, p. 336; Erwin and Stasiak 1979, p. 248), although some species have been documented to purposely forage near the fire line (Smallwood *et al.* 1982, p. 171; Erwin and Stasiak 1979, p. 248; Vogl 1973, p. 336). Epanchin *et al.* (2002, p. 141) noted direct mortality of white ibis (*Eudocimus albus*) after a wildfire in the Everglades. They hypothesized that the fire moved quickly through the area and suggested that the ibis may have been trapped by low overhead smoke or smoke inhalation, purposely foraging close to the fire line, or seeking refuge from the smoke and flames (Epanchin *et al.* 2002, p. 141). Smoke inhalation can also adversely affect birds as smoke can result in irritation and inflammation of the respiratory tract. In a severe case documented for a captive bird, smoke inhalation (from multiple kitchen fires) caused wheezing, respiratory distress, weakness, infections, behavioral changes (including decreased vocalization and activities), inability to coordinate voluntary muscle movements, collapse, and eventually death (Simone-Freilicher 2008, pp. 138-145).

Fire can indirectly affect endangered and threatened species by changing physical and biological characteristics of the area which subsequently results in secondary habitat degradation and loss of forage base. Physical features that will be exposed to heat and flames include soil structure and microclimate conditions. Fire will increase soil temperatures, alter soil moisture holding capacity, and modify soil rainfall infiltration (DeBano *et al.* 1979, pp. 2-7; Wells *et al.* 1979, p. 17; Neary *et al.* 2005, p. 2). These physical features will be indirectly exposed to post-fire erosion and alterations of light and shade, temperature, humidity, and wind as a result of vegetation destruction (Rice 1973, p. 30). Light levels, temperatures, and wind speeds will increase with destruction of canopy plants, and relative humidity will decrease (DeBano *et al.* 1979, p. 4; Rothermel and Rinehart 1983, p. 5; Hoffmann *et al.* 2003, p. 4-4). Because vegetation cover affects erosion rate, soil erosion may occur after fire except where rapid establishment of non-native invasive grasses are prevalent. Grass invasion may occur following removal of shrub and tree canopy (D'Antonio and Vitousek 1992, p. 63; Tunison *et al.* 2001, pp. 123-126). Chemical features that will be exposed to heat, flames, smoke, and ash include soil

nutrients and water, which will be indirectly exposed to post-fire changes in content and cycling rates. Soil nutrient availability will be altered through volatilization of certain elements to the atmosphere in smoke (e.g., carbon, nitrogen, and sulfur), conversion to more available forms in the ash (e.g., potassium, phosphorus, and divalent cations), wind dispersal of the ash, and surface erosion (Clayton 1976, p. 162, 164; Agee 1993, pp. 160-163).

Biotic features of the habitat that will be exposed to heat, flames, smoke, and ash include all living organisms in the exposure area, litter layers on the forest floor, organic matter within the surface soil horizon, and seeds within the litter and surface soil. These types of organic matter are typically used in megapode nests for incubation of eggs via heat from decomposition. Forage organisms will be directly exposed to injury or death, and seeds, litter, and organic matter will be directly exposed to destruction and loss (Kinnaird and O'Brien 1998, p. 955). These effects in turn will indirectly expose soils to long-term changes in fertility and structure as a result of disrupted decomposition and nutrient cycling processes, reduced nutrient and water retention by organic matter, increased nutrient losses in runoff and leaching, and reduced ecosystem primary production due to loss of leaf area and photosynthesis (Kinnaird and O'Brien 1998, p. 955).

In order to avoid and minimize direct, indirect, and interrelated effects from fire to the Micronesian megapode, the USN proposes to implement multiple actions (see conservation measures 4.1.1; 4.2.2; 4.3.3; and 4.3.4). For example, the training that occurs on Tinian in habitats that support transient Micronesian megapodes is restricted. These areas are designated "no wildlife disturbance areas" where are types of pytrotechnics and potential fire starting activities are restricted. Furthermore, no live-fire (except indoors with bullet traps) or tracer rounds will be used on Tinian. The use of incendiary materials and other potential fire-starting activities must be conducted on existing, cleared runways and in accordance with the Fire Prevention Plan. Additionally, military fire response efforts will be augmented by the Tinian Fire Department. On Saipan, no incendiary materials or other potential fire-starting activities (including campfires or cooking during bivouac activities) will occur. Smoking is not permitted during training activities and fire-safe portable receptacles for cigarette butts are used during periods of rest between training activities. We do not anticipate adverse effects from fire to Micronesian megapodes on Tinian or Saipan from MIRC.

On Farallon de Medinilla, live-fire weapons are restricted in that cluster bombs, live cluster weapons, live scatterable munitions, fuel-air explosives, incendiary devices, and bombs greater than 2,000 pounds are prohibited. The live-fire weapons allowed are used only in two specific areas and targets are placed to reduce the potential for wildfire. The areas for target placement support only low growing vegetation due to long-term training with explosives. Due to the lack of fuels in the area, explosions have not resulted in wildfires. Dense vegetation grows on the northern portion of the island within the "No Drop Zone" which could create a wildfire if weapons are misfired. However, none of the military training to date has resulted in wildfires on Farallon de Medinilla or any other action area within the MIRC (USN 2009b, p. 32).

The USN plans to use prescribed fire on Farallon de Medinilla to facilitate target installation and maintenance and reduce potential migration of munitions constituents off-range (USN 2009c, p. 2). Specific procedures will be followed to ensure the prescribed burn does not escape (USN 2009c, p. 3). Conservation measures (4.1.2) will also be implemented to minimize effects from

prescribed burning. We anticipate the effects of an escaped prescribed burn to be analogous to those of a wildfire; therefore, we have not completed an additional effect analysis to evaluate the impacts of smoke and flames from prescribed burning to the Micronesian megapode or its habitat. As a conservation measure the USN will aerially-apply a fire retardant powder, foam, or gel before the prescribed burn to prevent escape. Therefore, the use of fire retardants is interrelated and interdependent to prescribed burning and is discussed below as fire retardant may affect wildlife and their habitats.

Approximately five pairs (ten individuals) of Micronesian megapodes (extrapolated from survey data) may be using the area around the inert and live-fire target areas on Farallon de Medinilla and are at risk from a fire (USN 2009b, p. 89). We believe that a training-related wildfire or a prescribed burn is unlikely to spread to the "No Drop Zone" due to the lack of historical wildfires, lack of vegetative fuel in the target areas, and the conservation measures proposed for prescribed burns. Behavior of Micronesian megapodes during a fire event has not been documented. In the event of a fire, we anticipate Micronesian megapodes would fly to the "No Drop Zone" or other nearby islands thereby avoiding direct effects from flames. While we anticipate that Micronesian megapode would flee from smoke, exposure to smoke inhalation could result in similar initial symptoms (respiratory distress and excessive blinking) (Simone-Freilicher 2008, p. 138). However, we do not expect the symptoms to escalate as with the captive bird. Therefore, we anticipate that take of five pairs (10 individuals) of Micronesian megapodes could occur in the form of harm and injury due to smoke inhalation from training related fires or prescribed burning.

Fire Retardants

Historically, the use of fire retardants has resulted in negative environmental effects such as soil sterilization and adverse impacts to human health; however, because of these impacts older generation fire retardants are no longer in use (Kalabokidis 2000, p. 130). The USN proposes to use Flame Guard Gel as a fire retardant and the main components of the fire retardant include ammonium polyphosphate, diammonium phosphate, diammonium sulfate, monoammonium phosphate, attaplugus clay and guar gum (USN 2009c, 12 pp. + Appendix E). Fire retardants using these chemicals are similar to agricultural fertilizers and generally are considered to have minimal toxicological or ecological effects (Kalabokidis 2000, p. 134). Fire retardants can benefit plants by adding nutrients to the soils; however, overapplication can result in leaf death (Kalabokidis 2000, pp. 130, 134). Kalabokidis (2000, p. 134) noted that a risk assessment indicated there could be possible adverse effects (not described) from toxicity of long-term use of retardants to blue jays (*Cyanocitta cristata*), wild turkeys, and quail (*Callipela spp.*). During drought conditions or in low light, high temperature conditions, herbivorous mammals could experience nitrate poisoning from consumption of plant material that has incorporated the nitrogen from the fire retardants (Kalabokidis 2000, p. 134). Humans report skin and eye irritation as a result of prolonged contact with fire retardants (Kalabokidis 2000, p. 130). Flame Guard Gel is reported by the manufacturer to be biodegradable and non-toxic in accordance with U.S. Forest Service tests (Flame Guard Gel, 2009); however, the material safety data sheet indicates exposure could result in respiratory tract irritation, skin irritation with prolonged exposure, and digestive tract irritation from ingestion.

Approximately five pairs (ten individuals) of Micronesian megapodes (extrapolated from survey data) may be using the area around the inert and live-fire target areas on Farallon de Medinilla and are at risk from a fire (USN 2009b, p. 89). Therefore, we anticipate that these five pairs (ten individuals) of Micronesian megapodes could be exposed to the use of fire retardant through inhalation, skin exposure, and ingestion resulting in temporary harm due to irritation of the respiratory and digestive tracts, and possible skin irritation. However, application of the fire retardant will be restricted to one small area along the north end of the island, just south of the "No Drop Zone". The use of retardant is limited and is only used when a prescribed burn will be necessary to complete range maintenance. We anticipate that range maintenance will occur no more than once every two to five years. Conservation measures will be implemented to attempt to avoid birds (via pre-application surveys) and ensure retardant application is appropriate (see conservation measure 4.1.2). We anticipate that megapodes will leave the area due to human disturbance (i.e., the pre-application surveys); however, harm through exposure to fire retardant is possible. Again these are the same five pairs (ten individuals) that we anticipate will be adversely affected by other stressors and actions described above.

Herbicide Use

The USN must clear range debris and replace targets on Farallon de Medinilla on a regular basis to facilitate training (USN 2009c, p. 2-3). Clearing the range debris requires vegetation removal in a small portion (3.3 hectares; 8.3 acres) of Impact Area 1. Vegetation will be cleared using herbicides and prescribed burns (see Fire above).

The Impact Area 1 site is relatively flat and the vegetation is dominated by dense herbaceous communities that are used by the Micronesian megapode. Based upon observations during biological surveys of Farallon de Medinilla, we anticipate there may be approximately five pairs of megapodes surrounding or within the area where targets are located and range debris must be cleared (USN 2009b, p. 89; contrary to USN 2009c, p. 3 which estimates four pairs). The USN proposes to use the glyphosate-based, Dow Rodeo brand herbicide, which is designed and approved for use in or near aquatic ecosystems and is approved for use in wildlife habitat areas throughout the United States (Dow AgroSciences 2002, p. 2).

Rodeo does not affect underground rhizomes or root stock (Dow 2002, p. 2); therefore, we anticipate that vegetation will return after range clearing and target replacement are completed. The herbicide degrades readily in the environment, does not bioaccumulate in terrestrial or aquatic animals, is not anticipated to kill terrestrial invertebrates (based on aquatic invertebrate studies), and is largely non-toxic to animals, including birds (Monheit 2003, 10 pp. and references within). Therefore, we do not anticipate direct harm to Micronesian megapodes from the use of Rodeo. Habitat for shelter and potentially nesting will be degraded from the use of Rodeo and subsequent vegetation removal. Additionally, forage items may become limited in the immediate area of treatment (i.e., plant and seed material will be unsuitable, insects will move to new habitat patches; see Moneheit 2003, p. 7 and references within). We anticipate that the estimated five pairs (ten individuals) of Micronesian megapodes will leave the area prior to application of the herbicide and temporarily forage and shelter elsewhere on the island.

Training and range maintenance activities cannot occur at the same time; therefore, temporarily displaced megapodes would not be at greater risk for a direct strike. In addition, conservation

measures (see 4.1.2) will be used to ensure herbicide use attains maximum efficiency with minimal chemical use. Herbicide use will be completed during conditions where drift will be minimized thereby reducing affects to adjacent habitats. Based upon these data and the implementation of associated conservation measures, we anticipate that the use of herbicides and vegetation removal on Farallon de Medinilla may affect five pairs (ten individuals) of Micronesian megapodes through temporary displacement; however, we do not anticipate that these affects will rise to the level of take. Herbicides will not be used by the USN on Tinian or Saipan; therefore, the application of herbicide in these action areas is not analyzed in this biological opinion.

Pesticide Use

As a conservation measure, the USN has proposed to eradicate rats (likely *Rattus exulans*) from Farallon de Medinilla. Documentation of the effects that rats are having on the Farallon de Medinilla ecosystem is lacking. However, it is likely that their impact is similar to impacts reported elsewhere for *R. exulans*, including predation of bird eggs, seed predation, and the stripping of vegetation for moisture (Lindsay *et al.* in press, p. 5; Towns and Broome 2003, pp. 378-379).

The use of rodenticide may adversely affect the Micronesian megapode through lethal or sublethal impacts. The megapode is omnivorous (Glass and Aldan 1988, p. 142) and could be exposed to the rodenticide through both direct ingestion of pellets and through secondary poisoning via contaminated insects, crabs, and possibly scavenging on dead rats. Eisemann and Swift (2006, pp. 424-426, 429-430) used three methods to calculate the lethal and sublethal exposure risk to various avifauna, including the Hawaiian owl (*Asio flammeus sandwichensis*) and Hawaiian crow (*Corvus hawaiiensis*), from aerially broadcast diphacinone pellets. At 350 grams, the Micronesian megapode's weight is identical to that of the Hawaiian owl, and the megapode's omnivorous diet is analogous to that of the Hawaiian crow. Therefore, the calculations completed by Eisemann and Swift (2006, pp. 429-430) to assess the risk to the Hawaiian owl and Hawaiian crow from aerial broadcast of diphacinone can be applied to examine the exposure risk to the Micronesian megapode on Farallon de Medinilla.

Extrapolating from Eisemann and Swift (2006, 20 pp.) and acute diphacinone toxicity testing completed on avian test species (USEPA 1998, pp. 60-61 and references within), a megapode would need to consume at least 2.8 kilograms of bait (0.005 percent diphacinone), 27.94 kilograms of contaminated invertebrates containing 5.01 milligrams diphacinone per kilogram, or 45.60 kilograms of rodents containing 3.07 parts per million diphacinone in one day to ingest a dose equivalent to the lethal dose for half of the individuals (LD50). We do not have data indicating the consumption rates of food items for Micronesian megapode. However, the amount of forage items or pellets a megapode would need to consume within one day to reach the extrapolated LD 50 is well above the body weight of a megapode. Therefore, we believe the risk of mortality from consumption of pellets or contaminated forage items extremely low.

A megapode would need to consume at least 4.2 grams of bait (0.005 percent diphacinone), 41.9 grams of contaminated invertebrates containing 5.01 milligrams diphacinone per kilogram, or 68.40 grams of rodents containing 3.07 parts per million diphacinone per day for multiple days to be exposed to a dose of diphacinone equivalent to the lowest dietary dose causing mortality in

test species. These rates of consumption are much lower than those needed to reach an LD50. However, diphacinone breaks down rapidly in the environment (USEPA 1998, p. 77). Therefore, we believe the risk of mortality from consumption of pellets or contaminated forage items over time is low.

Risk calculations for sublethal exposure (i.e., increased time for blood clotting) show that a megapode would only need to eat 0.77 grams of bait, 7.68 grams of contaminated invertebrates containing 5.01 milligram diphacinone per kilogram, or 12.54 grams of rodent tissue containing 3.07 parts per million diphacinone, per day for multiple days to be affected. These rates of consumption are very low (i.e., foraging on less than one bait pellet or one rodent per day). Therefore, we believe sublethal effects to megapodes through primary exposure to bait or secondary exposure to invertebrates and rodents are likely. The duration of the sublethal effects are not known. Increased duration for blood clotting could result in subsequent mortality if a bird were wounded. However, wounded birds would be subject to mortality in the absence of rat control.

The diphacinone pellets weigh approximately 1 to 2 grams, and are unlikely to cause mortality in Micronesian megapode due to a direct strike. A similar application of aerial broadcast of diphacinone pellets was recently completed on the island of Lehua, Hawaii, which supports a seabird colony (Nelson and Kessler 2009, pers. comm.). No avian mortality was observed during monitoring efforts immediately after application (i.e., no evidence of direct strike) of the diphacinone pellets (Nelson and Kessler 2009, pers. comm.). Additionally, no avian mortality was observed seven and fourteen days after the diphacinone application indicating no other lethal effects as well (Nelson and Kessler 2009, pers. comm.). Monitoring for sublethal affects was not implemented.

We anticipate that diphacinone will be applied evenly across the island. We also anticipate that multiple applications of diphacinone will be necessary as the island has many cavities for rats to hide and store forage materials within which would subsequently reduce their exposure to the toxicant. Therefore, we anticipate that all Micronesian megapodes (n = 46) on Farallon de Medinilla are at risk from sublethal effects and therefore could be harmed due to diphacinone consumption or foraging on contaminated materials. We do not expect mortality from the application of diphacinone, from the consumption of diphacinone or contaminated forage items. Removing rats from Farallon de Medinilla would likely result in increased vegetation cover. Increases in vegetation cover could indirectly benefit Micronesian megapodes in that additional cover and organic matter would be available for foraging, developing nest sites, and for shelter. If rats are preying upon megapode eggs, an increase in the megapode population is expected. Pesticides will not be used on Saipan or Tinian; therefore, the application of pesticide in these action areas is not analyzed in this biological opinion.

Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

Recreation and tourism occur within the Military Lease Area on Tinian. In general, the tourists are bused to historical sites, while some use rental cars. These tourism activities are not anticipated to result in effects to the Micronesian megapode as the species is transient on Tinian and the majority of the sites are not in habitats that would be used by the megapode. There are no historical landmarks in the area where megapodes were last detected.

Recreation and tourism, motorcross racing, charcoal harvesting, and homesteading all occur in or adjacent to the Marpi Maneuver Area, Saipan. As with Tinian, tourism is for visits to historical sites and shrines and is typically via rental car or tour bus. These activities are not anticipated to adversely impact the megapode. Motorcross racing occurs in a previously disturbed area that does not support habitat for the megapode. Citizens of Saipan will remove tangantangan by hand for use as charcoal. We do not believe this activity will affect the Micronesian megapode as the megapode would be expected to avoid people entering the tangantangan and is not likely to use this habitat for nesting.

Homesteading occurs and may continue to occur in the Marpi Maneuver Area. Homesteading often results in clearing land or grazing land or bringing in other avian species (i.e., game birds, chickens). One analysis suggests that Megapodiidae distribution is limited by competitive exclusion from members of the Phasianidae family (e.g., pheasant, quails, and francolins), all of which are in the same Order as megapodes (Olsen 1980, p. 21). Competition for nesting and foraging areas would be possible if introduced game birds and domestic or feral chickens (which forage on the same prey items as megapodes) become established in megapode habitats (USFWS 1998b, p. 38; Vogt 2009c, p. 6). Due to the size of the area and the low number of megapodes, we do not believe competition would be a limiting factor at this time. Additionally, the import of game birds or chickens and existing feral chicken colonies could expose megapodes to avian diseases (USFWS 1998b, pp. 38-39), as many of these species are susceptible to west Nile virus (UC Davis 2009, pp. 2-3). We believe at least one Micronesian megapode uses the Marpi Maneuver Area and would be subject to increased risk of avian diseases. No avian diseases have been detected on Saipan to date and avian disease will continue to be monitored in the Pacific (Fisher 2009, pers. comm.).

Human exploitation via hunting and egg collecting has been documented for megapodes (Dekker *et al.* 2000, p. 2; USFWS 1998b, p. 37). Though Federal and local laws are in place to prohibit hunting and egg collecting, poaching and sustenance egg collecting is still reported from many islands (Vogt 2009c, p. 5; Amidon and Kessler 2009, pers. comm.). It is possible that eggs or adults could be poached from the Marpi Maneuver Area; however, poaching has not been reported on Saipan, most likely due to the difficultly in locating adult megapodes and the lack of observed nesting.

No non-Federal actions are expected to occur on Farallon de Medinilla. It is possible that citizens may poach eggs or adults. However, due to unexploded ordnance and the difficulty accessing Farallon de Medinilla; we consider poaching unlikely to occur.

CONCLUSION

We reviewed the MIRC to determine if any additional affects to Mariana crow and Mariana fruit bat are anticipated from implementation of the proposed action and determined that no additional activities are planned or authorized beyond those already considered within the ISR Strike biological opinion and MIRC will follow all the requirements within the ISR Strike biological opinion. Therefore, we concur that the non-jeopardy determination from the ISR Strike biological opinion is still appropriate because: the analysis completed within the ISR Strike biological opinion is still accurate; all requirements within the ISR Strike biological opinion will be followed by MIRC; and there are no additional anticipated impacts to the Mariana crow or the Mariana fruit bat from the implementation of MIRC.

After reviewing the current status of the Micronesian megapode, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that implementation of MIRC, as proposed, is not likely to jeopardize the continued existence of the Micronesian megapode. No critical habitat has been designated for this species; therefore, none will be affected.

We further support this determination based upon the following information:

1. We estimate the total mortality of Micronesian megapodes over five years due to the implementation of MIRC to be five pairs (ten individuals) on Farallon de Medinilla. The total range-wide Micronesian megapode population is estimated at minimum of 1,585 individuals. Therefore the proposed project will affect less than 1 percent of the total megapode population. If we assume that all individuals (n = 46) on Farallon de Medinilla are harmed by the consumption of rodenticide or rodenticide contaminated forage items, implementation of the MIRC will adversely affect approximately 3 percent of the total megapode population. Mortality of less than 1 percent of the total population or harm to 3 percent of the total population is not considered significant at this time.

2. Recovery goals include a stable or increasing population of 50 individuals on Saipan or Tinian (USFWS 1998b, p. 43). While neither island currently supports a Micronesian megapode population of this size; implementation of the MIRC will not preclude this goal from being achieved as avoidance and minimization measures will reduce impacts to the Micronesian megapode on Tinian and Saipan to a level that is insignificant or discountable. As a conservation measure, megapode life history research will be conducted on Saipan and Sarigan. These data will provide insight into improving management of small populations thereby contributing to overall recovery.

3. The avoidance and minimization on Farallon de Medinilla are designed to protect the area of the island densely occupied by the Micronesian megapode ("No Drop Zone"). Lusk *et al.* (2000, p. 33) believed that the vegetation and avian communities had not changed substantially since 1974. While these data were not specific to the megapode, we believe this is an indication that the avoidance and minimization measures are providing some level of protection to the species and its habitats while military training occurs. Though we believe the avoidance and minimization measures are providing

benefits to the species, we do anticipate that take of Micronesian megapode will occur. The island of Farallon de Medinilla is not necessary for recovery (USFWS 1998b, pp. 42-42). However, we appreciate the USN commitment to the avoidance and minimization measures because the island: (a) currently supports a dense population of Micronesian megapodes; (b) may provide a genetic link between northern and southern populations; and (c) may function as a rest stop for dispersing birds (Lusk *et al.* 2000, p. 29). Conservation measures implemented on Farallon de Medinilla (i.e., rat control) may further increase the megapode population on the inland by eradicating a potential predator and competitor for food, shelter, and nesting resources. Additional research conducted on the life history of megapodes on Sarigan will provide insight into improving management of large populations, thereby contributing to overall recovery.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harm is further defined by USFWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by USFWS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)4 and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the USN so that they become binding conditions of any grant, permit, or permissions issued by the USN, as appropriate, for the exemption in section 7(o)(2) to apply. The USN has a continuing duty to regulate the activity covered by this incidental take statement. If the USN (1) fails to assume and implement the terms and conditions or (2) fails to require the adherence to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit, grant document, or other permissions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the USN must report the progress of the action and its impact on the species as specified in the Incidental Take Statement.

Amount or Extent of Take Anticipated

The Incidental Take Statement from the ISR Strike biological opinion is still valid for the Mariana crow and Mariana fruit bat and is incorporated into this biological opinion and Incidental Take Statement by reference. No additional take of Mariana crow or Mariana fruit bat is authorized.

The USFWS anticipates incidental take of the Micronesian megapode will be difficult to quantify because access to the island and subsequent surveys and monitoring are conducted

infrequently due to the unexploded ordnance on Farallon de Medinilla. Additionally, the number of nests, eggs, and juveniles are unknown. Due to the difficulty in quantifying the number of total individuals that will be taken as a result of the proposed action, we quantified take incidental to the project as the number of observed adults and juveniles and estimated number of eggs. Therefore, we anticipate the following forms of incidental take will occur between 2010 and 2015 from implementation of MIRC:

1. An estimated five pairs (ten individuals) of Micronesian megapodes have been detected using the area around the inert and live-fire target areas on Farallon de Medinilla. These five pairs (ten individuals) are subject to harassment, harm, injury, or mortality through direct strike, habitat loss, fire, and noise from ordnance impact and range maintenance (i.e., herbicide and fire retardant use).

2. All Micronesian megapodes (n = 46) on Farallon de Medinilla will be subject to harm and harassment, but not mortality, from the consumption of rodenticide or rodenticide-contaminated forage items.

3. We do not anticipate take of Micronesian megapodes will occur from the introduction or spread of non-native invasive species due to the conservation measures for interdiction and control proposed within this biological opinion.

Effect of the Take

In the accompanying biological opinion, the USFWS determined this level of anticipated take is not likely to result in jeopardy to the Micronesian megapode. No critical habitat has been designated for the Micronesian megapode; therefore none will be adversely modification of critical habitat.

Reasonable and Prudent Measures

The USFWS believes that no more than five pairs or 10 individuals over five years will be killed as a result of the proposed action and no more than 46 individuals over five years will be harmed and harassed from the use of rodenticide for conservation purposes. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of the incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. In addition, the action that caused the taking must cease; the action agency must immediately provide an explanation of the causes of the taking; and must review with the USFWS the need for possible modification of the reasonable and prudent measures. The following reasonable and prudent measures are necessary and appropriate to minimize the effect of take on the Micronesian megapode. The measures described below are non-discretionary and must be implemented.

1. Further minimize impacts from training, range maintenance, and rodent control to Micronesian megapodes.

2. The baseline condition for the Micronesian megapode on Farallon de Medinilla shall be adequately tracked to ensure that no unauthorized take occurs.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the USN must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

1.1 Pre- and post-monitoring surveys for Micronesian megapodes will be conducted to ensure no unanticipated impacts occur from each implementation of range maintenance and rodent control activities.

2.1 The USN will conduct Micronesian megapode population trend surveys at least every five years to evaluate incidental take. Micronesian megapode surveys will follow standard procedures currently implemented by the USN, including playback calls. In addition, a subset of megapodes (no less than 20 percent; n= 8 is ideal) will be captured and banded to estimate population size, recruitment, resilience and persistence. The use of playbacks will help assess effects from noise. Ideally these population surveys will occur every time range maintenance is completed (anticipated every two to five years).

2.2 After the completion of the megapode life history study and the first population trend survey (see 2.1 above), the USN will present the results to the Service. If it is determined that estimated carrying capacity (Vogt 2009a, p 4.) is exceeded and if a take greater than 5 pairs or 10 individuals is needed, the Navy will work with the Service to facilitate a translocation of these birds to other islands within the CNMI, such that increased take is not needed for the military training. This commitment to facilitate a translocation requires USN coordination to access the island and Explosive Ordnance Disposal (EOD) team support so that the USFWS or other designated personnel may have access to remove the birds. The USN may provide any other support as desired, but additional support beyond access allowance and EOD safety is not required.

2.3 In coordination with the USFWS, the USN will develop a standard efficacy and compliance reporting template and submit annual reports to the USFWS on the first of October of each year beginning 2010 through 2015. The purpose of the reporting template is to ensure report preparation time is limited, while still concisely discussing the successes and failures of all avoidance, minimization, and conservation measures and terms and conditions listed in this biological opinion (except those for invasive species control and interdiction) in relation to the anticipated and observed impacts and incidental take.

2.4 Using a standard template, the USN will develop and submit semi-annual reports to the USFWS on the first of October and the first of April of each year beginning 2010 through 2015. The October report will be combined with the report required under 2.2 above. The purpose of the reporting template is to ensure report preparation time is limited, while still concisely discussing the successes and failures of all avoidance, minimization, and conservation measures and terms and conditions listed in this biological opinion for

invasive species control and interdiction in relation to the anticipated and observed impacts and incidental take. The report will include details regarding which cargo was inspected or un-inspected, potential level of risk associated with each cargo type, and where the cargo was shipped from training related actions only. The reports should include explanations if specific cargo shipments were missed and document all snake detections or other high risk incidents and the method used for the detection for training related actions only. The report will also include the number of brown treesnake kills during training actions.

2.5 The USN will convene an annual coordination meeting prior to 31 December of each year (2010 through 2015) to discuss findings within the compliance report and adapt avoidance, minimization, and conservation measures to further reduce incidental take.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. The term "conservation recommendations" has been defined as: (1) discretionary measures a Federal agency can take to minimize or avoid the adverse effects of a proposed action on listed or proposed species, or designated or proposed critical habitat; (2) studies, monitoring, or research to develop new information on listed or proposed species, or designated or proposed critical habitat; and (3) suggestions on how an action agency can assist species conservation as part of their action and in furtherance of their authorities under section 7(a)(1) of the ESA.

1. We recommend you collect and analyze genetic samples from Micronesian megapodes to evaluate population attributes including but not limited to dispersal and movement among islands. We recommend that you collect the samples during routine monitoring of Micronesian megapodes on Farallon de Medinilla, while implementing life history studies on Sarigan and Saipan, and during other routine monitoring or surveys (i.e., INRMP implementation). We recommend that if samples are collected by outside parties (i.e., from biological surveys of the Northern Islands) that you incorporate these data into your analysis to understand relationships among Micronesian megapode populations on different islands.

2. The USN has sponsored ungulate eradication on Sarigan and Anatahan (USN 2009b, p. 89). These efforts have been highly successful in restoring habitat for endangered and threatened species and increasing population numbers of Micronesian megapodes (USN 2009b, p. 89). The ungulates have been completely removed from Sarigan (Kessler 2002, p. 132). Only a few ungulates remain on Anatahan; however, without complete removal the existing population will grow and the conservation effort expended on this island will be ineffective. We recommend that you complete the ungulate eradication on Anatahan.

3. Because ungulate eradication has been so successful on Sarigan, we recommend that you implement ungulate eradication on all northern islands to improve habitat for the Micronesian megapode.

4. Upon determination of success for the rodent eradication proposed for Farallon de Medinilla, we recommend you eradicate rodents on all the northern islands to improve habitat for, reduce competition with, and eliminate potential predation of, Micronesian megapodes.

5. To further their recovery, we recommend that you outplant endangered and threatened plants in protected areas on Guam.

REINITIATION-CLOSING STATEMENT

This concludes formal consultation on the Mariana Islands Range Complex 2009 through 2014. As provided for in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law), and if (1) the amount or extent of incidental take is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take should cease pending reinitiation.

Sincerely,

Gina M Shay

for Loyal Mehrhoff
Field Supervisor

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Appendix A

Existing and proposed training levels within the MIRC action area (USN 2009b, p. 21 and 25).

Training Activity			Training Levels		Training Area	
Exercise	**Platform**	**System or Ordnance**	**Existing Levels**	**Proposed Levels**	**Primary**	**Secondary**
Strike Warfare (STW)						
BOMBEX (LAND)	Fixed Wing Aircraft, e.g. FA-18; AV-8B; B-1; B-2; B-52; F-15; F-16; F-22; A-10	High Explosive Bombs: < 500 lbs	400 annually	500 annually	FDM	-NA-
		High Explosive Bombs: 750 / 1,000 / 2,000 lbs	1,600 annually	1,650 annually		
		Inert Bomb Training Rounds: ≤ 2,000 lbs	1,800 annually	2,800 annually		
		Total sorties (1 aircraft per sortie)	1,000 sorties	1,300 sorties		
MISSILEX (A-G)	Fixed Wing and Rotary Aircraft, e.g FA-18; AV-8B; F-15; F-16; F-22; A-10; MH-60R/S; SH-60B; HH-60H; AH-1	TOW; MAVERICK; HELLFIRE; ROCKETS < 5"	30 annually	60 annually	FDM	-NA-
GUNEX (A-G)	Fixed Wing and Rotary Aircraft, e.g FA-18; AV-8B; F-15; F-16; F-22; A-10; MH-60R/S; SH-60B; HH-60H; AH-1; AC-130	20 or 25 mm Cannon	16,500 rounds	20,000 rounds	FDM	-NA-
		30 mm Cannon (A-10)	0	1,500 rounds		
		40mm or 105mm CANNON (AC-130)	100 rounds	200 rounds		
Combat Search and Rescue (CSAR)	MH-60S; HH-60; MH-53	Night vision flight training	30 Sorties	60 Sorties	Tinian North Field; AAFB Northwest Field; Navy Munitions Site	Orote Point Airfield; Rota International Airport
Amphibious Warfare (AMW)						
FIREX (Land)	CG, DDG	5" Guns and (HE) shells	4 (400 rounds)	8 (800 rounds)	FDM	-NA-
Amphibious Assault Marine Air Ground Task Force (MAGTF)	1 LHA or LHD, 1 LPD, 1 LSD, 1 CG or DDG, and 2 FFG.	4-14 AAV/EFV or LAV/LAR; 3-5 LCAC; 1-2 LCU; 4 H-53; 12 H-46 or 10 MV-22; 2 UH-1; 4 AH-1; 4 AV-8; Includes temporary Forward Arming and Refueling Point (FARP Construction	1 event (assault, offload, backload)	5 events (assault, offload, backload)	Tinian Military Leased Area; Unai Chulu,Dankulo and Babui (beach) and Tinian Harbor; North Field	Apra Harbor; Reserve Craft Beach; Polaris Point Beach (MWR) and Polaris Point Field; Orote Point Airfield; Sumay Cove and MWR Ramp; Tipalao Cove and Dadi Beach
Amphibious Raid Special Purpose MAGTF	1 LHA or LHD, 1 LPD, and 1 LSD. Tailored MAGTF.	4-14 AAV/EFV or LAV/LAR; 0-5 LCAC; 0-2 LCU; 4 H-53; 12 H-46 or 10 MV-22; 2 UH-1; 4 AH-1; 4 AV-8	0	2 events (raid, offload, backload)	Apra Harbor; Reserve Craft Beach; Polaris Point Beach (MWR) and Polaris Point Field; Orote Point Airfield; Field; Sumay Cove and MWR Marina Ramp; Tipalao Cove and Dadi Beach	Tinian Military Leased Area; Unai Chulu; Dankulo, and Babui (beach) and Tinian Harbor; North Field
Expeditionary Warfare						
Military	USMC Infantry	5.56 mm	2 events, 7-21	5 events of 7-	AAFB South	Tinian, Rota, Saipan

Training Activity			Training Levels		Training Area	
Exercise	**Platform**	**System or Ordnance**	**Existing Levels**	**Proposed Levels**	**Primary**	**Secondary**
Operations in Theatre Training (MOUT)	Company: AH-1, UH-1; H-46 or MV-22; H-53; AAV, LAV, HMMWV, TRUCK	Blanks/Simunitions	days/event	21 days/event	Finegayan Communication Annex; Barrigada Housing; Northwest Field	
	USAF RED HORSE SQUADRON: TRUCK, HMMWV; MH-53; H-60		2 events, 3-5 days/event	4 events, 3-5 days/event		
	Navy NECC Company: HMWWV, TRUCK		2 events, 3-5 days/event	4 events, 3-5 days/event		
	Army Reserve/ GUARNG Company; HMWWV, TRUCK		2 events, 3-5 days/event	4 events, 3-5 days/event		
Special Warfare						
Direct Action	SEAL Tactical Air Control Party (TAC-P); RHIB; Small Craft.	M-16, M-4, M-249 SAW, M-240G, .50 cal, M-203 (5.56 /7.62 mm/ .50 cal round/ 40mm HE)	2 (2,000 rounds)	3 (3,000 rounds)	FDM	-NA-
	SEAL Platoon/Squad; NECC Platoon/Squad; USMC Platoon/Squad; ARMY Platoon/Squad; USAF Platoon/Squad	5.56 mm blanks/Simunitions 9mm (Orote Pt. Combat Qualification Center - OPCQC) 1.5 lb NEW C4 (Navy Munitions Site Breaching House)	32 (12,500 9mm) (10.5 lb NEW C4)	40 (15,000 9mm) (15 lb NEW C4)	OPCQC and Navy Munitions Site Breacher House	Tarague Beach CQC and Navy Munitions Site Breacher House
MOUT	SEAL Platoon/Squad; EOD Platoon/Squad; HMWWV; TRUCK	5.56 mm Blanks/Simunitions	6 events of 3-5 days/event	8 events of 3-5 days/event	Guam; AAFB South; Finegayan Communication Annex; Barrigada Housing; Navy Munitions Site Breacher House	Tinian, Rota, Saipan
Parachute Insertion	SEAL Platoon/Squad; EOD Platoon/Squad; ARMY Platoon/Squad USAF Platoon/Squad; C-130; CH-46; H-60	Square Rig or Static Line	6	12	Orote Pt. Airfield; Northwest Airfield; Orote Pt. Triple Spot	Finegayan DZ; Apra Harbor; Navy Munitions Site Breacher House
Insertion / Extraction	SEAL Platoon/Squad; EOD Platoon/Squad; ARMY, USMC, USAF Platoon/Squad: RHIB; Small Craft; CRRC; H-60; H-	Square Rig or Static Line; Fastrope; Rappel; SCUBA	104	150	Orote Pt. Airfield; Northwest Field; Orote Pt. Triple Spot; Apra Harbor; Gab Gab Beach	Orote Pt. CQC; Finegayan DZ; Haputo Beach; Navy Munitions Site Breacher House; Polaris Pt. Field; Orote Pt. KD Range

Training Activity			Training Levels		Training Area	
Exercise	Platform	System or Ordnance	Existing Levels	Proposed Levels	Primary	Secondary
	46/ MV-22					
Breaching (Buildings and Doors)	SEAL Platoon/Squad; EOD Platoon/Squad; ARMY Platoon/Squad; USMC Platoon/Squad;	Breach House (1.5 lbs NEW C4 max/door)	10	20	Navy Munitions Site Breacher House	-NA-
Special / Expeditionary Warfare						
Land Demolitions (IED Discovery / Disposal)	NECC EOD Platoon/ Squad; USMC EOD Platoon/ Squad; USAF EOD Platoon/ Squad: HMWWV; TRUCK	IED Shapes	60	120	Guam, Orote Pt. Airfield; Orote Pt. CQC; Polaris Pt. Field; Andersen South; Northwest Field	Northern/Southern Land Navigation Area; Navy Munitions Site Breacher House; Tinian MLA
Land Demolitions (UXO Discovery / Disposal)	NECC EOD Platoon/ Squad; USMC EOD Platoon/ Squad; USAF EOD Platoon/ Squad: HMWWV; TRUCK	UXO	100	200	Navy Munitions Site EOD Disposal Site (limit 3000 lbs NEW per UXO event)	AAFB EOD Disposal Site (limit 100 lbs per event) and Northwest Field (limit 20 lbs NEW per event)
Seize Airfield	SEAL Company/ Platoon USMC Company/ Platoon ARMY Company/ Platoon USAF Squadron C-130; MH-53; H-60; HMWWV;	5.56 mm blank/Simunitions	2	12	Northwest Field	Orote Pt. Airfield; Tinian North Field; Rota International Airport
Airfield Expeditionary	USAF RED HORSE Squadron. NECC SEABEE Company. USMC Combat Engineer Company USAR Engineer Dozer, Truck, Crane, Forklift, Earth Mover, HMMWV. C-130; H-53.	Expeditionary Airfield Repair and Operation (includes temporary FARP construction operation)	1	12	Northwest Field	Orote Pt. Airfield; Tinian North Airfield
Intelligence, Surveillance, Reconnaissance (ISR)	SEAL, ARMY, USMC, USAF Platoon/Squad;	Night Vision; Combat Camera; 5.56 mm blanks/Simunition	12	16	Guam; Northwest Field; Barrigada Housing; Finegayan Comm. Annex; Orote Pt. Airfield.	Tinian, Rota, Saipan
Field Training Exercise (FTX)	ARMY Company/ Platoon NECC SEABEE Company/ Platoon	Tents; Trucks; HMMWV; Generators	100 events, 2-3 days per event	100 events, 2-3 days per event	Guam, Northwest Field; Northern Land Navigation Area	Orote Pt. Airfield; Polaris Pt. Field; Tinian North Field
Non-Combatant Evacuation	ARG Amphibious	HMMWV; Trucks; Landing Craft	1 event, 3-5 days	2	Apra Harbor; Reserve Craft	Tinian MLA, Unai Chulu, Dankulo and

Training Activity			Training Levels		Training Area	
Exercise	**Platform**	**System or Ordnance**	**Existing Levels**	**Proposed Levels**	**Primary**	**Secondary**
Operation (NEO)	Shipping (1-LHD; 1-LPD; 1-LSD) USMC Special Purpose MAGTF	(LCAC/ LCU); AAV/ LAV; H-46 or MV-22			Beach; Polaris Point Beach (MWR) and Polaris Point Field; Orote Point Airfield; Northwest Field; Sumay Cove and MWR Marina Ramp	Babui (beach) and Tinian Harbor; North Field, Rota International Airport/West Harbor
Maneuver (Convoy; Land Navigation)	USMC Company/ Platoon ARMY Company/ Platoon	Trucks; HMWWV; AAV/LAV	8	16	Northwest Field; AAFB South; Northern and Southern Land Navigation Area; Tinian MLA; Saipan Marpi Maneuver Area	Finegayan Annex; Barrigada Annex; Orote Pt. Airfield
Humanitarian Assistance/ Disaster Relief Operation (HADR)	ARG Amphibious Shipping (1-LHD; 1-LPD; 1-LSD) USMC Special Purpose MAGTF	HMMWV; Trucks; Landing Craft (LCAC/ LCU); AAV/ LAV; H-46 Or MV-22	1 event, 3-5 days	2	Apra Harbor; Reserve Craft Beach; Polaris Point Beach (MWR) and Polaris Point Field; Orote Point Airfield; Northwest Field; Sumay Cove and MWR Marina Ramp	Tinian Military Leased Area; Unai Chulu (beach) and Tinian Harbor; North Field, Rota International Airport/West Harbor
Force Protection / Anti-Terrorism						
Embassy Reinforcement	SEAL Platoon ARMY Platoon USMC Company/ Platoon Trucks; HMMWV; C-130; H-60; H-53	5.56 mm Blanks/Simunitions	42 events, 1-2 days per event	50 events, 2-3 days per event	Orote. Pt. Airfield Inner Apra Harbor; Northern and Southern Land Navigation Area	Orote Pt. Triple Spot; Orote Pt. CQC; Kilo Wharf; Rota
Force Protection	USAF Squadron/ Platoon NECC SEABEE Company/ Platoon USAR Engineer Company/ Platoon Tents; Trucks; HMMWV; Generators	5.56 mm Blanks/Simunitions	60 events, 1-2 days per event	75 events, 1-2 days per event	Guam, Northwest Field; Northern Land Navigation Area; Barrigada Annex	Orote Pt. Airfield; Polaris Pt. Field; Tinian North Field; Rota
Anti-Terrorism	Navy Base Security USAF Security Squadron USMC FAST Platoon Trucks; HMMWV; MH-60	5.56 mm Blanks/Simunitions	80 events, 1 day/event	80 events, 1 day/event	Tarague Beach Shoot House and CATM Range; Polaris Pt.; Northwest Field	Kilo Wharf; Finegayan Comm. Annex; Navy Munitions Site; AAFB Munitions Site; Rota

APPENDIX D

TRAINING OPERATIONS DESCRIPTIONS

This appendix describes in general detail the training operations conducted in the MIRC; however pre-event briefing materials on specific hazards to training change frequently and necessarily reference updated briefs and instructions prepared by the scheduling authorities. Specific operator safety and environmental instructions for FDM, Guam and Tinian ranges, and all other training facilities are maintained current by the scheduling authorities. COMNAVMARINST 3500.4, Marianas Training Handbook and COMNAVMARINST 3502.1, Standard Operating Procedures for R-7201 and FDM, provide safety and environmental information for training areas on Guam and CNMI.

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MARIANAS RANGE COMPLEX TRAINING

In Chapter 2, Tables 2-1 through 2-5 list and describe the Mariana Islands Range Complex (MIRC) training areas and the typical training activity conducted in each area; Figures 2-1 through 2-12 show MIRC training area locations; Table 2-7 lists major exercises in the MIRC Study Area; Table 2-8 lists Annual Training Activities in the MIRC study area and the Primary (PRI) and Secondary (SEC) areas for each activity; Table 2-9 is a Summary of Ordnance Use by Training Area; and Table 2-10 is a Summary of active Sonar Activity. Appendix D provides a more detailed description of typical training activities that have or may occur in the Mariana Islands Range Complex and further details the No Action, Alternative 1, and Alternative 2 activities.

Insertion/Extraction

Personnel approach or depart an objective area using various transportation methods and covert or overt tactics depending on the tactical situation. These operations train forces to insert and extract personnel and equipment day or night.

Table D-1: Insertion/Extraction

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SPECIAL WARFARE						
INSERTION/ EXTRACTION	SEAL Platoon/Squad; EOD Platoon/Squad; ARMY Platoon/Squad; USMC Platoon/Squad; USAF Platoon/Squad: RHIB; Small Craft; CRRC; H-60; H-46 or MV-22	Square Rig or Static Line; Fastrope; Rappel; SCUBA	104 Events; 2 to 8 hours.	150 Events; 2 to 8 hours.	150 Events; 2 to 8 hours.	PRI: Orote Pt. Airfield; Northwest Field; Orote Pt. Triple Spot; Apra Harbor; Gab Gab Beach SEC: Orote Pt. CQC; Finegayan DZ; Haputo Beach; Munitions Site Breacher House; Polaris Pt. Field; Orote Pt. KD Range

Special Warfare, NECC, or Army Personnel Parachute from Fixed-winged Aircraft

Basic Phase (Unit Level Training) Scenario

A fixed-winged aircraft such as a C-130 will fly to the objective area from a land based airfield. The embarked Special Warfare, Navy Expeditionary Combat Command (NECC), or other personnel will parachute (static line or free fall) into the planned area from either a high (25,000 ft or more) or a low (1,000 ft and below) altitude; training is conducted in any altitude between the two aforementioned altitudes.

Opposition force personnel may be employed as well as small arms with blanks or live ammunition (if permitted: live ammunition on MIRC land training areas is permitted only on small arms ranges or shoot houses). Ordnance, if used, typically includes 7.62 mm, 5.56 mm and .50 cal. These operations will vary in length depending on the transportation method and systems being used, typically from 2 to 8 hours.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario.

Training Considerations

Surveyed parachute drop zones in land or water range areas enhance safety.

Special Warfare, NECC, or Army Personnel from HH-60H, SH-60F, or MH-60S Helicopters

There are a number of different insertion or extraction techniques that are used depending on the mission and tactical situation:

- Helicopter Rope Suspension Training (HRST) is a collective term used for various techniques used for quickly deploying troops from a helicopter in locations where the helicopter itself is unable to touch down:
- Fast Rope uses a large diameter rope attached to the helicopter at one end and loose to the ground point of insertion. A thick rope is used so that the helicopter rotor blast does not blow it around. One simply holds onto the rope with their hands and feet and slides down. Several people can slide down the same rope almost simultaneously as long as enough room is provided for each person to get out of the way when they reach the ground so that the next person will not land on them. It is quicker than rappelling because the person is not attached to the rope.
- Rappelling is similar to the fast rope technique except that it uses a smaller diameter rope and the person wears a harness that is attached to the rope by a carabineer. It is safer than fast rope, but slower.
- Special Purpose Insertion/Extraction (SPIE) was designed for use in rough terrain as well as water. This technique inserts or extracts an entire patrol at one time. Each person wears a harness and uses a carabineer to attach to “D” rings in a rope that is attached to the helicopter. The helicopter descends or lifts vertically into/from the insertion/extraction zone while ensuring that the rope and personnel are clear of obstructions. During forward flight the rope and personnel are treated as an external load and airspeeds, altitudes, and oscillations are closely monitored.
- Cast and Recovery is a method for delivering or recovering personnel to or from the water. A helicopter flies low and slow over the water near the target point and the personnel simply jump into the water one at a time. This method is also used for inserting and extracting a Combat Rubber Raiding Craft (CRRC) and its passengers.

Basic Phase (Unit Level Training) Scenario

Helicopters with the embarked personnel approach the objective area at a low altitude, between 200 ft to 400 ft, descend quickly to the insertion position, and hover about 20 ft above the ground. Once the passengers and equipment have been inserted or extracted, the helicopter departs the area.

Opposition force personnel may be employed as well as small arms with blanks or live ammunition (if permitted). Ordnance, if used, typically includes 7.62 mm, 5.56 mm and .50 cal.

These operations will vary in length depending on the transportation method and systems being used, typically from 2 to 8 hours.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario, except that the procedure is done as a part of a larger operation with two or more helicopters and an assigned mission.

Special Warfare or NECC Personnel from Boats

Basic Phase (Unit Level Training) Scenario

Combat personnel use Combat Rubber Raiding Craft (CRRC), Rigid Hull Inflatable Boats (RHIB), and other boats to approach a hostile area ashore from points at sea to perform an assigned task such as obtain intelligence, destroy an assigned target, or complete another objective. The goal of this exercise is to get the personnel to or from the beach.

Opposition force personnel may be employed as well as small arms with blanks or live ammunition (if permitted). Ordnance, if used, typically includes 7.62 mm, 5.56 mm and .50 cal.

These operations will vary in length depending on the transportation method and systems being used, typically from 2 to 8 hours.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario.

Special Warfare or NECC Personnel or Marines from SSN or SSGN

Several methods are used by submarines and embarked personnel to move from the submarine to the objective area:

- The Lock-in/lock-out procedure allows personnel to swim out of submerged submarines.
- The SEAL Delivery Vehicle (SDV) may be used by personnel to move from the submarine to an underwater area closer to shore.
- The Advanced SEAL Delivery System (ASDS) is a longer range submersible used to move Special Warfare personnel to the shore. It is typically carried by a specially configured SSN to a special launch point where the personnel embark and use it to move to a location where they can swim to shore.

Basic Phase (Unit Level Training) Scenario

Submarines approach a hostile area and move at a very slow speed while inserting or extracting personnel by using one, or a combination of two or more, of the three procedures discussed above. Once the personnel have inserted or extracted, the submarine will leave the area.

Opposition force personnel may be employed as well as small arms with blanks or live ammunition (if permitted) once the personnel reach the beach area. Ordnance, if used, typically includes 7.62 mm, 5.56 mm and .50 cal.

These operations will vary in length depending on the transportation method and systems being used, typically from 2 to 8 hours.

Integrated and Sustainment Phase Training Scenarios

Not typically conducted in these phases.

Local Training Considerations

Insertion/extraction operations train Special Forces (Navy, Marine Corps, and Air Force) to deliver and extract personnel and equipment in challenging environments. Apra Harbor operations in FY03 were conducted by Naval Special Warfare Unit One (NSWU-1) and EODMU-5. These operations included, but were not limited to, parachute, fastrope, rappel, Special Purpose Insertion/Extraction (SPIE), combat rubber raiding craft, and lock-in/lock-out from underwater vehicles.

Parachute Insertions and Air Assault

Special Warfare and Army personnel use fixed-winged and rotary aircraft to insert troops and equipment by parachute, or use helicopters that fly directly to a specified objective area, land and off load their troops or cargo.

Special Warfare, NECC, or Army Personnel Parachute from Fixed-winged Aircraft

Basic Phase (Unit Level Training) Scenario

A fixed-winged aircraft such as a C-130, or helicopter such as a MH-60, will fly to the objective area from a land based airfield. The embarked Special Warfare, NECC, or other personnel will parachute (static line or free fall) into the planned area from either a high (25,000 ft or more) or a low (1,000 ft and below) altitude; training is conducted in any altitude between the two aforementioned altitudes.

Opposition force personnel may be employed as well as small arms with blanks or live ammunition (if permitted). Ordnance, if used, typically includes 7.62 mm, 5.56 mm and .50 cal.

These operations will vary in length depending on the transportation method and systems being used, typically from 2 to 8 hours.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario.

Table D-2: Parachute Insertions and Air Assault

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SPECIAL WARFARE						
PARACHUTE INSERTION	SEAL Platoon/Squad; EOD Platoon/Squad; ARMY Platoon/Squad USAF Platoon/Squad; C-130; CH-46; H-60	Square Rig or Static Line	6 Events; 2 to 8 hours	12 Events; 2 to 8 hours	12 Events; 2 to 8 hours	PRI: Orote Pt. Airfield; Northwest Airfield; Orote Pt. Triple Spot SEC: Finegayan DZ; Apra Harbor; Navy Munitions Site Breacher House

Training Considerations

Surveyed parachute drop zones in land or water range areas enhance safety.

Special Warfare, NECC, or Army Personnel from HH-60H, SH-60F, or MH-60S Helicopters

Basic Phase (Unit Level Training) Scenario

Helicopters with the embarked personnel approach the objective area at a low altitude, between 200 ft to 400 ft, descend quickly to the insertion position, land and disembark or embark personnel and/or equipment. Once the passengers and equipment have been inserted/extracted, the helicopter departs the area.

Opposition force personnel may be employed as well as small arms with blanks or live ammunition (if permitted). Ordnance, if used, typically includes 7.62 mm, 5.56 mm and .50 cal.

These operations will vary in length depending on the transportation method and systems being used, typically from 2 to 8 hours.

Local Training Considerations

OPA supports personnel, equipment, and CDS airborne parachute insertions.

Mine Laying Exercise (MINEX)

The goal of the Mine Laying Exercise (MINEX) in MIRC is to precisely deploy mine shapes (inert) from fixed wing air craft e.g. MPA, FA-18, USAF bomber aircraft. Typically inert MK-62 Quick Strike Mines or Mk-56 ASW Mines (inert) are used.

Table D-3: Underwater Demolitions

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
MINE WARFARE (MIW)						
MINEX	Fixed Wing Fighter/Bomber/MPA *e.g.* B-1/ B-2/ B-52/ FA-18/P-3/P-8A	MK-62 / MK-56 (Inert)	2	3	3	PRI: W-517 SEC: MI Maritime, >12 nm from land

Local Training Considerations

Primary site for the event is W-517, and secondary site is Marianas maritime area, greater then 12nm from Guam or CNMI.

Floating Mine Neutralization - Explosive Ordnance Disposal (EOD)

Explosive Ordnance Disposal personnel use special equipment to evaluate threat mines, then explosive charges to destroy the mine in order to create a safe channel for friendly shipping.

Table D-4: Floating Mine Neutralization – Explosive Ordnance Disposal

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
MINE WARFARE (MIW)						
FLOATING MINE NEUTRALIZATION	RHIB; CRRC; Small Craft	Floating mine shape; 5 – 10 lb NEW	8 Events; (2 – 8 hours each)	20 Events; (2 – 8 hours each)	20 Events; (2 – 8 hours each)	PRI: Agat Bay SEC: Piti

<u>EOD Personnel with Mine Neutralization Charges</u>

Basic Phase (Unit Level Training) Scenario

EOD personnel detect, identify, evaluate, and neutralize mines. The EOD mission is typically to locate and neutralize mines after they have been initially located by another source, such as a MCM class ship or

a MH-53 or MH-60S helicopter. Once the mine shapes are located, EOD divers are deployed from a ship via Combat Rubber Raiding Craft (CRRC) to further evaluate and neutralize the mine in the water. This is normally done with an explosive device and may involve the detonation of one or two explosive charges of up to 10 pounds of TNT equivalent.

Mine training shapes or other exercise support equipment and a range area that will support the use of live ordnance is required for a six to eight hour window. These operations are normally conducted during daylight hours for safety reasons. Mine Neutralization training in Inner Apra Harbor (IAH) typically consists of locating and neutralizing LIMPET mines (inert shapes for training). LIMPET mine training shapes are attached to a ship or object that is to be destroyed by the mine.

Local Training Considerations

This EOD event in the Agat Bay or Piti Floating Mine Neutralization Area is the location and neutralization of a floating or near surface mine by EOD divers. The neutralization of the mine (the portion of the exercise that involves the use of ordnance) is typically scheduled during daylight hours for safety reasons and completed within a two hour period. Divers deploy from RHIB, CRRC, or small craft, and a diver will place the explosive next to or on each inert mine shape. The EOD divers control the initiation of each charge. Once the neutralization charge is placed on or near the mine, the divers will return to their craft and proceed to a safe location for detonation. Based on charge size and operating conditions, EOD will determine a “safe time” and distance needed from the mine before they detonate the charge. Typically two detonations per training event are conducted, with a second charge detonated 1-2 hours after the first shot. After the detonation portion of the exercise is completed, the mine shape is recovered. Divers are redeployed to the detonation area to verify that the mine shape was destroyed or to aid in recovery of the mine shape.

Underwater Demolitions

Navy SEALS or EOD personnel use explosive charges to destroy obstacles or other structures in an underwater area that could cause interference with friendly or neutral forces and planned operations.

Table D-5: Underwater Demolitions

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
MINE WARFARE (MIW)						
UNDERWATER DEMOLITION	RHIB; CRRC; Small Craft	Bottom/mid-moored mine shape 5 – 10 lb NEW	22 Events; (2 – 8 hours each)	30 Events; (2 – 8 hours each)	30 Events; (2 – 8 hours each)	PRI: Agat Bay SEC: Apra Harbor (10lb NEW max)

<u>NSW or EOD Personnel with Explosive Charges</u>

Basic Phase (Unit Level Training) Scenario

NSW or EOD personnel locate mines, barriers or obstacles designed to deny access to an area, and then use explosive charges to destroy them.

Training Considerations

This training provides NSW and EOD personnel with experience in placing and detonating explosives to achieve best results.

Local Training Considerations

Underwater demolitions are designed to train personnel in the destruction of mines, obstacles or other structures in an area to prevent interference with friendly or neutral forces and non-combatants. They provide Navy Special Warfare and EOD teams experience detonating underwater explosives. Apra Harbor supports this training near the Glass Breakwater and Buoy 702, at a depth of 125 feet and using up to a 10 pound Net Explosive Weight (NEW) charge. The Agat Bay Underwater Detonation Area supports this training using up to 10 pound NEW charge. Lying outside of Apra Harbor and to the north of Glass Breakwater is the Piti Floating Mine Neutralization area.

Breaching

Special Warfare, Army, and USMC personnel use explosives to gain access to buildings where enemy personnel or material could be located or to investigate the building itself.

Breaching with Explosive Charges

Breaching operations train personnel to employ any means available to break through or secure a passage through an enemy defense, obstacle, minefield, or fortification. This process enables a unit to maintain its mobility by removing or reducing natural and man-made obstacles. Breaching training is designed to provide experience in knocking down doors to enter a building or structure or destroying obstacles that could block access to vehicles or personnel.

Basic Phase (Unit Level Training) Scenario

Six to 12 personnel use small unit tactics to approach a fortified building that may contain enemy personnel or material, and force is required to gain access. Explosive charges are set around door frames or other specified areas where the explosion will breach the door, wall, or other area and allow access into the building. In simple settings, a door and door frame is erected in a breaching building or demolition pit or in a MOUT where personnel practice knocking down the door using explosives that are normally no more than 1.2 pound NEW.

Local Training Considerations

Breaching operations train personnel to employ any means available to break through or secure a passage through an enemy defense, obstacle, minefield, or fortification. This enables a force to maintain its mobility by removing or reducing natural and man-made obstacles. In the Urban Warfare sense, breaching operations are designed to provide teams experience knocking down doors to enter a building or structure. During the conduct of a normal breach operation personnel practice knocking down the door using explosives that are no more than 3 pounds NEW and normally 1.2 pounds NEW or less. The Navy Munitions Site Breaching House is the only facility in MIRC that permits explosive breaching. Explosives at Orote Point Close Quarters Combat (OPCQC) are not permitted, which limits the value of conducting breaching training at OPCQC.

Table D-6: Breaching

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SPECIAL WARFARE						
BREACHING (Buildings, Doors)	SEAL Platoon/Squad; EOD Platoon/Squad; ARMY Platoon/Squad; USMC Platoon/ Squad;	Breach House (1 lbs NEW C4 max/door)	10 Events; 2-8 hours (15 lbs NEW C4)	20 Events; 2-8 hours (30 lbs NEW C4)	20 Events; 2-8 hours (30 lbs NEW C4)	Navy Munitions Site Breacher House

Land Demolitions

EOD personnel use explosive charges to destroy land mines, explosive devices, such as improvised explosive devices, bombs, structures, or other items as required.

Table D-7: Land Demolitions

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SPECIAL/EXPEDITIONARY WARFARE						
LAND DEMOLITIONS (IED DISCOVERY/ DISPOSAL)	NECC EOD Platoon/ Squad; USMC EOD Platoon/ Squad; USAF EOD Platoon/ Squad: HMWWV; TRUCK	IED Shapes	60 Events; 2-8 hours	120 Events; 2-8 hours	120 Events; 2-8 hours	PRI: Guam, Orote Pt. Airfield; Orote Pt. CQC; Polaris Pt. Field; Andersen South; Northwest Field SEC: Northern/Southern Land Navigation Area; Munitions Site Breacher House; Tinian MLA
Land Demolitions (UXO Discovery/ Disposal)	NECC EOD Platoon/ Squad; USMC EOD Platoon/ Squad; USAF EOD Platoon/ Squad: HMWWV; TRUCK	UXO	100	200	200	PRI: Navy Munitions Site EOD Disposal Site (limit 3000 lbs NEW per UXO event) SEC: AAFB EOD Disposal Site (limit 100 lbs per event) and Northwest Field (limit 20 lbs NEW per event)

EOD Personnel with Explosive Charges

Basic Phase (Unit Level Training) Scenario

EOD detachments transit to the training site in trucks or other light wheeled vehicles, sometimes conducting convoy operations or employing other unit tactics enroute to the site. A search of a suspect area is conducted to locate inert land mines buried in the sand or to locate a designated target for destruction. Buried land mines and unexploded ordnance (UXO) require the detachment to employ probing techniques and metal detectors for locating the mine or object and the use of hand tools and digging equipment to excavate them. Once they are exposed and/or properly identified, the detachment neutralizes the threats by using small amounts of simulated or live explosives (EOD land demolitions training using live explosives in the MIRC are authorized in an EOD pit only).

Integrated and Sustainment Phase Training Scenarios

Not typically conducted in these phases.

Training Considerations

Land demolitions are designed to train forces to explode and destroy enemy personnel, vehicles, aircraft, obstacles, facilities, or terrain on land. These operations are also designed to develop and hone EOD detachment mission proficiency in the location, excavation, identification and neutralization of buried land mines or other hazardous objects.

Local Training Considerations

Land demolitions training is designed to develop and hone EOD detachment mission proficiency in location, excavation, identification, and neutralization of buried land mines. During the training, teams transit to the training site in trucks or other light wheeled vehicles. A search is conducted to locate inert (non-explosively filled) land mines or Improvised Explosive Devices (IEDs) and then designate the target for destruction. Buried land mines and UXO require the detachment to employ probing techniques and metal detectors in the location phase. Use of hand tools and digging equipment is required to excavate. Once exposed and/or properly identified, the detachment neutralizes threats on site using simulated explosives only.

Land demolition training is actively conducted throughout the MIRC. Explosive Ordnance Disposal Mobile Unit (EODMU)-5 is stationed at Main Base and EOD Detachment, Marianas (DET MARIANAS) is a small unit of EOD personnel who are permanently attached to COMNAVBASE MARIANAS and are actively involved in disposing of old munitions and UXO found throughout the MIRC.

Visit, Board, Search, and Seizure (VBSS)

Helicopters and surface ships deliver boarding parties to suspect surface vessels to inspect and examine the vessel's papers or examine it for compliance with applicable resolutions or sanctions. Seizure of the vessel (that is confiscating or taking legal possession of the vessel and contraband (goods or people)) could result if the vessel is found in violation of any applicable resolutions or sanctions.

Table D-8: Visit, Board, Search, and Seizure

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SURFACE WARFARE						
Visit, Board, Search and Seizure/Maritime Interception Operation (VBSS/MIO)	RHIB, Small Craft, Ship, H-60	n/a	3 Events; 2-3 hours	6 Events; 2-3 hours	8 Events; 2-3 hours	PRI: Apra Harbor SEC: MI Maritime

CG, DDG, FFG, LPD, LSD with Shipboard or Special Forces Boarding Teams with Small Arms

Basic Phase (Unit Level Training) Scenario

Ships will typically be on patrol in a designated ocean or restricted area to watch for vessels that may need to be inspected or seized. When a suspect vessel is sighted, the ship will approach the suspect vessel at a speed of 20 kts or more while preparing to launch its organic helicopter or small boat and using its radio to talk to the suspect vessel to get it to assume an assigned course and slow speed. A cooperative boarding will allow the armed boarding party to board and conduct the inspection.

An uncooperative boarding is the more typical training scenario and may actually require a clandestine approach to the suspect vessel and use of force. An organic helo and small boat will still be used to board the suspect vessel, but shipboard or Special Forces boarding teams with armed force may be required to make the boarding. Small arms with inert blanks may be used. The entire exercise may last two to three hours.

Training Considerations

A range support vessel or other commercial style vessel can be used as the suspect vessel to be boarded and may be staffed with opposing forces to create a better training environment.

SH-60B/F, HH-60H, MH-60R/S with Machine Guns and Shipboard or Special Forces Boarding Teams with Small Arms

Basic Phase (Unit Level Training) Scenario

Helicopters supply the transportation for the boarding party from a surface ship to the suspect vessel to be boarded, as described above, and provide added fire power from onboard 7.62 mm or .50 Cal machine guns (see GUNEX (A-S)) if required in an uncooperative boarding. The helicopter will approach the suspect vessel, use an appropriate insertion/extraction method (see Insertion/Extraction - HELO) for the tactical situation to place the boarding party on the suspect vessel, and then standby in a hover or close proximity flight pattern to provide armed support as required.

Training Considerations

A range support vessel or other commercial style vessel can be used as the suspect vessel to be boarded and may be staffed with opposing forces to create a better training environment.

Amphibious Raid

Marine amphibious forces make swift incursions into or temporarily occupy a hostile territory or area for a specified purpose and a specified time, then make a planned withdrawal. Raids are often conducted against objectives requiring specific results that may not be achieved by any other means. Because of these mission requirements, the Marine Expeditionary Unit (Special Operations Capable) (MEU (SOC)) is a unit that has been specially structured to achieve specific mission requirements in unique situational settings against expected threat force structures.

A Marine amphibious raid force will consist of varying numbers of aviation, infantry, engineering, and fire support forces necessary for the specific mission to be accomplished. Because they typically lack the ability to overwhelm a forewarned and well-armed defender, the riskiest phases of an amphibious raid are the insertion and extraction phases. These phases depend on the availability of sufficient and dependable intelligence to allow the raid force to approach the target without in route engagement, complete the mission expeditiously, and withdraw before the enemy can respond.

Table D-9: Amphibious Raid

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
AMPHIBIOUS WARFARE (AMW)						
Amphibious Raid Special Purpose MAGTF	1 LHA or LHD, 1 LPD, and 1 LSD. Tailored MAGTF.	4-14 AAV/EFV or LAV/LAR; 0-5 LCAC; 0-2 LCU; 4 H-53; 12 H-46 or 10 MV-22; 2 UH-1; 4 AH-1; 4 AV-8	0	2 events (raid, offload, backload)	2 events (raid, offload, backload)	PRI: Apra Harbor; Reserve Craft Beach; Polaris Point Beach (MWR) and Polaris Point Field; Orote Point Airfield; Field; Sumay Cove and MWR Marina Ramp SEC: Tinian Military Leased Area; Unai Chulu (beach) and Tinian Harbor; North Field.

<u>MEU (SOC) with Small Boats or Mechanized Assault Craft and Blank Small Arms Ammunition</u>

Basic Phase (Unit Level Training) Scenario

Typical Amphibious Raid missions might be mounted to:

- Inflict loss or damage a specified target
- Seize a port or airfield for use by “friendly” forces
- Secure intelligence information

- Evacuate combatant or non-combatant personnel
- Create a tactical diversion.

A typical Amphibious Raid force may be comprised of a reinforced company (100-150 personnel) landed by small boat or mechanized assault craft on a beachhead, or inserted by assault support aircraft into a landing zone (LZ). The company would then proceed to a designated objective area within the range complex to carry out the assigned mission. When the mission is successfully accomplished, the company would then proceed to an extraction point for return to ships in the ESG.

Because it is the foundation for MEU operations, the amphibious raid is conducted more prevalently within the Pre-deployment Training Plan. A single MEU is expected to execute 16-20 training raids for its 3 companies and attachments in the basic phase scenario

Integrated and Sustainment Phase Training Scenarios

Unlike an Amphibious Assault that is intended to establish a more permanent presence in a hostile territory, the Amphibious Raid makes a swift incursion into, or a temporary occupation of, an objective, followed by a planned withdrawal.

The procedures used during these phases are built on those developed during the Basic Phase, but the forces will accomplish their mission under the larger umbrella of the ESG and with the additional support forces available from the ESG.

Local Training Considerations

Reserve Craft Beach (RCB) is capable of supporting a small Expeditionary Raid training event followed by a brief administrative buildup of forces ashore. In FY03 up to 300 31st MEU personnel and equipment were moved ashore at RCB via LCAC.

Military Operations in Urban Terrain (MOUT)

USMC, Army, Air Force, Special Warfare, and NECC personnel use combat tactics appropriate for a small city environment inhabited by noncombatants but occupied by a hostile force to search out and capture or destroy the hostile force.

MOUT Personnel with Small Arms Weapons

Basic Phase (Unit Level Training) Scenario

Patrols use advanced, offensive, close-quarters battle techniques to move through a hostile urban environment where noncombatants are or may be present and collateral damage must be kept to a minimum. Techniques used include: advanced breaching to enter buildings or clear rooms; clearing stairwells; selective target engagement to ensure noncombatants are not harmed; and dynamic assault techniques to ensure collateral damage is kept to a minimum.

Organizational equipment used during these operations includes 7.62 mm, 5.56 mm, 12-gauge, and 9 mm small arms, 40 mm grenades, and breaching explosive charges. Blanks from organizational equipment or “paint ball” type weapons are typically employed over different portions of the training scenario, which is usually especially tailored for a possible real world scenario.

Table D-10: Military Operations in Urban Terrain

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
EXPEDITIONARY WARFARE						
MILITARY OPERATIONS IN THEATER (MOUT) TRAINING	USMC Infantry Company: AH-1, UH-1; H-46 or MV-22; H-53; AAV, LAV, HMMWV, TRUCK	5.56 mm blanks/Simulations	2 events, 7-21 days/event	5 events of 7-21 days/event	5 events of 7-21 days/event	PRI: Guam; AAFB South; Finegayan Communication Annex; Barrigada Housing; Northwest Field SEC: Tinian; Rota; Saipan
	USAF RED HORSE SQUADRON: TRUCK, HMMWV; MH-53; H-60		2 events, 3-5 days/event	4 events, 3-5 days/event	4 events, 3-5 days/event	
	Navy NECC Company: HMWWV, TRUCK		2 events, 3-5 days/event	4 events, 3-5 days/event	4 events, 3-5 days/event	
	Army Reserve/GUARNG Company; HMWWV, TRUCK		2 events, 3-5 days/event	4 events, 3-5 days/event	4 events, 3-5 days/event	
SPECIAL WARFARE						
MILITARY OPERATIONS IN THEATER (MOUT) TRAINING	SEAL Platoon/Squad; EOD Platoon/Squad; HMWWV; TRUCK	5.56 mm blanks/Simulations	6 events of 3-5 days/event	8 events of 3-5 days/event	10 events of 3-5 days/event	PRI: Guam; AAFB South; Finegayan Communication Annex; Barrigada Housing; Navy Munitions Site Breaching House SEC: Tinian; Rota; Saipan

Integrated and Sustainment Phase Training Scenarios

Typically differ from the Basic Phase Scenario by the number of personnel that will be involved and the more command and control that will be used. The operation may also be supported by helicopters for insertion and extraction or close air support, and by UAVs for intelligence information.

MOUT forces in these phases are more typically geared for Marine Corps missions at company-level size operations (100-150 personnel) to battalion-level size operations (1,000 personnel).

Training Considerations

A “city” with opposing forces is required to get the most out of MOUT training and gain the experience required by the complicating factors of urban warfare which include:

- Distinguishing civilians from hostiles
- Three dimensional environment
- Limiting fields of view and fire caused by buildings
- Enhanced concealment and cover for hostiles

- Below ground infrastructure
- Booby traps
- Snipers.

MOUT training can consist of more than one type of scenario. One might be a "raid," in which small teams use MOUT tactics to seize and secure an objective, accomplish their mission and withdraw. Another might be a Marine Expeditionary Force (MEF) using MOUT tactics to seize and secure an objective for the long term. In either case, training to neutralize enemy forces must be accomplished in a built-up area featuring structures, streets, vehicles and civilian population. It is manpower intensive, requiring close fire and maneuver coordination and extensive training.

Local Training Considerations

OPCQC supports "raid" type MOUT training on a limited basis.

USMC makes extensive use of Andersen South during Training in Urban Environment Exercise (TRUEX) events.

Airfield Seizure

Special Warfare, Army and Marine Corps units use combat tactics appropriate for seizing and securing an occupied enemy airfield in order to make it available for follow-on friendly force use. Air Force and NECC units specialize in securing and repairs of a seized airfield.

Table D-11: Airfield Seizure

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SPECIAL/EXPEDITIONARY WARFARE						
SEIZE AIRFIELD	SEAL Company/ Platoon USMC Company/ Platoon ARMY Company/ Platoon USAF Squadron C-130; MH-53; H-60; HMWWV; TRUCK	5.56 mm blank/Simulations	2 Events; 1- 3 days	12 Events; 1-3 days	12 Events; 1-3 days	PRI: Northwest Field SEC: Orote Pt. Airfield; Tinian North Field

<u>Personnel with Small Arms Weapons</u>

Basic Phase (Unit Level Training) Scenario

NSW, NECC, or Marine Corps patrols use advanced, offensive, raid and close-quarters battle techniques to move through a hostile environment where noncombatants are or may be present and collateral damage must be kept to a minimum in order to be able to use the airfield facilities after they have been seized.

The raid/seizure force typically advances from over the horizon, assaulting across a hostile territory in a combination of helicopters, VTOL aircraft, and other landing craft.

Organizational equipment used during this operation includes 7.62 mm, 5.56 mm, 12-gauge, and 9 mm small arms, 40 mm grenades, and breaching explosive charges. Blanks from organizational equipment or "paint ball" type weapons are typically employed over different portions of the training scenario, which is usually especially tailored for a possible real world scenario.

Local Training Considerations

Northwest Field (NWF) is a primary site for this training. The USAF Red Horse Squadron will frequently conduct this type of training.

Direct Action

Special Forces or NECC personnel use covert or overt small unit tactics against an enemy force to seize, damage, or destroy a target and/or capture or recover personnel or material.

Table D-12: Direct Action

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SPECIAL WARFARE						
DIRECT ACTION	SEAL Tactical Air Control Party (TAC-P); RHIB; Small Craft.	M-16, M-4, M-249 SAW, M-240G, .50 cal, M-203 (5.56 /7.62 mm/ .50 cal round/ 40mm HE)	2 Events; 1 day (2,000 rounds)	3 Events; 1 day (3,000 rounds)	3; events 1 day (3,000 rounds)	FDM (R-7201)
	SEAL Platoon/Squad; NECC Platoon/Squad; USMC Platoon/Squad; ARMY Platoon/Squad; USAF Platoon/Squad	5.56 mm blanks/Simulations 9mm (Orote Pt. Combat Qualification Center - OPCQC) 1.5 lb NEW C4 (Navy Munitions Site Breaching House)	32 Events; 2-8 hours (12,500 9mm) (10.5 lb NEW C4)	40 Events; 2 - 8 hours (15,000 9mm) (15 lb NEW C4)	48 Events; 2 - 8 hours (17,500 9mm) (19.5 lb NEW C4)	PRI: OPCQC and Navy Munitions Site Breacher House SEC: Tarague Beach CQC and Navy Munitions Site Breacher House.

<u>Personnel with Small Arms Weapons and Explosive Devices</u>

Basic Phase (Unit Level Training) Scenario

A squad or platoon size force are inserted into and later extracted from a hostile area by helicopter, Combat Rubber Raiding Craft (CRRC), or other technique, and then use small-scale offensive actions to attack hostile forces or targets. These offensive actions can include: raids, ambushes, standoff attacks by firing from ground, air, or maritime platforms, designating or illuminating targets for precision-guided munitions, providing support for cover and deception operations, and sabotage.

Opposing forces and targets within range areas are required for realism. Small arms such as 7.62 mm, 5.56 mm, 9 mm, 12-gauge, 40 mm grenades, laser illuminators, and other squad or platoon weapons may be used against live fire targets, or with blanks.

Training Considerations

This exercise may be combined with other exercises such as insertion and extraction, close air support, and others.

Local Training Considerations

NSWU-1 is capable of using small craft to island hop from Guam to Rota, Rota to Tinian, Tinian to Saipan, and Saipan to FDM. This is not a frequent event. Once at FDM, they will employ small arms, grenades, and crew served weapons in direct action against targets on the island. They may also participate in TACP/FAC training in conjunction with a Bombing Exercise (Air-to-Ground) (BOMBEX (A-G)).

NSWU-1 and visiting Special Forces training in the MIRC will frequently include training that utilizes the access provided by Gab Gab Beach to Apra Harbor and Orote Point training areas.

Maneuver

Marine Corps units practice the maneuver and employment of forces in a non live fire environment such that the forces may achieve a position of advantage over an enemy force and accomplish operational or strategic objectives.

Table D-13: Maneuver

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SPECIAL/EXPEDITIONARY WARFARE						
MANEUVER (Convoy; Land Navigation)	USMC Company/Platoon Army Company/Platoon	Trucks; HMWWV;AAV/LAV	8 Events; 8 -24 hours	16 Events; 8 -24 hours	16 Events; 8 -24 hours	PRI: Northwest Field; AAFB South; Northern and Southern Land Navigation Area; Tinian MLA SEC: Finegayan Annex; Barrigada Annex; Orote Pt. Airfield;

<u>Marine Corps and Army Personnel</u>

Basic Phase (Unit Level Training) Scenario

This training may be conducted at the squad level or at the Battalion, Regiment, Division, Force, or Joint level.

Local Training Considerations

Northern Land Navigation Area and Southern Land Navigation Area support teams on foot only, no convoy training. Limited convoy training is possible at Andersen South, and Finegayan and Barrigada Annexes.

Gunnery Exercise (Surface-to-Surface) (Boat): GUNEX [S-S] (Boat)

A small boat uses a machine gun and small arms to attack and disable or destroy a surface target that simulates another ship, boat, swimmer, floating mine or near shore land targets.

A number of different types of boats are used depending on the unit using the boat and their mission. Boats are most used by NSW teams and Navy Expeditionary Combat Command (NECC) units (Naval Coastal Warfare, Inshore Boat Units, Mobile Security Detachments, and Explosive Ordnance Disposal). These units are used to protect ships in harbors and high value units, such as: aircraft carriers, nuclear submarines, liquid natural gas tankers, etc., while entering and leaving ports, as well as to conduct insertion and extractions, and various naval special warfare operations.

The boats used by these units include: Small Unit River Craft (SURC), Combat Rubber Raiding Craft (CRRC), Rigid Hull Inflatable Boats (RHIB), Patrol Craft, and many other versions of these types of boats. These boats use inboard or outboard, diesel or gasoline engines with either propeller or water jet propulsion.

Table D-14: Gunnery Exercise (Surface-to-Surface) (Boat): GUNEX [S-S](Boat)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SURFACE WARFARE (SUW)						
GUNEX Surface-to-Surface (Small arms)	CG cutters, Ship, RHIB, small craft. Barrel or Inflatable tgt.	M-16, M-4, M-249 SAW, M-240G, .50 cal, M-203 (5.56 /7.62 mm/ .50 cal round/ 40mm TP)	24 (12,000 rounds)	32 (16,000 rounds)	40 (20,000 rounds)	PRI: MI Maritime, >3 nm from land SEC: W-517

<u>Navy and Coast Guard Boats with .50 cal, 7.62 mm or 40 mm Machine Guns</u>

This exercise is usually a live fire exercise, but at times blanks may be used so that the boat crews can practice their boat handling skills for the employment of the weapons while minimizing risk to personnel and equipment associated with firing live weapons.

Basic Phase (Unit Level Training) Scenario

Boat crews may use high or low speeds to approach and engage targets simulating other boats, swimmers, floating mines, or near shore land targets with .50 cal, 7.62 mm, or 40 mm weapons.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario, except for the additional command and control coordination involved.

Training Considerations

The purpose of this exercise is to develop marksmanship skills and small boat handling tactics and skills required to employ these weapons. It usually lasts one to two hours.

Local Training Considerations

Surface gunnery exercises take place in the open ocean to provide gunnery practice for Navy and Coast Guard ship and small craft crews supporting NSWU-1, EODMU-5, and Mobile Security Squadron Seven (MSS-7). Local GUNEX training activity conducted typically involve only non-maneuvering targets such as a MK-42 Floating At Sea Target (FAST) or a MK-58 marker (smoke) buoy, or a steel drum. The systems employed against surface targets include the 5-inch, 76mm, 25mm chain gun, 20mm Close In Weapon System (CIWS), .50 caliber machine gun, 7.62mm machine gun, small arms, and 40mm grenade.

Gunnery Exercise (Surface-to-Surface) (Ship): GUNEX [S-S] (Ship)

Ship gun crews engage surface targets at sea with their main battery 5-inch and 76 mm guns as well as smaller surface targets with 25 mm, .50 cal, or 7.62 mm machine guns with the goal of disabling or destroying the threat ship.

Table D-15: Gunnery Exercise (Surface-to-Surface)(Ship) (GUNEX [S-S] [Ship])

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SURFACE WARFARE (SUW)						
GUNEX Surface-to-Surface (Ship)	Ships and patrol craft. Barrel, Inflatable tgt.	.50 cal MG	1 (2,400 rounds)	5 (12,000 rounds)	5 (12,000 rounds)	PRI: W-517 SEC: MI Maritime, >12 nm from land
		.25 mm MG	1 (1,600 rounds)	5 (8,000 rounds)	5 (8,000 rounds)	
	CG and DDG. Barrel or Inflatable tgt. or towed sled.	5” gun	4 (160 rounds)	8 (320 rounds)	10 (400 rounds)	
	FFG. Barrel or Inflatable tgt. or towed sled.	76 mm	2 (60 rounds)	4 (120 rounds)	5 (150 rounds)	

<u>CG and DDG with 5-inch and FFG with 76 mm Guns</u>

There are three types of main battery shipboard guns currently in use: 5-inch/54 (CG and DDG), 5-inch/62 (DDG-81 and newer), and 76 mm (FFGs). Both 5-inch guns use the same types of 5-inch projectiles for training exercises. The difference between the 5-inch guns is the longer range of the 5-inch/62 because of the larger powder propulsion charge.

Basic Phase (Unit Level Training) Scenario

A slow (5 kts) or high (30 kts) speed simulated enemy ship or boat approaches the CG/DDG/FFG from about 10 nm, is detected by the ship's radar and determined to be hostile. The target is tracked by radar, and when it is within five to nine nm, it is engaged by approximately 60 rounds of 5-inch or 76 mm, fired with an offset so as not to actually hit the targets. Exercise occurs over duration of about 3 hours. Live or inert training rounds may be used. After impacting the water, the live rounds are expected to detonate within 3 ft of the surface. Inert rounds and fragments from the live rounds will sink to the bottom of the ocean.

The main battery guns have a requirement to attack high-speed, maneuvering, towed or remotely controlled surface targets such as the QST-35 Seaborne Powered Target (SEPTAR), High Speed Maneuverable Surface Target (HSMST), or a remote controlled Jet Ski. These types of targets have not been available in the MIRC.

Integrated and Sustainment Phase Training Scenarios

These two scenarios will be similar to each other and the Basic Phase Scenario, but will have more “friendly” ships (3 to 5) participating. Additional ships will increase the number of rounds fired proportionally.

While main battery guns are designed for both offensive and defensive use against larger, ship-sized targets, these smaller caliber machine guns are designed to provide close range defense against patrol boats, smaller boats, swimmers, and floating mines.

Amphibious ships, such as LHA, LHD, LPD, and LSD use 25 mm machine guns as their principal gun to provide a defensive gunfire capability for the engagement of a variety of smaller surface targets. These ships, as well as the CG, DDG, FFG, and CVN are also equipped with .50 cal or 7.62 mm machine guns.

Basic Phase (Unit Level Training) Scenario

Ships use machine guns to practice defensive marksmanship, typically against non-maneuvering floating targets. Targets are engaged after closing the target to within about 2,000 yards for 25 mm, 900 yards for .50 cal, and 400 yards for 7.62 mm; between 200 and 800 rounds are typically expended.

The target is typically a Floating At-Sea Target (FAST), a MK-58 smoke, or a steel drum. Targets are expended during the exercise and are not recovered.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario.

Bombing Exercise (Air-to-Surface) (BOMBEX [A-S])

Strike fighter and maritime patrol aircraft deliver bombs against surface maritime targets, day or night, with the goal of destroying or disabling enemy ships or boats.

Table D-16: Bombing Exercise (Air-to-Surface) (BOMBEX [A-S])

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SURFACE WARFARE (SUW)						
BOMBEX (Air to Surface)	Fixed Wing Fighter/Bomber/MPA (MK 58 Smoke tgt. or towed sled or small hull target)	MK-82/83/84 series and JDAM (Live Rounds)	1 round	4 / year (1 round /qrtr.)	4 / year (1 round /qrtr.)	PRI: W-517, >50 nm from land SEC: MI Maritime, >50 nm from land; ATCAAs
BOMBEX (Air to Surface) Inert Only	Fixed Wing Fighter/Bomber/MPA (MK 58 Smoke tgt. or towed sled)	MK 82 I; BDU-45; MK 76; JDAM (Inert Rounds)	16 (48 rounds)	24 (72 rounds)	30 (90 rounds)	PRI: W-517 SEC: MI Maritime, >12 nm from land; ATCAAs

Fixed Wing Aircraft with Unguided or Precision-guided Munitions

Unguided munitions: MK-76 and BDU-45 (inert training bombs); MK-80 series (inert or live); MK-20 Cluster Bomb (inert or live).

Precision-guided munitions: Laser-guided bombs (LGB) (inert or live); Laser-guided Training Rounds (LGTR) (inert); Joint Direct Attack Munition (JDAM) (inert or live) GPS guidance.

Basic Phase (Unit Level Training) Scenario

A flight of two aircraft will approach the target from an altitude of between 15,000 ft to less than 3,000 ft and, when on an established range, will adhere to designated ingress and egress routes. Typical bomb release altitude is below 3,000 ft and within a range of 1000 yards for unguided munitions, and above 15,000 ft and in excess of 10 nm for precision-guided munitions. Laser designators from either own aircraft, a support aircraft, or ground support personnel are used to illuminate certified targets for use with lasers when using laser guided weapons.

Integrated and Sustainment Phase Training Scenarios

Typically involves an at-sea simulated strike scenario with a flight of four or more aircraft, with or without a designated opposition force (OPFOR).

Training Considerations

Strike fighter pilots can fulfill this training requirement against either a land or water target.

Unguided munitions: Usually conducted at land ranges with inert or live ordnance, or water ranges with ship hulks available for targets. MK-76 and BDU-48 inert bombs are the most common weapon allocation.

Precision-guided munitions: The very large safety footprints of these bombs limit their employment to impact areas on large land ranges, such as the Fallon Training Range Complex, or at-sea during a Sinking Exercise (SINKEX) or BOMBEX.

P-3C and P-8A Maritime Patrol Aircraft (MPA) with Unguided Munitions

Unguided munitions: BDU-45 inert bomb; MK-82 (500 lb bomb) (inert or live); MK-20 (Rockeye cluster bomb) (inert or live); CBU-99 (cluster bomb) (inert or live).

Basic Phase (Unit Level Training) Scenario

MPA use bombs to attack surfaced submarines and surface craft that would not present a major threat to the MPA itself. The MPA is larger and slower than a strike fighter aircraft (e.g. F/A-18), so its bombing tactics differ markedly. A single MPA approaches the target at a low altitude. In most training exercises, it drops inert training munitions, such as the BDU-45 on a MK-58 smoke float used as the target.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario, except that a more realistic target may be available and live ordnance may be expended, such as during a SINKEX.

Training Considerations

MPA pilots can fulfill this training requirement against either a land or water target, but it is usually conducted within the Warning Area above a water range with inert ordnance against a MK-58 smoke as the target.

The annual ordnance expenditure allocation typically authorizes only a very limited number of live munitions.

Gunnery Exercise (Air-to-Surface) (GUNEX [A-S])

Strike fighter aircraft and helicopter crews, including embarked Naval Special Warfare personnel use guns to attack surface maritime targets, day or night, with the goal of destroying or disabling enemy ships, boats, or floating or near-surface mines. Typical event lasts 1 to 2 hours.

Table D-17: Gunnery Exercise (Air-to-Surface) (GUNEX [A-S])

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SURFACE WARFARE						
GUNEX Air-to-Surface	SH-60; HH-60; MH-60R/S; UH-1; CH-53; FA-18; AH-1W; F-15; F16; F-22; F-35; AV-8B; A-10 (Barrel or MK-58 smoke tgt.)	7.62 mm MG	150 (30,000 rounds)	200 (40,000 rounds)	200 (40,000 rounds)	PRI: W-517 SEC: MI Maritime, >12 nm from land; ATCAAs
		.50 cal MG	10 (2,000 rounds)	20 (4,000 rounds)	20 (4,000 rounds)	
		20 mm cannon	50 (5,000 rounds)	100 (10,000 rounds)	100 (10,000 rounds)	
		25 mm cannon	10 (1,000 rounds)	40 (4,000 rounds)	40 (4,000 rounds)	
		30 mm cannon	0	15 (1,500 rounds)	15 (1,500 rounds)	

F/A-18C/E/F with Vulcan M61A1/A2 20 mm Cannon

Basic Phase (Unit Level Training) Scenario

A flight of two aircraft will begin its descent to the target from an altitude of about 3,000 ft while still several miles away. Within a distance of 4,000 ft from the target, each aircraft will fire a burst of about 30 rounds before reaching an altitude of 1,000 ft, then break off and reposition for another strafing run until each aircraft expends its exercise ordnance allowance of about 250 rounds.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario.

Training Considerations

Strike fighter pilots can fulfill this training requirement against either land (most often) or water targets, or at specially prepared floating ship hulks during the occasional Sinking Exercise (SINKEX). F/A-18s will only rarely strafe into open ocean.

MH-53, HH-60H, MH-60R/S, SH-60B/F Helicopters with Side Door-Mounted .50 cal and 7.62 mm Machine Guns

Basic Phase (Unit Level Training) Scenario

Typically, a single helicopter will carry several air crewmen needing gunnery training and fly at an altitude between 50 ft to 100 ft in a 300 ft racetrack pattern around an at-sea target. Each gunner will expend about 200 rounds of .50 cal and 800 rounds of 7.62 mm ordnance in each exercise. The target is normally a non-instrumented floating object such as an expendable smoke float, but may be a remote controlled speed boat or jet ski type target if available. Gunners will shoot special target areas or at towed targets when using a remote controlled target to avoid damaging them. The exercise lasts about 1 hour.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario.

Training Considerations

HH-60H, MH-60S, and SH-60F have a mission to support NSW operations, so they will also train with embarked NSW personnel. NSW personnel use .50 cal, 7.62 mm, and hand-held weapons firing 40 mm grenades during this exercise.

Local Training Considerations

GUNEX (A-S) operations are conducted by rotary-wing aircraft against stationary targets (FAST and smoke buoy). Rotary-wing aircraft involved in this operation would use either 7.62mm or .50 caliber door-mounted machine guns. Interviews with HSC-25 (MH-60S) indicate that GUNEX (A-S) training occurs frequently in the MIRC Offshore Areas other than W-517.

Anti-Submarine Warfare (ASW) - Helicopters, Maritime Patrol Aircraft, Surface Ships, and Submarines

Maritime patrol aircraft, helicopters, surface ships, and submarines search for threat submarines with active and passive sonar and sonobuoys, develop a firing solution and use torpedoes to attack and destroy the threat submarine.

ASW Mission

The search and attack mission may be conducted by individual platforms or in various combinations of all four platform types, but the ASW prosecution will go through six specific phases to complete the search and attack mission:

- Search - As naval units move from one location to another they employ their available sensors and tactics of systematic reconnaissance to find the anticipated threat along their route or within a defined ocean area.
- Detect - The initial result of a sensor's perception of an object of possible interest, but the object's identification still needs to be determined.
- Classify - The determination that the object that has been detected by the sensor is a probable submarine.
- Localize - Tactics are used to determine the exact location of the probable submarine.
- Track - A series of sensor localizations over a period of time creates a path from which the sensor operator may determine the probable submarine's course and speed. This information is used to create a firing solution, e.g. where to send the torpedo.
- Neutralize - A torpedo is launched toward the position of the probable submarine and it is destroyed.

ASW Sensors

Hull Mounted Sonar:

- Surface ships have hull mounted sonar with both active and passive capabilities. The CG and DDG classes have the AN/SQS-53 and the FFG class has the AN/SQS-56. Both are mid-frequency active sonar.
- AN/BQQ-5 is mid-frequency active and passive bow-mounted sonar, used by SSN 688 class submarines.
- AN/BQQ-6 is a passive only sonar used by the Ohio class SSBN submarines
- AN/BQQ-10 is a sonar system upgrade to the older AN/BQQ-5 and BQQ-6 systems, and has been installed or has been scheduled for integration onto Los Angeles, Seawolf, Virginia (AN/BQQ-10(V4) model), Ohio and SSGN-class submarines. It integrates and improves towed array, hull array, sphere array, and other ship sensor processing while enhancing fidelity. Since program inception in 1998, AN/BQQ-10 systems have been installed on over 40 submarines.

Towed Array Sonar: this is a passive sonar system that is simply a long cable full of microphones that is towed behind the ship. Passive sonar is a listening device that uses hydrophones to receive, amplify, and process underwater sounds. The advantage of passive sonar is that it places no sounds in the water, so it does not reveal the location of the ship towing the sonar.

- AN/SQR-19 is the towed array sonar used by surface ships (CG, DDG, and FFG).
- TB-23 and TB-29 are towed arrays used by SSN.

Dipping Sonar:

- AN/AQS-22 Airborne Low Frequency Sonar (ALFS) is an active and passive sonar system used by the MH-60R helicopter. The active sonar operates in the mid-frequency range.
- AN/AQS-13 is an active sonar system used by the SH-60F helicopter. The sonar is deployed on a 1,575 ft cable while the helicopter hovers about 60 ft above the water.

Sonobuoys: can be either active or passive. Multiple sonobuoys are deployed at one time in different patterns depending on the tactical situation. The sonobuoys sink after their battery is exhausted.

- Active sonobuoys transmit electronic mid-frequency sound waves (sonar) that reflect off the target submarine and are received by the sonobuoy.
- Passive sonobuoys only receive target submarine noise signals transmitted through the water from equipment in the submarine, such as engine noise.
- Explosive Echo Ranging (EER) and the Improved Explosive Echo Ranging (IEER) sonobuoy systems consist of two separate sonobuoys employed together to locate a target submarine. One sonobuoy is an active “explosive” buoy that creates an acoustic sound source from the explosion of 4.2-lbs of high explosives. The active buoy contains two 4.2-lb sources that are detonated at separate times to extend the life of the buoy. The other sonobuoy is an air deployable active receiver (ADAR) passive buoy placed several miles away from the active buoy. It receives echoes reflected from the target submarine that were created by the active buoy's explosive source.
- Acoustic Extended Echo Ranging (AEER) sonobuoy (AN/SSQ-125) is a system that uses the same ADAR sonobuoy as the EER/IEER acoustic receiver and is used for a large area ASW search capability in both shallow and deep water. However, instead of using explosives as an impulsive source for the active acoustic wave, the AEER system uses a battery powered (electronic) acoustic source. AAER is intended to replace the EER/IEER's use of explosives and is scheduled to enter the fleet in 2011.
- SURTASS LFA ships may operate in support of naval strike groups in major exercises; however they typically operate independently of the naval strike group. Independent LFA activities are covered in the LFA FEIS. SURTASS LFA sonar systems are long-range sonars that operate day or night in most weather conditions in the low frequency range of 100 to 500 hertz (Hz). The SURTASS LFA system consists of an active component and a passive component. The active component of the system, LFA, is a set of low frequency acoustic transmitting source elements (called projectors) suspended by cable from underneath the ship. These projectors produce the active sonar signal or “ping.” The passive or listening component of the system is SURTASS, which detects returning echoes from submerged objects, such as Opposition Force submarines. The returning signals are received through hydrophones that are towed behind the ship on a receiving array. The long-range capability of the sensitive receiving array and onboard acoustic processing provides a large geographic area of protection and submarine detection (Department of the Navy 2001). This information is provided to naval Strike Groups to then determine the appropriate response including the possible use of ASW capable ships and other ASW capable aircraft, including helicopters and P-3 aircraft.

Radar is used by most ASW capable units to watch for periscopes and other masts that the submarine may expose.

Magnetic Anomaly Detector (MAD) is used by MPA and the SH-60B helicopter, and is a passive receiver used to detect natural and manmade differences in the Earth's magnetic field. MAD sensor operation is similar in principle to the metal detector used by treasure hunters on beaches. When the MAD sensor passes over or very near to a submarine, the submarine's disturbance of the Earth's magnetic field is detected, and the submarine's position is pinpointed.

ASW Platforms

Aircraft:

- The P-3C and P-8A Maritime Patrol Aircraft are land based, long range, fixed-winged aircraft. Their ASW sensors include radar, Magnetic Anomaly Detector (MAD), and up to 84 active, EER, and passive sonobuoys. Of these sensors, only sonobuoys enter the water.
- The SH-60B, operates from cruisers, destroyers, and frigates, has a search radar, MAD, and carries 25 active and passive sonobuoys, but usually drops only 8-14 in a given exercise.
- The SH-60F operates from aircraft carriers and employs a search radar, active or passive dipping sonar rather than MAD, and carries only 14 active or passive sonobuoys.
- The MH-60R combines the capabilities of the SH-60B and SH-60F, with search radar and active and passive sonobuoys, and employs a new, low frequency, active and passive dipping sonar, the AN/AQS-22 Airborne Low Frequency Sonar (ALFS).

Surface Ships:

- Cruisers (CG)
- Guided Missile Destroyers (DDG)
- Guided Missile Frigates (FFG).
- T-AGO class SURTASS LFA vessels.

Ship ASW sensors include passive hull-mounted and towed array sonar that put no acoustic energy in the water, active hull-mounted mid-frequency sonar, and SH-60B or MH-60R helicopters if the specific ship has a helicopter embarked.

Submarines:

- Attack Submarine (SSN)
- Guided Missile Submarine (SSGN)
- Ballistic Missile Submarine (SSBN).

The SSN is the principal ASW attack submarine, but each class submarine must train to the ASW mission. Submarine ASW sensors are principally passive hull-mounted and towed array sonar, and secondarily, hull-mounted mid-frequency active sonar, which is seldom used.

ASW Ordnance

ASW platforms use the following ordnance to neutralize enemy submarines:

Lightweight Torpedoes: The navy is phasing out the MK-46 torpedo and is expected to completely replace it with the MK-54 by 2012. The MK-54 has improved guidance and warhead systems over the MK-46. Helicopters, MPA, and surface ships all use variants of these torpedoes. Although the different launching methods will involve different supporting expendables (parachutes, rocket boosters, nose caps, etc.), the torpedo is the same once it has entered the water. There are typically two types of torpedoes used in exercises:

- Practice Torpedo Exercise Shape. The recoverable exercise torpedo (REXTORP) is just a torpedo shape with no internal propulsion or guidance mechanisms that allows crews to practice loading and launching the torpedo.
- Exercise Torpedo (EXTORP). The EXTORP is a recoverable, functional torpedo with an inert exercise warhead that contains data collection instrumentation. This exercise torpedo functions like a real torpedo, using active and passive acoustic homing to attack the target, but turns away so as not to hit the target. Once the EXTORP is recovered, the instrumentation may be accessed

at the land based torpedo shop to provide data that will give an indication as to whether the torpedo would have hit the target.

REXTORPS are used more often than EXTORPS because of a number of exercise constraints, including higher costs and safety requirements, on the use of EXTORPS.

Heavyweight Torpedo: The MK-48 exercise torpedo is used only by submarines (SSN, SSGN, SSBN) and has both an anti-surface and Anti-Submarine capability. It is wire guided (command controlled from the submarine) and has an active and passive homing capability. This torpedo is most frequently used on instrumented underwater tracking ranges to ensure the best training feedback to submarine crews. Use of the exercise MK-48 requires special recovery support assets such as special helicopters or vessels equipped for their recovery, which also requires that they be used only during daylight.

ASW Targets and Pingers

ASW training targets are used to simulate target submarines. They are equipped with one or a combination of the following devices: (1) acoustic projectors emanating sounds to simulate submarine acoustic signatures; (2) echo repeaters to simulate the characteristics of the echo of a particular sonar signal reflected from a specific type of submarine; and (3) magnetic sources to trigger magnetic detectors.

There are three principal targets used in ASW training exercises:

- One or more submarines is the most desirable target because it provides the most realistic training and can be augmented to simulate typical threat submarines that could be encountered.
- MK-39 Expendable Mobile ASW Training Target (EMATT). This expendable target is small enough to be launched by hand from a surface ship, aircraft or helicopter using the target. It provides a sound source for passive tracking, or a return echo to active sonar.
- MK-30 Mobile ASW Target. This target is principally used only on instrumented ranges as it requires range support for launching and recovery. It too provides a sound source for passive tracking, or a return echo to active sonar. The MK 30 target is a torpedo-like, self-propelled, battery powered underwater vehicle capable of simulating the dynamic, acoustic, and magnetic characteristics of a submarine. The MK-30 is 21 inches in diameter and 20.5 feet in length. It is launched by aircraft and surface vessels and can run approximately four hours depending on the programmed training scenario. The MK 30 is recovered after the exercise for reconditioning and subsequent reuse. The MK 30 has no discharges into the environment.

Any of these targets may be tasked within their capability to be non-evasive, operate on a specified track, make simple course or depth maneuvers, or be fully evasive depending on the state of training of the ASW unit and the training objectives to be achieved. The MK-39 and MK-30 targets may be used for exercise torpedo firings. Some live submarines may also be used as exercise torpedo targets, but there are special requirements and special authorizations required before a live submarine can be assigned as a target for an inert torpedo firing.

MK-84 range pingers, used in association with the Portable Undersea Tracking Range (PUTR), are active acoustic devices that allow ships, submarines, and target simulators to be tracked by means of deployed hydrophones and transponders. The signal from a MK-84 pinger is very brief (15 milliseconds) with a selectable frequency at 12.9 kHz or 37 kHz and a source level of approximately 194dB SPL.

The PUTR is a new underwater range tracking system that supports ASW TRACKEX and TORPEX training. PUTR Baseline (1) can be temporarily deployed in forward deployed training areas with 10 transponders, seven deployed on the seafloor and three held in reserve. The PUTR system includes a supporting range control boat and processing equipment. PUTR tracks up to four MK-84 pingers using seven transponders anchored in a hexagon configuration at depths between 400 meters and 3500 meters. The transponders uplink their reports to the range control processor on the range support boat. The

transponder uplink frequency is selectable at either 8.8 kHz (186 dB SPL) or 40 kHz (190 dB SPL). Depending on the depth of deployment and spacing of the transponders, the range size can be between 4 nmi^2 to 100 nmi^2.

ASW Basic Training Scenarios

It is important to understand that, in most cases, all phases of ASW prosecution (search, detection, classification, localization, tracking, and neutralization) are done in both the ASW Tracking Exercise (TRACKEX) and ASW Torpedo Exercise (TORPEX); the difference is the amount of time spent in the first five phases and the last. In the ASW TRACKEX, the goal is training in the search, detection, classification, localization, and tracking process, while the goal of the ASW TORPEX is to proceed quickly through these first five phases and focus on neutralization of the target through the launching of a torpedo. Besides the training goal, the principal factors that drive this timing are usually the battery life of the torpedo target and the torpedo recovery support requirements, which include a low sea state and several hours of daylight to ensure recovery of the exercise torpedo before sunset. No torpedo is fired during an ASW TRACKEX unless it is coupled with an ASW TORPEX.

ASW Integrated and Sustainment Phase Training Scenarios

These scenarios involve coordinated ASW operations where multiple ships, helicopters, and maritime patrol aircraft operate together to prosecute an ASW threat and defend the elements of the strike group. The combination of a variety of sensors and the capability of the aircraft to cover large areas quickly and employ ASW weapons at greater ranges is a significant advantage over single platform operations.

Coordinated operations may also include a friendly submarine as part of the force. While this added sensor is extremely valuable, it adds complications to the exercise to ensure that a weapon is not dropped on the friendly submarine.

The goal of exercises conducted in these phases is to gain the experience of working with additional forces and coordinating several similar and dissimilar platforms to work together with information provided from other units to destroy the threat submarine.

One or more live submarines will typically be used as the threat for these phases. A phase could last from four to six hours during unit or sustainment training or from 12 to 16 hours or longer during major integrated ASW exercises.

Training Considerations

Basic Phase ASW TRACKEXs are preferred to be conducted on an Undersea Warfare Training Range (USWTR), but the scarcity of USWTRs, distances from homeports to those that do exist, and exigencies of deployment schedules conspire to ensure that most do not occur over an USWTR.

Integrated and Sustainment Phase ASW TRACKEXs rarely occur over USWTRs since major fleet training exercises require ocean areas much larger than an USWTR.

Anti-Submarine Warfare Tracking Exercise–Helicopter (ASW TRACKEX-Helo)

Helicopters use their sensors to search, detect, classify, localize and track a threat submarine with the goal of determining a firing solution that could be used to launch a torpedo and destroy the submarine.

Table D-18: Anti-Submarine Warfare Tracking Exercise–Helicopter (ASW TRACKEX-Helo)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
ANTI SUBMARINE WARFARE (ASW)						
ASW TRACKEX (HELO)	SH-60B, SH-60F SUB/ MK-30/ EMATT	AQS-22 DICASS	9 Events; 2 hours/helo	18 Events; 2 hours/helo	62 Events; 2 hours/helo	PRI: W-517 SEC: MI Maritime, >3 nm from land

SH-60B with Sonobuoys and MAD

SH-60F or MH-60R with Sonobuoys and Dipping Sonar

Basic Phase (Unit Level Training) Scenario

A single helicopter will typically drop its sonobuoys from an altitude below 3,000 ft into specific patterns designed for both the anticipated threat submarine and the specific water conditions. These patterns will cover many different size areas, depending on these two factors. Passive sonobuoys will be used first, so that the threat submarine is not alerted to the fact that someone is searching for it. Active buoys will be used as required either to locate extremely quiet submarines or to further localize and track submarines previously detected by passive buoys. The use of EER sonobuoys is similar to that of other sonobuoys except for how the field is positioned, the tactics of which are classified. The helicopter will typically operate below 3,000 ft during the entire operation, going to about 1,500 ft to monitor buoys already dropped.

The dipping sonar is employed from an altitude of about 50 ft after the search area has been narrowed from the initial passive sonobuoy search. The passive sonar from the MH-60R is used before its active mode or before the active sonar from the SH-60F is used, just as the passive sonobuoys are used before the active sonobuoys.

As the location of the submarine is further narrowed, MAD is used by the SH-60B to further confirm and localize the target's location.

The target for this exercise is either an EMATT or live submarine and may be either non-evading and assigned to a specified track, or fully evasive depending on the state of training of the helicopter. A TRACKEX-Helo usually takes one to two hours.

Integrated and Sustainment Phase Training Scenarios

Integrated and sustainment phase scenarios do not typically differ from the description of the unit level phase scenario, except that additional helicopters, maritime patrol aircraft, or surface ships may participate together, using their sensors and weapon capabilities, as a coordinated operation.

Anti-Submarine Warfare Tracking Exercise–Maritime Patrol Aircraft (ASW TRACKEX-MPA)

MPA use their sensors to search, detect, classify, localize and track a threat submarine with the goal of determining a firing solution that could be used to launch a torpedo and destroy the submarine.

Table D-19: Anti-Submarine Warfare Tracking Exercise-Maritime Patrol Aircraft

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
ANTI SUBMARINE WARFARE (ASW)						
ASW TRACKEX (MPA)	FIXED WING MPA SUB/ MK-30/ EMATT	DICASS EER/IEER/AEER	5 Events; 4 hours/MPA	8 Events; 4 hours/MPA	17 Events; 4 hours/MPA	PRI: W-517 SEC: MI Maritime, >3 nm from land

MPA with Sonobuoys and MAD

Basic Phase (Unit Level Training) Scenario

A single MPA drops its sonobuoys from an altitude below 3,000 ft into specific patterns designed for both the anticipated threat submarine and the specific water conditions. These patterns will cover many different size areas, depending on these two factors. Passive sonobuoys will be used first, so that the threat submarine is not alerted to the fact that someone is searching for it. Active buoys will be used as required either to locate extremely quiet submarines, or to further localize and track submarines previously detected by passive buoys. The use of EER sonobuoys is similar to that of other sonobuoys except for how the field is positioned, the tactics of which are classified. While the MPA will typically operate below 3,000 ft to drop sonobuoys, perhaps as low as 1,000 ft, it will climb to several thousand feet and fly in a pattern over the buoy field to best monitor the buoys. A MPA sonobuoy field pattern will typically be much larger than a helicopter pattern, as the MPA can carry and deploy more buoys than a helicopter, and can monitor 31 buoys at one time. The higher altitude allows monitoring the buoys over a much larger search pattern area.

MAD is used principally during the localization phase to further confirm a more exact target location moments before weapons launch, although there are no weapons used in this tracking exercise. The MPA will fly within a few hundred feet above the best estimated position of the threat submarine as close proximity is required to best employ MAD.

The target for this exercise is either an EMATT or live submarine and may be either non-evading and assigned to a specified track or fully evasive depending on the state of training of the MPA. A TRACKEX-MPA usually takes two to four hours.

Integrated and Sustainment Phase Training Scenarios

Integrated and sustainment phase scenarios do not typically differ from the description of the unit level phase scenario, except that additional helicopters, MPA, or surface ships may participate together, using their sensors and weapon capabilities, as a coordinated operation.

Anti-Submarine Warfare Tracking Exercise–Surface (ASW TRACKEX-Surface)

Surface ships use their sensors to search, detect, classify, localize and track a threat submarine with the goal of determining a firing solution that could be used to launch a torpedo and destroy the submarine.

Table D-20: Anti-Submarine Warfare Tracking Exercise-Surface (ASW TRACKEX-Surface)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
ANTI SUBMARINE WARFARE (ASW)						
ASW TRACKEX (SHIP)	CG/ DDG / FFG SUB/ MK-30/ EMATT	SQS-53C/D SQS-56	10 Events; 4 hours/ship	30 Events; 4 hours/ship	60 Events; 4 hours/ship	PRI: W-517 SEC: MI Maritime, >3 nm from land

CG, DDG, FFG with Hull Mounted and Towed Array Sonar

Basic Phase (Unit Level Training) Scenario

A single surface ship will operate between about 5 and 15 kts while employing its hull mounted and/or towed array sonars. Passive or active sonar will be employed depending on the type of threat submarine, the tactical situation, and sonar range of the day calculations, as determined by varying water conditions. Active sonar transmits at varying power levels, pulse types, and intervals, while passive sonar listens for noise emitted by the threat submarine. Passive sonar is typically employed first so as not to alert the threat submarine, followed by active sonar, if required, to determine a more exact location of the target. Active sonar may be employed during the search phase against an extremely quiet submarine or in situations where the water conditions do not support good passive reception. The surface ship will approach the threat submarine to between 10 nm and 1,000 yards during training.

The target for this exercise is either an EMATT or live submarine and may be either non-evading and assigned to a specified track or fully evasive depending on the state of training of the ship. There is no torpedo fired in this exercise. An ASW TRACKEX-Surface usually lasts two to four hours.

Integrated and Sustainment Phase Training Scenarios

Integrated and sustainment phase scenarios do not typically differ from the description of the unit level phase scenario, except that the surface ship will usually be working in conjunction with additional helicopters, MPA, or surface ships, using their sensors and weapon capabilities together in a coordinated operation.

Anti-Submarine Warfare Tracking Exercise–Submarine (ASW TRACKEX-Sub)

Submarines use their sonar sensors to search, detect, classify, localize and track the threat submarine with the goal of developing a firing solution that could be used to launch a torpedo and destroy the threat submarine.

Table D-21: Anti-Submarine Warfare Tracking Exercise-Submarine (ASW TRACKEX-Sub)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
ANTI SUBMARINE WARFARE (ASW)						
ASW TRACKEX (SUB)	SSN; SSGN MK-30	BQQ	5 Events; 4 hours /sub	10 Events; 4 hours /sub	12 Events; 4 hours /sub	PRI: Guam Maritime, >3 nm from land SEC: W-517

SSN, SSGN, SSBN with Hull Mounted and Towed Array Sonar

Basic Phase (Unit Level Training) Scenario

A single submerged submarine operates at slow speeds and various depths while using its hull mounted and/or towed array sonar to search, detect, classify, localize, and track the submerged threat submarine. During submarine versus submarine TRACKEXs, passive sonar is used almost exclusively. Active sonar use is very rare because it reveals the tracking submarine's presence to the target submarine.

Typically, this exercise is conducted by two submarines, but in the event a second submarine is not available, a MK-30 Mobile ASW Target or EMATT may also be used as a target. If feasible this exercise may be conducted on an USWTR so that both submarines and targets can be tracked by the range and the submarine crews can be debriefed at the completion of the exercise. The debrief adds to a full understanding of what actually occurred during the exercise and improves the quality of the training received. There is no torpedo fired in this exercise. A TRACKEX-Submarine usually lasts two to four hours.

Integrated and Sustainment Phase Training Scenarios

Integrated and sustainment phase scenarios do not typically differ from the description of the unit level phase scenario, except that two or more friendly submarines or one submarine and a surface ship may operate together to prosecute the threat submarine. *Anti-Submarine Warfare Torpedo Exercise–Helicopter (ASW TORPEX-MPA/Helo)*

Helicopters or MPA deliver torpedoes against threat submarines with the goal of destroying the submarine.

Table D-22: Anti-Submarine Warfare Torpedo Exercise-Helicopter (ASW TORPEX-MPA/Helo)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
ANTI SUBMARINE WARFARE (ASW)						
ASW TORPEX (MPA / HELO)	MPA / SH-60B/F, SUB/ MK-30/ EMATT TRB / MH-60S/ RHIB	AQS-22 / DICASS EXTORP/ REXTORP	0	4 events; 2 hours	8 events; 2 hours	PRI: Guam Maritime, >3 nm from land SEC: W-517

<u>SH-60B, SH-60F, or MH-60R or MPA with MK-46 or MK-54 REXTORP or EXTORP</u>

Basic Phase (Unit Level Training) Scenario

A single helicopter or MPA uses its sensors to localize and track the threat submarine and develop a firing solution. The aircraft then flies to a drop point about 150 ft above the water and releases the torpedo. Torpedoes are only released during the day and are recovered before sunset. A helicopter is typically based on a CG, DDG, or FFG class ship and a helicopter or MPA may conduct this range operation in conjunction with a ship's tracking or torpedo exercise. This exercise typically lasts one to two hours. It follows the same initial procedures of an ASW TRACKEX, but quickly advances into the neutralization phase with the actual drop of a REXTORP or EXTORP. The target is typically an EMATT or MK-30 target.

Anti-Submarine Warfare Torpedo Exercise–Surface (ASW TORPEX-Surface)

Surface ships deliver torpedoes against threat submarines with the goal of destroying the submarine.

Table D-23: Anti-Submarine Warfare Torpedo Exercise-Surface (ASW TORPEX-Surface)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
ANTI SUBMARINE WARFARE (ASW)						
ASW TORPEX (SHIP)	CG/ DDG / FFG SUB/ MK-30/ EMATT TRB / MH-60S/ RHIB	SQS-53C/D SQS-56 EXTORP/ REXTORP	0	3 Events; 4 hours	6 Events; 4 hours	PRI: Guam Maritime, >3 nm from land SEC: W-517

CG, DDG, or FFG with MK-46, MK-50, or MK-54 REXTORP or EXTORP

Basic Phase (Unit Level Training) Scenario

A single surface ship uses its sensors to localize and track the threat submarine and develop a firing solution. The ship then proceeds to a position where the torpedo can be launched from either the surface vessel torpedo tube (SVTT) MK 32 or the vertical launch rocket thrown torpedo (RTT) cell. The RTT is the same torpedo as the tube launched torpedo once it enters the water, as previously discussed, but it is delivered to the water entry point by a rocket booster. Torpedoes are only released during the day and are recovered before sunset.

This exercise typically lasts about two to four hours. It follows the same initial procedures of an ASW TRACKEX-Surface, but quickly advances into the neutralization stage with the actual launch of a REXTORP or EXTORP. The target is typically an EMATT or MK-30 target.

Anti-Submarine Warfare Torpedo Exercise–Submarine (ASW TORPEX-Sub)

Submarines deliver torpedoes against threat submarines with the goal of destroying the threat submarine.

Table D-24: Anti-Submarine Warfare Torpedo Exercise-Submarine (ASW TORPEX-Sub)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
ANTI SUBMARINE WARFARE (ASW)						
ASW TORPEX (SUB)	SSN; SSGN MK-30 TRB / MH-60S	BQQ MK-48 EXTORP	5 Events; 4 hours	10 Events; 4 hours	12 Events; 4 hours	PRI: Guam Maritime, >3 nm from land SEC: W-517

SSN, SSGN, SSBN with MK-48 Exercise Torpedo

Basic Phase (Unit Level Training) Scenario

A single submerged submarine uses its sensors to localize and track the threat submarine and develop a firing solution. The submarine then proceeds to a position where the torpedo can be launched up to a maximum range of 35,000 yards from the threat submarine. Torpedoes are only released during the day and are recovered before sunset.

This exercise typically lasts one to two hours. It follows the same initial procedures of an ASW TRACKEX-Sub but quickly advances into the neutralization stage with the actual launch of a MK-48 exercise torpedo. The target is typically a MK-30 Mobile ASW Target or an EMATT.

Training Considerations

This exercise is ideally conducted on an instrumented range, but it may be conducted in other operating areas depending on training requirements and available assets. The MK-48 exercise torpedo requires recovery support assets such as special helicopters or vessels equipped for their recovery.

Air Intercept Control (AIC)

Surface ships, fixed-winged aircraft, or air control facilities use their air search radar capability to direct strike fighter aircraft toward threat aircraft where the threat aircraft may be engaged and destroyed by the strike fighter's missiles or guns.

Ships, Airborne Early Warning (AEW) Aircraft, and Air Control Facilities with Air Search Radar

Unit Level Training Scenario

The goal of the AIC exercise is the training of both the controllers and the aircraft pilots to intercept and simulate destruction of an opposing aircraft with own force aircraft using either the aircraft's missile or gun systems.

Air intercept controllers embarked in ships, AEW aircraft, or in air control facilities use their air search radars to track both the friendly strike fighter interceptor and the threat aircraft at altitudes typically well above 15,000 ft. Friendly and threat aircraft may be 100 nm apart at the start of this exercise. When the threat aircraft is detected by the controller's air search radar, a course and speed is provided to the strike fighter to intercept and engage the threat aircraft. Speeds in excess of 450 kts may be used. No high explosive ordnance is used, but captive carry training missile (CATM) may be used when strike fighters participate, and thereby complete MISSILEX (A-A) or GUNEX (A-A) exercises. Several intercepts are usually conducted over one to two hours.

When fleet aircraft are not available for this training, commercial air services aircraft ***can be*** used to provide the level of training required by controllers.

Coordinated Event and Major Exercise Training Scenarios

Typically do not differ from the Unit Level Scenario, except that two to four interceptors may be directed toward larger numbers of threat aircraft.

Table D-25: Air Intercept Control (AIC)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
AIR WARFARE (AW)						
Air Intercept Control	Fixed Wing Aircraft, *e.g.* FA-18; F-15; F-35	Search and Fire Control Radars	40 sorties (2-4 aircraft) 20 events	80 sorties (2-4 aircraft) 40 events	100 sorties (2-4 aircraft) 50 events	PRI: W-517 SEC: MI Maritime, >12nm from land; ATCAAs

Air Combat Maneuver (ACM)

Strike fighter aircraft perform intricate flight maneuvers to achieve a gun or missile firing position from which an attack can be made on a threat aircraft with the goal of destroying the adversary aircraft.

ACM is the general term used to describe an air-to-air (A-A) event involving two or more aircraft. These aircraft may be similar or dissimilar. Aircraft are considered similar if they are of the same aircraft type

and model. For example, an F/A-18C is similar to an F/A-18E, whereas an F/A-18 and an F-15 are dissimilar.

Unit Level ACM training consists of three levels: Basic Fighter Maneuvering (BFM), intermediate level Offensive Counter Air (OCA), and Defensive Counter Air (DCA) training. No live-weapons are fired during ACM operations.

BFM: during BFM, two aircraft (one vs. one) will engage in offensive and defensive maneuvering against each other.

OCA and DC: during OCA or DCA training, three or more aircraft (one vs. two, two vs. two, or three vs. one) will engage in offensive and defensive maneuvering. Participating aircraft will be separated at the start by distances up to 50 nm. During OCA training, a force of two or more aircraft will attempt to establish and maintain air superiority over a defined battle space by defeating a force of defending aircraft. During DCA training, a force of two or more aircraft will attempt to retain air superiority over a defined battle space by defeating a force of aggressor aircraft. Unit level OCA and DCA training, which is a precursor to joint and combined integrated range operations, involves high airspeeds (from high subsonic to supersonic) and rapidly changing aircraft altitudes and attitudes.

Table D-26: Air Combat Maneuver (ACM)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
AIR WARFARE (AW)						
AIR COMBAT MANUEVERS (ACM)	Fixed Wing Aircraft, e.g. FA-18; F-35; AV-8B; F-15; F16	Captive Air Training Missile (CATM) or Telemetry Pod	360 sorties of 2-4 aircraft per sortie	720 sorties of 2-4 aircraft per sortie	840 sorties 2-4 aircraft per sortie	PRI: W-517 SEC: MI Maritime, >12nm from land; ATCAAs

<u>Fighter Aircraft with Captive Carry Training Missiles (CATM-9)</u>

Basic Phase (Unit Level Training) Scenario

Typically two aircraft, operating from 5,000 to 30,000 ft, begin their maneuvers from a separation distance of 2 to 3 nm and, throughout an "engagement," will normally not separate beyond visual range (6 to 8 nm). Aircraft airspeeds will range from very low (less than 100 kts) to high subsonic (less than 600 kts). Their maneuvers will be continuous proactive and reactive changes in aircraft attitude, altitude, and airspeed to gain advantage over the adversary aircraft, resulting in its simulated destruction from guns or missiles. Maneuvers will last for about one hour.

The training scenario builds through several separate basic levels as the pilot becomes more experienced and will include:

- Defensive fighter maneuvers - one vs. one adversary is described above
- High aspect fighter maneuvers - one vs. one adversary that starts from a offensive, defensive or neutral position

- Dissimilar fighter maneuvers - one vs. one adversary of a different type of adversary aircraft
- Section fighter maneuvers - two vs. one adversary or more.

Integrated and Sustainment Phase Training Scenarios

Typically not conducted during these phases; these scenarios do not normally have adversary aircraft operating within visual range of friendly aircraft.

Training Considerations

The preferred ACM training location is on a Tactical Aircrew Training System (TACTS) Range located within a Warning Area or Restricted Airspace; TACTS is not available in the MIRC. TACTS equipped range airspaces are designed to keep other aircraft clear of the area where military aircraft are conducting operations and thereby allow safe operations. The TACTS range has the capability to precisely track and record the location of aircraft conducting maneuvers on the range. This capability provides excellent data for feedback that is used to debrief the aircraft crews after their training. The TACTS system is being replaced by a new system called Tactical Combat Training System (TCTS); Carrier Air Wing Five, stationed in Japan, is scheduled to receive TCTS. It essentially provides the same service, but it can more precisely locate each aircraft on the range, is portable and organic to the air wing, and has a longer range capability than TACTS. The training aircraft must still conduct their training within a Warning or Restricted Area, but more of the area is now available because of the new technology available in TCTS.

Missile Exercise (Air-to-Air) (MISSILEX [A-A])

Strike fighter aircraft attack a simulated threat target aircraft with its air-to-air missile with the goal of destroying the other aircraft.

Table D-27: Missile Exercise (Air-to-Air) (MISSILEX [A-A])

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
AIR WARFARE						
MISSILEX / GUNEX Air-to-Air	Fixed Wing Aircraft, e.g. FA-18; F-35; EA-18; AV-8B. TALD tgt.	AIM-7 Sparrow (Non Explosive). 20mm or 25 mm cannon.	4 sorties (2-4 aircraft) (4 missiles; 1,000 rounds)	6 sorties (2-4 aircraft) (6 missiles; 1,500 rounds)	8 sorties (2-4 aircraft) (8 missiles; 2,000 rounds)	PRI: W-517 SEC: MI Maritime, >12nm from land; ATCAAs
		AIM-9 Sidewinder (HE)/AIM-120 (HE or Inert). 20mm or 25 mm cannon.	4 sorties (2-4 aircraft) (4 missiles; 1,000 rounds)	6 sorties (2-4 aircraft) (6 missiles; 1,500 rounds)	8 sorties (2-4 aircraft) (8 missiles; 2,000 rounds)	

F/A-18 with AIM-7 Sparrow; AIM-9 Sidewinder; or AIM-120 AMRAAM (Live or Inert)

EA-18G with AIM-120 AMRAAM (Live or Inert)

Basic Phase (Unit Level Training) Scenario

A flight of two aircraft operating between 15,000 to 25,000 ft and at a speed of about 450 kts will approach a target from several miles away and, when within missile range, will launch their missile against the target. Approximately half of the missiles have live warheads and about half have an inert telemetry head package. The missiles fired are not recovered.

The target is an unmanned aerial target drone (BQM-34; BQM-74) or Tactical Air-Launched Decoy (TALD). BQM targets deploy parachutes, float on the surface of the water, and are recovered by boat. TALDs are expended. The exercise lasts about one hour, is conducted in a warning Area at sea outside of 12 nm and well above 3,000 ft

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario.

Training Considerations

Range operations conducted with "captive carry" missiles (missiles that are not released from the aircraft) are documented under Air Combat Maneuver. Only live or inert missiles that are actually fired from the aircraft are documented under this range operation heading.

Local Training Considerations

In the MIRC this event refers to training operations in which air-to-air missiles are fired from aircraft against unmanned aerial target drones, gliders, or flares. The missiles fired are not recovered.

Electronic Combat Operations (EC OPS); Chaff and Flare Exercises

Aircraft, surface ships, and submarines attempt to control critical portions of the electromagnetic spectrum used by threat radars, communications equipment, and electronic detection equipment to degrade or deny the enemy's ability to defend its forces from attack and/or recognize an emerging threat early enough to take the necessary defensive actions.

EC OPS can be active or passive, offensive or defensive.

Active EC OPS use radio frequency (RF) transmissions in the 2-12 gigahertz frequency spectrum to conduct jamming and deception.

- Jamming bombards a radio or radar receiver with sufficient RF energy to cause the internal automatic gain setting of the receiving equipment to adjust the signal-to-noise threshold setting downward to a point where the desired RF return (for example, a radio voice, datalink transmission, or a target's radar return) is "lost" in the background noise of the RF spectrum.
- Electronic deception may generate false targets that appear to be real, thereby causing the recipient of the false targets to commit forces or weapons to attack those targets, and, in the process, not attack the real target. Another type of deception allows the defender to deny the attacker's weapon system from successfully acquiring and engaging a valid target.

Passive EC OPS use the enemy's electromagnetic transmissions to obtain intelligence about enemy operations and to recognize and categorize an enemy threat and take steps to defend against it.

Offensive EC OPS use active or passive installed EC systems against enemy search, EC, and weapons systems. Electronically, this process is active (overpowering enemy receiver systems) or passive (chaff) jamming.

Defensive EC OPS use active or passive installed EC systems in reaction to enemy threat systems. These installed EC systems are programmed to recognize an enemy threat signal and will automatically send a false return signal to the enemy threat system or dispense chaff and/or flares in immediate reaction to receiving an enemy threat signal. Missile, gun or search radar signals are common threat signals that can initiate an automatic response.

Navy units can conduct EC OPS training as stand alone events, but they are often embedded in other training events, such as fighting through enemy jamming to deliver ordnance on targets or ejecting chaff and flares in response to enemy missile threat radars.

Training ranges need an EC OPS training capability that can generate threat signals that will exercise the full range of every platform's EC capability and also be able to evaluate the effectiveness of both the equipment and operator's tactical responses to those signals.

EC OPS may also be categorized in several other areas where they may be combined with primary exercise being conducted. These other exercises include:

- HARMEX, destruction of enemy threat radars; non-firing exercises are included in this EC OPS category.
- Chaff Exercise, disruption of enemy threat search or guidance radars.
- Flare Exercise, seduction of enemy threat missile guidance systems or infrared systems.

Ships, fixed-winged aircraft, and helicopters deploy chaff to disrupt threat targeting and missile guidance radars and to defend against an attack.

The chaff exercise trains aircraft in the use and value of chaff to counter an enemy threat. Chaff is a radar reflector material made of thin, narrow, metallic strips cut in various lengths to elicit frequency responses, which deceive enemy radars. Chaff is employed for a number of different tactical reasons, but the end goal is to create a target from the chaff that will lure enemy radar and weapons system away from the actual friendly platform.

Chaff may be employed offensively, such as before a major strike to "hide" inbound striking aircraft or ships, or defensively in reaction to being detected by an enemy targeting radar. Defensive chaff training is the most common exercise used for training both ships and aircraft. In most cases, the chaff exercise is training for the ship or aircraft that actually deploys the chaff, but it is also a very important event to "see" the effect of the chaff from the "enemy" perspective so that radar system operators may practice corrective procedures to "see through" the chaff jamming, so exercises are often designed to take advantage of both perspectives.

Chaff exercises are often conducted with flare exercises, as well as other exercises, rather than as a stand alone exercise.

Table D-28: Electronic Combat Operations (EC OPS); Chaff and Flare Exercises

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
ELECTRONIC COMBAT						
CHAFF Exercise	SH-60; MH-60; HH-60; MH-53	RR-144A/AL	12 sorties (360 rounds)	14 sorties (420 rounds)	14 sorties (420 rounds)	PRI: W-517 SEC: MI Maritime, >12nm from land; ATCAAs
	FA-18; EA-18; AV-8B; MPA; EA-6	RR-144A/AL	16 sorties (160 rounds)	32 sorties (320 rounds)	48 sorties (500 rounds)	
	USAF Fixed Wing Aircraft *e.g.* F-15; F-16; F-35; C-130	RR-188	150 sorties (1,500 rounds)	500 sorties (5,000 rounds)	550 sorties (5,500 rounds)	
	CG, DDG, FFG, LHA, LHD, LPD, LSD	MK 214 (seduction); MK 216 (distraction)	12 (72 canisters)	16 (90 canisters)	20 (108 canisters)	

Table D-28: Electronic Combat Operations (EC OPS); Chaff and Flare Exercises (Continued)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
ELECTRONIC COMBAT (Continued)						
FLARE Exercise	SH-60; MH-60; HH-60; MH-53	MK 46 MOD 1C; MJU-8A/B; MJU-27A/B; MJU-32B; MJU-53B; SM-875/ALE	12 sorties (360 flares)	14 sorties (420 rounds)	14 sorties (420 rounds)	PRI: W-517 SEC: MI Maritime, >12nm from land; ATCAAs
	FA-18; EA-18; AV-8B; MPA; EA-6		16 sorties (160 rounds)	32 sorties (320 rounds)	48 sorties (500 rounds)	
	USAF Fixed Wing Aircraft *e.g.* F-15; F-16; F-35; C-130	MJU-7; MJU-10; MJU-206	4 sorties (1,500 rounds)	500 sorties (5,000 rounds)	550 sorties (5,500 rounds)	

F/A-18C/E/F; EA-18G; E-2C; MPA; SH-60B/F; MH-60R/S; HH-60H; MH-53E with Defensive Chaff

There are various types of chaff; the type used varies based on the anticipated threat frequencies to be countered. Typical chaff includes:

- AN/ALQ-190(V)1 - used by SH-60B/F and MPA. This canister is the size of a sonobuoy and can also be employed in the offensive role to create chaff corridors as well as decoy missiles and radars in the defensive role.
- RR-129A/AL - used by all naval airframes.
- RR-144A/AL - designed specifically for training and used by all naval airframes.
- RR-181/AL - used by SH-60B/F and MPA. This chaff can also be employed in the offensive role to create chaff corridors as well as decoy missiles and radars in the defensive role.

Basic Phase (Unit Level Training) Scenario

Aircraft detect electronic targeting signals from threat radars or missiles, dispense chaff, and immediately maneuver to defeat the threat. The chaff cloud deceives the inbound missile, and the aircraft clears away from the threat.

The chaff disperses with the winds over a wide area and will eventually settle in limited concentrations over the surrounding land or sea areas where it was dispensed.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario.

CG, DDG, FFG, LCC, LHA, LHD, LPD, LSD with MK-214 or MK-216 Super Rapid Bloom Off-board Chaff (SRBOC) Defensive Chaff

Defensive chaff deployed from ships is typically MK-214 (Seduction Chaff) or MK-216 (Distraction Chaff) from the MK-36 SRBOC launcher. The specific type and amount of chaff deployed will depend on the specific tactical situation.

Basic Phase (Unit Level Training) Scenario

A surface ship detects an electronic targeting signal or the ship's search radar detects an inbound threat missile. Chaff rounds are fired automatically or manually, depending on the setting selected for the tactical situation, from the MK-36 Super Rapid Bloom Off-board Countermeasures (SRBOC) Chaff and Decoy Launching System, or other similar systems. The chaff forms a cloud that presents a ship size "target," forcing the inbound missile to make a choice between the chaff and the real ship. With the employment of additional countermeasure tactics, the ship may maneuver away from the cloud and cause the missile to choose the chaff "target."

The chaff disperses with the winds over a wide area and will eventually settle in limited concentrations over the surrounding sea areas where it was dispensed.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario.

Training Considerations

The chaff exercise trains shipboard personnel in the use and value of chaff to counter an enemy threat. Chaff is a radar reflector material made of thin, narrow, metallic strips cut in various lengths to elicit frequency responses, which will deceive enemy radars. Chaff is employed for a number of different tactical reasons, but the end goal is to create a target from the chaff that will lure enemy radar and weapons system away from the actual friendly ship.

Local Training Considerations

Chaff Exercises train aircraft and/or shipboard personnel in the use of chaff to counter anti-ship and antiaircraft missile threats. Chaff is a radar confusion reflector, consisting of thin, narrow metallic strips of various lengths and frequency responses, which are used to reflect echoes to deceive radars. During a Chaff Exercise, the chaff layer combines maneuvering with deployment of multiple rounds of chaff to confuse incoming missile threats. In an integrated Chaff Exercise scenario, ships/helicopters/fixed wing craft will deploy ship and air launched rapid bloom offboard chaff in pre-established patterns designed to enhance missile defense. In FY03 Air Force C-130 aircraft conducted Chaff Exercises in W-517.

CG, DDG, FFG, LHA, LHD, LPD, LSD, CVN with SLQ-32

The SLQ-32 provides early warning, identification, and direction of threat targeting radars and weapon emitters to its own ship systems that will engage hard kill weapons (e.g. CIWS), automatically disperse chaff and flare decoys, and use active electronic emissions to counter inbound missiles.

Basic Phase (Unit Level Training) Scenario

Surface ships detect and evaluate threat electronic signals from threat aircraft or missile radars, evaluate courses of action concerning the use of passive or active countermeasures, then use ship maneuvers and either chaff, flares, active electronic countermeasures or a combination of them to defeat the threat.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario.

Training Considerations

Threat signals are commonly provided by a commercial air service Lear Jet with a threat signal simulator pod that flies an appropriate threat missile profile; this service is not available in the MIRC.

F/A-18C/D with ALQ-165 and F/A-18E/F with ALQ-214 Jamming System

The AN/ALQ-165 is an automated active deception jammer designed to contribute to the electronic self-protection of the host aircraft from a variety of air-to-air and surface-to-air radar threats.

The AN/ALQ-214 is an Integrated Defensive Electronic Countermeasures (IDECM) Radar Frequency Countermeasures system that uses autonomous active techniques that deny, disrupt, delay, and degrade missile launch and firing solutions from a variety of air-to-air and surface-to-air radar and infrared threats. This system includes an onboard radio frequency countermeasures system as well as the ALE-55 Fiber Optics Towed Decoy, which is trailed behind the aircraft at varying lengths.

Basic Phase (Unit Level Training) Scenario

The F/A-18 will typically fly well above 3,000 ft at about 400 kts toward the threat signal generators used by the training range. When a threat signal is received, the pilot reacts to the enemy missile threats by maneuvering and employing autonomous active jamming against the threat search radars or missiles.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario, except that it is employed during a major range event, at sea, and in conjunction with other friendly forces.

EA-18G with Active Jamming Systems

- AN/ALQ-218 Airborne Electronic Attack (AEA) Suite - capable of selective reactive and pre-emptive electronic jamming of enemy communications. It is designed to replace the AN/ALQ-99.
- AN/ALQ-99 Tactical Jamming System - provides jamming in support of strike or assault forces. It automatically detects and classifies an enemy's radar then automatically electronically jams the radar.
- AN/USQ-113 Communications Jamming System - used to jam enemy communications

Basic Phase (Unit Level Training) Scenario

The EA-18G supports strike aircraft by employing active jamming against threat search radars to mask the friendly inbound strike aircraft mission against threat antiaircraft weapons or command and control communication radios. Aircraft will typically fly at about 18,000 ft at about 400 kts in a racetrack pattern that will best support jamming the threat receivers.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario, except that it is typically employed during a major range event where jamming could be employed during strike or assault missions planned against opposing shore targets.

Training Considerations

Areas where active jamming may be employed are limited in order not to interfere with commercial RF signals or reveal current jamming capabilities.

SSN/SSGN/SSBN with Passive Electronic Detection Systems

Basic Phase (Unit Level Training) Scenario

Submarines use passive electronic detection equipment to search for, identify, and locate threat radars and communication systems in an effort to identify the threat that faces friendly forces and provide threat location to strike forces that can destroy the threat systems.

This is a completely passive training scenario, but realistic target threat signals in a realistic threat environment improve the quality of training for submarine crews.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario, except that it is conducted during major range events where the submarine could interact with Strike Forces.

Bombing Exercise (Air-to-Ground) (BOMBEX [A-G])

Fixed-winged strike aircraft deliver bombs and rockets against land targets, day or night, with the goal of destroying or disabling enemy vehicles, infrastructure, and personnel.

Table D-29: Bombing Exercise (Air-to-Ground) (BOMBEX [A-G])

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
STRIKE WARFARE (STW)						
BOMBEX (LAND)	Fixed Wing Aircraft, e.g. FA-18; AV-8B; B-1; B-2; B-52; F-15; F-16; F-22; F-35; A-10	High Explosive Bombs ≤ 500 lbs	400 annually	500 annually	600 annually	FDM (R-7201)
		High Explosive Bombs: 750 / 1,000 lbs / 2,000 lbs	1,600 annually	1,650 annually	1,700 annually	
		Inert Bomb Training Rounds ≤ 2,000 lbs	1,800 annually	2,800 annually	3,000 annually	
		Total Sorties (1 aircraft per sortie):	1,000 sorties	1,300 sorties	1,400 sorties	

Unguided or Precision-guided Bombs

Unguided munitions: MK-76 and BDU-45 (inert training bombs); MK-80 series bomb (inert or live); MK-20 Cluster Bomb (inert or live).

Precision-guided munitions: Laser-guided bombs (LGB) (live or inert); Laser-guided Training Rounds (LGTR) (inert, but does contain an impact initiated spotting charge); Joint Direct Attack Munition (JDAM) (inert or live). JDAM is simply a GPS guidance kit that is attached to an unguided munition, typically a MK-80 series bomb, in the 500 to 2000 lb range.

Basic Phase (Unit Level Training) Scenario

A flight of two aircraft will approach the target from an altitude of between 15,000 ft to less than 3,000 ft and, when on an established range, will usually establish a racetrack pattern around the target. The pattern is established in a predetermined horizontal and vertical position relative to the target to ensure that all participating aircraft follow the same flight path during their target ingress, ordnance delivery, target egress, and "downwind" profiles. This type of pattern is designed to ensure that only one aircraft will be releasing ordnance at any given time. The typical bomb release altitude is below 3,000 ft and within a range of 1,000 yards for unguided munitions; above 15,000 ft and may be in excess of 10 nm for precision-guided munitions. Laser designators from the aircraft dropping the bomb, a support aircraft, or ground support personnel are used to illuminate certified targets for use with lasers when using laser guided weapons. The average time for this exercise is about one hour.

Integrated and Sustainment Phase Training Scenarios

Typically involve a simulated strike scenario with a flight of four or more aircraft, with or without a designated opposition force (OPFOR). Participating aircraft attack the target using real-world tactics, which may require that several aircraft approach the target and deliver their ordnance, simultaneously, from several different altitudes and/or directions. An E-2 aircraft is typically involved in this exercise from a command and control perspective, and an EA-18G aircraft may provide electronic combat support in larger events.

Training Considerations

Strike fighter pilots can fulfill this training requirement against either a land or water target, but the land target is most common.

Unguided munitions: Usually conducted at land ranges with inert or live ordnance, or water ranges with grounded ship hulks available for targets. MK-76 and BDU-48 inert bombs are the most common weapon allocation.

Precision-guided munitions: The very large safety footprints of these bombs limit their employment to land ranges with sufficiently large controlled air space and safety zones, or at-sea during a Sinking Exercise (SINKEX) or BOMBEX. Each squadron's training allowance is very small (only one or two per year), severely limiting the total fleet-wide annual expenditure of these weapons.

The major difference between a BOMBEX (A-S) and BOMBEX (A-G) is related to targets. Ground targets may include any combination of fixed and mobile targets. Fixed targets may include a bull's eye of concentric rings and real or simulated wheeled vehicles, convoys, trains, aircraft, buildings, petroleum and oil storage areas, personnel silhouettes, and artillery and missile sites. Mobile targets include remote-

controlled wheeled vehicles. Any ashore BOMBEX target may be actively or passively augmented to provide radar, infrared, or electronic signals, or support laser designation.

Feedback to participants is very important for this exercise and can include any combination of real-time and post-mission feedback from a Weapon Impact Scoring System (WISS) or instrumented range, real-time visual sighting by range observers or participating aircrews, and post-mission telephonic or facsimile debrief.

Local Training Considerations

BOMBEX (A-G) allows aircrews to train in the delivery of bombs and munitions against ground targets. The weapons commonly used in this training on FDM are inert training munitions (e.g., MK-76, BDU-45, BDU-48, BDU-56 and MK-80-series bombs), and live MK-80-series bombs and precision guided munitions (Laser Guided Bombs [LGBs] or Laser Guided Training Round [LGTRs]). Cluster bombs, fuel-air explosives, and incendiary devices are not authorized on FDM. Depleted uranium rounds are not authorized on FDM.

BOMBEX (A-G) exercises can involve a single aircraft, a flight of two, four, or multiple aircraft. The types of aircraft that frequent FDM are FA-18, AV-8B, B-1B, B-2, B-52, F-15, F-16, F-22, F-35, and A-10.

FDM is an uncontrolled and un-instrumented, laser certified range with fixed targets, which includes CONEX boxes (metal shipping containers) in various configurations within the live-fire zones, and high fidelity anti aircraft missile, and gun shape targets within the inert only zone. COMNAVMAR is the scheduling authority. All aircraft without aid of an air controller must make a clearance pass prior to engaging targets as instructed in the FDM Range Users Manual (COMNAVMARINST 3502.1).

Missile Exercise (Air-to-Ground) MISSILEX [A-G] and MISSILEX [A-S] (Air-to-Surface) and CATMEX

Fixed-winged aircraft and helicopter crews launch missiles at ground targets and ships, day and night, with the goal of destroying or disabling vehicles, infrastructure, and personnel.

SH-60B, HH-60H, & MH-60R/S Helicopters with Hellfire Missiles

AGM-114 - Hellfire uses a laser guidance system.

Basic Phase (Unit Level Training) Scenario

One or two helicopters approach and acquire an assigned target, which is then designated with a laser to guide the Hellfire to the target. The laser designator is either own aircraft, wingman, or another source. The helicopter launches one live missile per exercise from an altitude of about 300 ft while in forward flight or in a hover, against a specially prepared target. The target could be a stationary or small hull target, or a remote controlled vehicle whose infrared signature has been augmented with a heat source (charcoal or propane) to better represent a typical threat vehicle. In any case, the targets are not usually expended.

Table D-30: MISSILEX [A-G] and MISSILEX [A-S] and CATMEX

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
STRIKE WARFARE (STW)						
MISSILEX [A-G]	Fixed Wing and Rotary, e.g. FA-18; AV-8B; F-15; F-16; F-22; F-35; A-10; MH-60R/S; SH-60B; HH-60H; AH-1	TOW; MAVERICK; HELLFIRE (Live Rounds)	30 annually	60 annually	70 annually	FDM (R-7201)
SURFACE WARFARE (SUW)						
MISSILEX [A-S] (Air to Surface)	Rotary and Fixed Wing Aircraft (MK 58 Smoke tgt. or towed sled or small hull target)	HELLFIRE (Live Rounds)	0	2 rounds	2 rounds	PRI: W-517, >50 nm from land SEC: MI Maritime, >50 nm from land; ATCAAs
MISSILEX (Air to Surface CATMEX) Inert Only	Rotary and Fixed Wing Aircraft (MK 58 Smoke tgt. or towed sled or small hull target)	Laser Designation and Tracking with Captive Air Training Missile	40	60	60	PRI: W-517 SEC: MI Maritime, >12 nm from land; ATCAAs

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario.

Training Considerations

This exercise is more commonly done in a Warning Area at sea, which can better accommodate the Hellfire's large safety footprint. MISSILEX [A-S] is frequently completed using the Captive Air Training Missile (CATM), which is a missile shape with electronics simulating a live missile. The CATM is fixed to the aircraft hardpoints and in electronic communication with the aircraft fire control system. Training is conducted as though the CATM were a “live” missile and the event is called a CATMEX.

F/A-18C/E/F Aircraft with Maverick, SLAM-ER or JSOW

- AGM-65 - Maverick uses infrared guidance.
- AGM-84 - Stand-off Land Attack Missile - Extended Range (SLAM-ER) uses GPS-aided Inertial Navigation System, IR, and datalink guidance.
- AGM-154 - Joint Stand-Off Weapon (JSOW) uses GPS guidance.

Basic Phase (Unit Level Training) Scenario

A flight of two aircraft approach a land target from an altitude between 40,000 ft and 25,000 ft for SLAM-ER or JSOW (high) and 25,000 ft and 5,000 ft for Maverick or JSOW (low), complete the internal targeting process, and launch the weapon at the target beyond 150 nm for SLAM-ER, 60 nm for JSOW (high), 15 nm for JSOW (low), and 12 nm for Maverick. Unit level training is usually highly structured to achieve desired training results. The majority of unit level exercises involve the use of captive carry (inert, no release) training missiles, where the aircraft can perform all detection, tracking, and targeting requirements without actually releasing a missile.

Targets used may include bulls-eyes of concentric rings, real or simulated wheeled vehicles, convoys, trains, aircraft, buildings, petroleum and oil storage areas, personnel silhouettes, and artillery and missile sites. Mobile targets include remotely controlled wheeled vehicles.

Feedback to land based participants can include any combination of real-time and post-mission feedback from an impact scoring system or instrumented range, real-time visual sighting by range observers or participating aircrews, and post-mission telephonic or facsimile debrief. With some A-G missiles, feedback may also include other indications from the target such as the loss or absence of a RF emission following the attack.

Integrated and Sustainment Phase Training Scenarios

Typically do not differ from the Basic Phase Scenario, except that an E-2 aircraft may participate in the integrated or sustainment phase exercise to assist with targeting procedures and command and control of several sections (four or more) of F/A-18.

Training Considerations

Because of the expense and large safety footprint, the Navy launches very few live missiles per year, land or sea. The typical live annual allocation is one SLAM-ER and one Maverick per squadron. Live Maverick can be launched at sea or at the Fallon Range Training Complex, while live SLAM-ER is typically fired only at sea. The missiles will typically be fired at a decommissioned ship during a SINKEX.

Local Training Considerations

Air-to-ground Missile Exercise trains aircraft crews in the use of air-to-ground missiles. On FDM it is conducted mainly by H-60 Aircraft using Hellfire missiles and occasionally by fixed wing aircraft using Maverick missiles. A basic air-to-ground attack involves one or two H-60 aircraft. Typically, the aircraft will approach the target, acquire the target, and launch the missile. The missile is launched in forward flight or at hover at an altitude of 300 feet Above Ground Level (AGL).

Missile Exercise (Surface-to-Air) (MISSILEX (S-A))

Surface ships engage threat missiles and aircraft with missiles with the goal of disabling or destroying the threat.

There is a training restriction on firing surface-to-air missiles from all surface ships, except aircraft carriers (CVN). Only CVNs fire surface-to-air missiles for training. Other surface-to-air missiles are typically fired for a RDT&E purpose.

Table D-31: Missile Exercise (Surface-to-Air) (MISSILEX [S-A])

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
AIR WARFARE						
MISSILEX Ship-to-Air	CVN, LHD, CG, DDG; BQM-74E.	RIM-7 Sea Sparrow RIM-116 RAM RIM-67 SM-II ER	1 (1 missile)	2 (2 missile)	2 (2 missile)	PRI: W-517 SEC: MI Maritime, >12nm from land; ATCAAs

CVN, CG, DDG, FFG, LHA, LHD, LSD, LPD, AOE with Point Defense Missiles

Point defense missiles are designed to defend the ships on which they are installed. These missiles are installed on various surface ships and are not inclusive in every class (the specific ship, by name, must be identified to determine what, if any, point defense missile system is installed):

- NATO Sea Sparrow - may be installed on AOE, LHD, CVN
- Evolved NATO Sea Sparrow, scheduled to replace NATO Sea Sparrow - may be installed on CG, LHA, AOE
- Rolling Airframe Missile - may be installed on CVN, FFG, LHA, LHD, LSD, LPD.
- Standard Missile – installed on CG, DDG

Basic Phase (Unit Level Training) Scenario

The scenario for this exercise is the same as for the main battery gun exercise above, but the simulated threat missile is engaged with the point defense missile system. One live or telemetered-inert-missile is expended against a target towed by a commercial air services Lear jet after two or three tracking runs. The exercise lasts about two hours.

The BQM-74 target, sometimes augmented with a TDU, is used as an alternate target for this exercise. The BQM target is a subscale, subsonic, remote controlled ground or air launched target. A parachute deploys at the end of target flight to enable recovery at sea.

Training Considerations

The CVN is currently the only ship to have a periodic training requirement with an actual live missile shot. Other surface ships routinely conduct the “detect to engage exercise” without a live missile firing, using a missile training round simulator. The training requirement for other ships to fire live or inert telemetry missiles on a periodic or test basis is continually subject to review or exemption.

CG, DDG with Standard Missile (SM-2)

CGs and DDGs use the Standard Missile (SM-2) to defend the force against threat missiles and aircraft. These ships are tactically stationed to defend the aircraft carrier, amphibious ships, or logistic ships of the force, as well as themselves, from the air threat.

Basic Phase (Unit Level Training) Scenario

One live or telemetered-inert-missile is fired against a missile target or jet/towed target after conducting a tracking run. The exercise lasts about two hours.

The BQM-74 target, sometimes augmented with a TDU, is used an alternate target for this exercise. The BQM target is a subscale, subsonic, remote controlled ground or air launched target. A parachute deploys at the end of target flight to enable recovery at sea.

Training Considerations

The "detect to engage exercise" is used to conduct this training where there is no longer a training requirement for these ships to fire live or inert missiles.

Naval Surface Fire Support (NSFS) Exercise (FIREX)

Surface ships use main battery guns to support forces ashore in their battle against threat forces.

NSFS normally consists of the bombardment of a target within an impact area, by one or more ships. The ship is often supported by Navy, Marine, or NSW spotters ashore, or by spotters embarked in fixed-wing aircraft or helicopters in the air, to call for the fire support from the ship, and to adjust the fall of shot onto the target.

The locations and opportunities for live-fire from a ship at sea to targets ashore are very limited, and often the training range area is not adequate to establish and maintain surface fire support proficiency.

Table D-32: Naval Surface Fire Support (NSFS) Exercise (FIREX)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
AMPHIBIOUS WARFARE (AMW)						
FIREX (Land)	CG, DDG	5" Guns and (HE) shells	4 (400 rounds)	8 (800 rounds)	10 (1,000 rounds)	FDM (R-7201)

CG and DDG with 5-inch Guns

FIREX (Land Target) (FIREX (Land))

This exercise uses a land area where live and inert ordnance is authorized to impact and is often supported by target shapes such as tanks, truck, trains, or aircraft on the ground. These targets add to the realism for both the spotters and the ships involved in the exercise.

Basic Phase (Unit Level Training) Scenario

The ship positions itself about four to six nm from the target area to receive information concerning the target and the type and exact location of the target from the assigned spotter. One or more rounds are fired at the target. The fall of the round is observed by the spotter, who then tells the ship if the target was hit or if the ship needs to adjust where the next round should fall. More shots are fired, and once the rounds are falling on the target, then the spotter will request a larger number of rounds to be fired to effectively destroy the target. Typically five rounds are fired in rapid succession (about one round every five to seven seconds). Ten or more minutes will pass, and then similar missions will be conducted until the allocated number of rounds for the exercise has been expended.

About 70 rounds of 5-inch inert or high explosive ordnance (typically 53% live and 47% inert), in addition to about 5 rounds of illumination are expended by the CG or DDG during a typical exercise. Portions of the exercise are conducted during both the day and the night to achieve full qualification. A ship will normally conduct three FIREXs at different levels of complexity over several months to become fully qualified.

A Shore Fire Control Party (SFCP) may consist of about 10 personnel who supply target information to the ship. From positions on the ground, the Navy, Marine, or NSW personnel who make up the SFCP provide the target coordinates at which the ship's crew directs its fire. As the rounds fall, the SFCP records where the rounds falls and provides adjustments to the fall of shot, as necessary, to ensure the target is "destroyed."

Integrated and Sustainment Phase Training Scenarios

Typically does not differ significantly from the Basic Phase Scenario with respect to the NSFS procedures and ordnance used.

If NSFS training is conducted as part of an ESGEX, in could be part of several independent or coordinated missions being conducted simultaneously, including CAS, Marine Corps artillery fires, and troop movements, that are being coordinated by the Expeditionary Strike Group Commander embarked in the LHA. In a training environment, it is expected that NSFS is only combined with Marine Corps artillery fires as a live or inert ordnance exercise in the same area.

Local Training Considerations

FIREX (Land) on FDM consists of the shore bombardment of an Impact Area by Navy guns as part of the training of both the gunners and Shore Fire Control Parties (SFCP). A SFCP consists of spotters who act as the eyes of a Navy ship when gunners cannot see the intended target. From positions on the ground or in the air, spotters provide the target coordinates at which the ship's crew directs its fire. The spotter provides adjustments to the fall of shot, as necessary, until the target is destroyed. On FDM, spotting may be conducted from the special use "no fire" zone or provided from a helicopter platform. No one may land on the island without the express permission of COMNAVMAR (COMNAVMARINST 3502.1).

Marksmanship

Navy personnel use small arms and small unit tactics to defend unit positions or attack simulated enemy positions with the goal of defending the unit position or clearing an area of a threat.

Marksmanship exercises are used to train personnel, beyond basic introductory skills, in the use of all small arms weapons for the purpose of ship self defense and security as well as NSW personnel in many of their training tasks.

Special Warfare, NECC, Shipboard and Other personnel with Small Arms

Marksmanship exercises may include but are not limited to 9 mm pistols, 12-gauge shotguns, .50 cal, 7.62 mm, 5.56 mm rifles and machine guns, and 40 mm grenades.

Basic Phase (Unit Level Training) Scenario

A squad, or other size unit, of personnel uses small unit tactics and small arms to approach a simulated hostile target area manned by an opposing force. The opposing force in this case may be popup targets and other targets designed to improve the marksmanship of the individual squad members.

Training Considerations

Basic marksmanship operations are strictly controlled and regulated by specific individual weapon qualification standards and typically occur on specific small arms ranges. While marksmanship exercises can occur on designated small arms ranges ashore, they are also scheduled on live fire or maneuver ranges ashore, MOUT areas ashore, or aboard surface ships at sea firing into the sea.

Local Training Considerations

Marksmanship exercises are used to train personnel in the use of all small arms weapons for the purpose of ship self defense and security. Basic marksmanship operations are strictly controlled and regulated by specific individual weapon qualification standards. Small arms include but are not limited to 9mm pistol, 12-gauge shotgun, and 7.62mm rifles.

Special Warfare Mission Area Training

Mission area training will typically be unique training for a particular unit's mission that can be completed at specific range areas that best support the required training.

Naval Special Warfare and EOD units most commonly have training requirements that fall into this category. This training usually requires a training range or training range support, but may have little or no environmental or community impact.

Table D-33: Special Warfare Mission Area Training

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SPECIAL WARFARE						
HYDROGRAPHIC SURVEYS	SEAL Platoon/Squad; EOD Platoon/Squad; USMC Platoon/Squad; Small Craft; RHIB; CRRC; H-60	SCUBA	3	6	6	PRI: FDM; Tinian; Tipalao Cove SEC: Haputo Beach; Gab Gab Beach; Dadi Beach

Mission Area Training at a typical range complex may include the following operations:

- Hydrographic Reconnaissance. A survey of underwater terrain conditions near shore and a report of findings to provide precise analysis for amphibious landings. Personnel perform methodical reconnoitering of beaches and surf conditions during the day and night to find and clear underwater obstacles and determine the feasibility of landing an amphibious force on a particular beach.
- Closed Circuit Breathing Diving. Swimming and diving in underwater ocean and bay areas with the Lambert Air Rebreather (LAR) V. The LAR V is a 100% oxygen rebreather system that makes use of a small oxygen bottle and a “scrubber” canister that filters the CO2 from exhaled air and allows the diver to re-breathe 100% oxygen.
- Open Circuit Breathing Diving. Swimming and diving underwater ocean and bay areas using the typical Self-Contained Underwater Breathing Apparatus (SCUBA) equipment, including compressed air and MK-16 mixed gas SCUBA equipment.
- Surf Observations. Recording information about ocean surf conditions using standard documentation methods for amphibious operations.
- Inflatable Small Boat Surf Passage. Various methods are learned for bringing inflatable small boats through the surf from sea to shore or shore to sea.
- Rock Portage. Various methods are learned to move small boats and equipment through rocky areas that would typically be found at the sea/shore beach interface.
- Land Patrolling. Various methods for patrolling and moving through various land terrain areas are learned by squads of about seven to 15 personnel.
- NSW Scout Training. Special tactical techniques are learned for observing threat areas and areas that may later be used by friendly forces to gain the most information from all available sources in the field.
- Advanced Close Quarters Defense Training. Hand-to-hand combat techniques within special training facilities to teach special tactical techniques with and without weapons.
- NSW Photo Image Capture. Tactical patrolling techniques to move in and out of a threat area without leaving any trace that anyone was there, while capturing detailed photography of the assigned threat.

Local Training Considerations

Hydrographic Reconnaissance is conducted to survey underwater terrain conditions and report findings to provide precise analysis typically in support of amphibious landings and precise ship and small craft movement through cleared routes (Q-Routes). Exercises involve the methodical reconnoitering of beach and surf conditions during the day and night to find and clear underwater obstacles and to determine the feasibility of landing an amphibious force on a particular beach. Explosive Ordnance Disposal (EOD) units periodically survey FDM to determine the condition of coral around the island and to detect the presence of Unexploded Ordnance (UXO).

Combat Search and Rescue (CSAR)

Fixed-winged aircraft, helicopters and submarines use tactical procedures to rescue military personnel within a hostile area of operation.

Table D-34: Combat Search and Rescue (CSAR)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
STRIKE WARFARE (STW)						
COMBAT SEARCH AND RESCUE (CSAR)	SH-60; MH-60; HH-60; MH-53; CH-53; C-17; C-130; V-22	NIGHT VISION	30 sorties	60 sorties	75 sorties	PRI: Tinian North Field: Guam Northwest Field SEC: Orote Point Airfield; Rota Airport

<u>HH-60H, SH-60F, MH-60S with Machine Guns</u>

Basic Phase (Unit Level Training) Scenario

Helicopters fly below 3,000 ft at the best altitudes and speeds between 50 kts and 100 kts to approach the area where the suspected personnel to be rescued are located. Machine guns (7.62 mm or 5.56 mm) will be mounted in the side door, but blank ammunition is normally used in this exercise. Chaff and flares may be expended if a surface-to-air or air-to-air threat or opposing force is available and an additional level of complexity is desired for the scenario. NSW personnel may be embarked during this exercise to act as the rescue party. This NSW squad would debark from the helicopter, “rescue” the personnel to be recovered, and return to the helicopter to be removed from the area. This basic exercise would last about one and a half hours.

Integrated and Sustainment Phase Training Scenarios

The basic procedures completed by the helicopter and embarked personnel are typically the same. The added complexity is the required coordination between rescue units and support from additional participants. See the E-2C and F/A-18C/E/F scenario below.

Training Considerations

See the E-2C and F/A-18C/E/F scenario below.

E-2C and F/A-18C/E/F with Cannon or Bombs

Basic Phase (Unit Level Training) Scenario

CSAR is typically conducted by these units in the integrated or sustainment phase training scenario.

Integrated and Sustainment Phase Training Scenarios

The E-2 will serve as a command and control element for the evolution while flying at an altitude of about 20,000 ft at a cruising speed of about 260 kts. Remaining within an assigned station, the E-2 will maintain communications and a tactical picture of the area containing the personnel to be rescued and other forces involved in the evolution. Two F/A-18s will serve as a Rescue Combat Air Patrol or Rescue Escort. In this role they will approach the rescue area at altitudes below 3,000 ft, down to about 300 ft where they can observe the area and provide protection as required with cannon (GUNEX (A-G)) or bombs (BOMBEX (A-G)) for both the personnel to be rescued as well as helicopters (HH-60H, SH-60F, MH-60S) and ground forces (NSW or Marine Corps) conducting the rescue. The principal focus of this exercise is the integration and coordination of actions between the various platforms involved. A CSAR exercise will last between two and three hours.

Training Considerations

This exercise will be supported by an opposition force and in conjunction with other exercises.

SSN, SSGN, SSBN

Basic Phase (Unit Level Training) Scenario

The submarine will proceed to a specified location at sea in a hostile area near land where the rescue is to be made, come to a depth of about 60 ft and visually search for the person to be rescued. Once the person is located, the submarine will surface just long enough to embark the persons to be rescued, and then leave the area.

Integrated and Sustainment Phase Training Scenarios

Not typically conducted in these phases.

Training Considerations

May be combined with insertion and extraction training.

Local Training Considerations

CSAR operations train rescue forces personnel the tasks needed to be performed to recover distressed personnel during war or military operations other than war. These operations could include aircraft, surface ships, submarines, ground forces (Marine Corps and NSW), and their associated personnel in the execution of training events.

In FY03 North Field supported NVG familiarization training for CSAR operators from the USS KITTY HAWK.

Embassy Reinforcement

Marine Corps, Army, or Special Warfare units reinforce embassy security in an area where the lives or property are endangered by war, civil unrest, or natural disaster.

Marine Corps units routinely train to conduct embassy reinforcement operations, usually operating in conjunction with expeditionary strike group ships and aircraft to provide a secure embassy or safe haven for embassy noncombatants in foreign countries when their lives are endangered by war, civil unrest, or natural disaster. Normally there is no opposition from the host country in response; however, Marine Corps Marine Expeditionary Unit (Special Operations Capable) [MEU(SOC)] normally train under circumstances that require the use of force in a hostile environment. Much like a raid, Embassy Reinforcement involves the rapid introduction of forces, and preparation for evacuation of non-combatants, and a planned withdrawal. A MEU(SOC), short take-off or landing fixed wing aircraft (e.g. C-130), helicopters or tilt-rotor aircraft (e.g. H-60, H-46, H-53, V-22), LCACs or other landing craft could be expected to participate in this operation during day or night.

Table D-35: Embassy Reinforcement

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
FORCE PROTECTION / ANTI-TERRORISM						
Embassy Reinforcement	SEAL Platoon ARMY Platoon USMC Company/ Platoon Trucks; HMMWV; helicopters, tilt-rotor, STOL fixed wing aircraft; LCAC or other landing craft	5.56 mm blanks/Simulations	42 events, 1-2 days per event	50 events, 2-3 days per event	50 events, 2-3 days per event	PRI: Orote. Pt. Airfield Inner Apra Harbor; Northern and Southern Land Navigation Area SEC: Orote Pt. Triple Spot; Orote Pt. CQC; Kilo Wharf; Rota Municipality.

Local Training Considerations

Primary training sites include Orote Pt. Airfield, Inner Apra Harbor, and Northern and Southern Land Navigation Areas. Secondary sites include Orote Pt. Triple Spot, Orote Pt. CQC, Kilo Wharf, and Rota Municipality.

Force Protection

Force protection operations increase the physical security of military personnel in the region to reduce their vulnerability to attacks. Force protection training includes moving forces and building barriers, detection, and assessment of threats, delay, or denial of access of the adversary to their target, appropriate response to threats and attack, and mitigation of effects of attack. Force protection includes employment of offensive as well as defensive measures.

Table D-36: Force Protection

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
FORCE PROTECTION / ANTI-TERRORISM						
FORCE PROTECTION	USAF Squadron/ Platoon NECC SEABEE Company/ Platoon USAR Engineer Company/ Platoon Tents; Trucks; HMMWV; Generators	5.56 mm blanks/Simulations	60 events, 1-2 days per event	75 events, 1-2 days per event	75 events, 1-2 days per event	PRI: Guam, Northwest Field; Northern Land Navigation Area; Barrigada Annex SEC: Orote Pt. Airfield; Polaris Pt. Field; Tinian North Field; Rota Municipality.

Local Training Considerations

Base Naval Security Forces and MSS-7 frequently conduct force protection training throughout the Waterfront Annex, but all forces will participate in force protection training to some degree in multiple locations throughout the MIRC.

Anti-Terrorism

Anti-Terrorism (AT) operations concentrate on the deterrence of terrorism through active and passive measures, including the collection and dissemination of timely threat information, conducting information awareness programs, coordinated security plans, and personal training. The goal is to develop protective plans and procedures based upon likely threats and strike a reasonable balance between physical protection, mission requirements, critical assets and facilities, and available resources to include manpower.

Anti-Terrorism operations may involve units of Marines dedicated to defending both U.S. Navy and Marine Corps assets from terrorist attack. The units are designated as the Fleet Anti-Terrorism Security Team (FAST). FAST Company Marines augment, assist and train installation security when a threat condition is elevated beyond the ability of resident and auxiliary security forces. They are not designed to provide a permanent security force for the installation. They also ensure nuclear material on submarines is not compromised when vessels are docked. FAST Companies deploy only upon approval of the Chief of Naval Operations.

Table D-37: Anti-Terrorism

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
FORCE PROTECTION / ANTI-TERRORISM						
ANTI-TERRORISM	Navy Base Security USAF Security Squadron USMC FAST Platoon Trucks; HMMWV; MH-60	5.56 mm blanks/Simulations	80 events, 1 day/event	80 events, 1 day/event	80 events, 1 day/event	PRI: Tarague Beach Shoot House and CATM Range; Polaris Pt.; Northwest Field. SEC: Kilo Wharf; Finegayan Comm. Annex; Navy Munitions Site; AAFB Munitions Site; Rota Municipality.

Local Training Considerations

The USMC Security Force FAST Platoon stationed in Yokosuka, Japan conducts Anti-Terrorism training with Base Naval Security, NSWU-1, and EODMU-5 support and in multiple locations within the MIRC in Guam.

Field Training Exercise (FTX)

FTX is an exercise where the battalion and its combat and combat service support units deploy to field locations to conduct tactical operations under simulated combat conditions.

Table D-38: Field Training Exercise (FTX)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SPECIAL/EXPEDITIONARY WARFARE						
FIELD TRAINING EXERCISE (FTX)	ARMY Company/ Platoon NECC SEABEE Company/ Platoon	Tents; Trucks; HMMWV; Generators	100 events, 2-3 days per event	100 events, 2-3 days per event	100 events, 2-3 days per event	PRI: Guam, Northwest Field; Northern Land Navigation Area SEC: Orote Pt. Airfield; Polaris Pt. Field; Tinian North Field.

Local Training Considerations

A company or smaller-sized element of the Army Reserve, Guam Army National Guard, or Guam Air National Guard will typically accomplish FTX within the MIRC, due to the constrained environment for land forces. The headquarters and staff elements may simultaneously participate in a CPX mode.

Surveillance and Reconnaissance (S&R)

Surveillance and reconnaissance is conducted to evaluate the battlefield, enemy forces, and gather intelligence. For training of assault forces, "red cell" or "OPFOR" units may be positioned ahead of the assault force and permitted a period of time to conduct S&R and prepare defenses to the assaulting force.

Table D-39: Surveillance and Reconnaissance (S&R)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SPECIAL/EXPEDITIONARY WARFARE						
Intelligence, Surveillance, Reconnaissance (ISR)	SEAL Platoon/Squad; ARMY Platoon/Squad; USMC Platoon/Squad; USAF Platoon/Squad	Night Vision; Combat Camera; 5.56 mm blanks/Simunition	12 Events; 8 – 24 hours	16 Events; 8 – 24 hours	16 Events; 8 – 24 hours	PRI: Guam; Northwest Field; Barrigada Housing; Finegayan Comm. Annex; Orote Pt. Airfield. SEC: Tinian, Rota, Saipan

Local Training Considerations

None documented.

USAF Airlift—Air Expeditionary—Force Protection

- Provide airlift support to combat forces.
- Provide air expeditionary operations support to forward deployed forces
- Provide Force Protection

Table D-40: USAF Airlift--Air Expeditionary—Force Protection

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SPECIAL/EXPEDITIONARY WARFARE						
AIRFIELD EXPEDITIONARY	USAF RED HORSE Squadron. NECC SEABEE Company. USMC Combat Engineer Company USAR Engineer Dozer, Truck, Crane, Forklift, Earth Mover, HMMWV. C-130; H-53.	Expeditionary Airfield Repair and Operation (includes temporary FARP construction and operation)	1 exercise	12 exercises	12 exercises	PRI: Northwest Field SEC: Orote Pt. Airfield; Tinian North Airfield

Local Training Considerations

Northwest Field is used in support of expeditionary training and is available as an alternate landing and lay down site for short field capable aircraft.

Miscellaneous Range Events

Sinking Exercise (SINKEX)

A SINKEX is typically conducted by aircraft, surface ships, and submarines in order to take advantage of a full size ship target and an opportunity to train with live weapons fire.

The target is typically a decommissioned combatant or merchant ship that has been made environmentally safe for sinking. It is placed in a specific location so that when it sinks it will serve another purpose, such as a reef, or be in deep water where it will not be a navigation hazard to other shipping.

Ship, aircraft, and submarine crews typically are scheduled to attack the target with coordinated tactics and deliver live ordnance to sink the target. Inert ordnance is often used during the first stages of the event so that the target may be available for a longer time. The duration of a SINKEX is unpredictable because it ends when the target sinks, but the goal is to give all forces involved in the exercise an opportunity to deliver their live ordnance. Sometimes the target will begin to sink immediately after the first weapon impact and sometimes only after multiple impacts by a variety of weapons. Typically, the exercise lasts for 4 to 8 hours and possibly over 1 to 2 days, especially if inert ordnance, such as 5-inch gun projectiles or MK-76 dummy bombs, is used during the first hours.

A SINKEX is conducted under the auspices of a permit from the U.S. Environmental Protection Agency (EPA).

Table D-41: Sinking Exercise (SINKEX)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SURFACE WARFARE (SUW)						
SINKEX	Ship hulk or barge	HARM [2] SLAM-ER [4] HARPOON [5] 5" Rounds [400] HELLFIRE [2] MAVERICK [8] GBU-12 [10] GBU-10 [4] MK-48 [1] Underwater Demolitions [2 -100lb]	1	2	2	PRI: W-517 SEC: MI Maritime, >50 nm from land; ATCAAs

The participants and assets could include:

- One full-size target ship hulk
- One to five CG, DDG, or FFG firing ships
- One to 10 F/A-18, or MPA firing aircraft
- One or two HH-60H, MH-60R/S, or SH-60B helicopters
- One E-2 aircraft for Command and Control
- One firing submarine
- One to three range clearance aircraft.

Some or all of the following weapons could be employed:

- Two to four Harpoon surface-to-surface or air-to-surface missiles
- Two to eight air-to-surface Maverick missiles
- Two to 16 MK-82 / MK-84 General Purpose Bombs
- Two to four Hellfire air-to-surface missiles
- One or two SLAM-ER air-to-surface missiles
- Fifty to 500 rounds 5-inch and 76 mm gun
- One MK-48 heavyweight submarine-launched torpedo
- Two to Ten Thousand rounds .50 cal and 7.62 mm.

Major Range Events

Table D-42: Annual Major Exercise Activities in the Mariana Islands Range Complex

MIRC EIS/OEIS		Major Exercises							
Exercise		Joint Expeditionary Exercise (CSG + ESG)	Joint Multi-strike Group Exercise (3 CSG + USAF)	Fleet Strike Group Exercise (CSG)	Integrated ASW Exercise (CSG)	Ship Squadron ASW Exercise (CRU DES)	MAGTF Exercise (STOM/ NEO)	SPMAGTF Exercise (HADR/ NEO)	Urban Warfare Exercise
Exercise Sponsor		US PACOM	US PACOM	C7F	C7F	C7F	III MEF	III MEF; MEU/UDP	III MEF; MEU/ UDP
Alternative: No Action		1 of the above		0	0	0	1	0	2
Alternative 1		1	1	0	0	0	4	2	5
Alternative 2		1	1	1	1	1	4	2	5
Primary Training Site		Tinian	MI Maritime >12 nm	MI Maritime >12 nm	MI Maritime >3 nm	MI Maritime >3 nm	Tinian	Guam	Guam
Secondary Training Sites		Nearshore to OTH: Guam: Rota; Saipan; FDM	FDM	FDM	FDM	N/A	Nearshore to OTH: Guam: Rota; Saipan; FDM	Tinian, Rota, Saipan	Tinian, Rota, Saipan
Activity Days per Exercise		10	10	7	5	5	10	10	7-21
Exercise Footprint									
NAVY SHIPS	CVN	1	3	1	1	0	0	0	0
	CG	1	3	1	1	1	0	0	0
	FFG	2	3	1	1	1	1	0	0
	DDG	5	12	3	3	3	2	0	0
	LHD/ LHA	1	0	1	0	0	1	1	1
	LSD	2	0	0	0	0	2	1	1
	LPD	1	0	0	0	0	1	1	1
	TAOE	1	3	1	0	0	0	0	N/A
	SSN	1	5	1	1	1	0	0	N/A
	SSGN	1	0	0	0	0	1	0	0
	T-AGO (LFA)	2	2	N/A	N/A	N/A	N/A	N/A	N/A
Partner National Ships	CG	1	0	0	0	0	0	0	N/A
	DDG	2	0	0	0	0	0	0	N/A
	SS	1	1	0	0	0	0	0	N/A
FIXED WING	F/A-18	4 Squadrons	12 Squadrons	4 Squadrons	4 Squadrons	N/A	N/A	N/A	N/A
	EA-6B/ EA-18G	1 Squadron	3 Squadrons	1 Squadron	1 Squadron	N/A	N/A	N/A	N/A
	E-2	1 Squadron	3 Squadrons	1 Squadron	1 Squadron	N/A	N/A	N/A	N/A
	MPA (P-3/8A)	3	5	3	3	3	N/A	N/A	N/A
	AV-8B/F-35	1 Squadron	N/A	1 Squadron	N/A	N/A	N/A	N/A	N/A
	C-130	2	N/A	N/A	N/A	N/A	1	1	1

Table D-42: Annual Major Exercise Activities in the Mariana Islands Range Complex (Continued)

MIRC EIS/OEIS		Major Exercises							
Exercise		Joint Expeditionary Exercise (CSG + ESG)	Joint Multi-strike Group Exercise (3 CSG + USAF)	Fleet Strike Group Exercise (CSG)	Integrated ASW Exercise (CSG)	Ship Squadron ASW Exercise (CRU DES)	MAGTF Exercise (STOM/ NEO)	SPMAGTF Exercise (HADR/ NEO)	Urban Warfare Exercise
Exercise Footprint									
FIXED WING	USAF Bomber	N/A	1 Squadron	N/A	N/A	N/A	N/A	N/A	N/A
	F-15/16/22/35	N/A	1 Squadron	1 Squadron	N/A	N/A	N/A	N/A	N/A
	A-10	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	E-3	1	1	1	N/A	N/A	N/A	N/A	N/A
	KC-10/135/130	1	2	1	N/A	N/A	N/A	N/A	N/A
ROTARY	MH-60R/S	4	12	4	4	4	2	N/A	N/A
	SH-60H	4	12	4	4	4	N/A	N/A	N/A
	HH-60H	4	12	4	4	N/A	N/A	N/A	N/A
	SH-60F	3	9	3	3	N/A	N/A	N/A	N/A
	CH-53	4	N/A	4	N/A	N/A	4	4	4
	CH-46	12	N/A	12	N/A	N/A	12	12	12
	AH-1	4	N/A	4	N/A	N/A	4	4	4
	UH-1	2	N/A	2	N/A	N/A	2	2	2
	MV-22 FY10 (replace CH-46)	10	N/A	10	N/A	N/A	10	10	10
UAS	Ship Based	2	3	1	1	0	1	0	0
	Ground Based	2	1	0	0	0	2	1	1
Landing Craft	LCAC	3-5	N/A	N/A	N/A	N/A	3-5	3	N/A
	LCU	1-2	N/A	N/A	N/A	N/A	1-2	1	N/A
	CRRC	18	N/A	N/A	N/A	N/A	18	18	0
GCE	AAV	14	N/A	N/A	N/A	N/A	14	3	3
	LAV	13	N/A	N/A	N/A	N/A	5	5	5
	HMMWV	78	N/A	N/A	N/A	N/A	78	16	16
	Ground Personnel	1200	N/A	N/A	N/A	N/A	1200	250	250
LCE	Trucks	36	N/A	N/A	N/A	N/A	36	8	8
	Dozer	2	N/A	N/A	N/A	N/A	2	1	1
	Forklift	6	N/A	N/A	N/A	N/A	6	2	2
	ROWPU	2	N/A	N/A	N/A	N/A	2	1	1
	RHIB	2	N/A	N/A	N/A	N/A	2	2	2
	Ground Personnel	300	N/A	N/A	N/A	N/A	300	60	60

Joint Expeditionary Exercise

The Joint Expeditionary Exercise brings different branches of the U.S. military together in a joint environment that includes planning and execution efforts as well as military operations at sea, in the air, and ashore. The purpose of the exercise is to train a U.S. Joint Task Force staff in crisis action planning for execution of contingency operations. It provides U.S. forces an opportunity to practice training together in a joint environment as well as a combined environment with partner nation forces, where more than 8,000 personnel may participate.

The participants and assets could include:

- Fleet and Battle Group Staffs
- Aircraft carrier
- Cruisers
- Guided missile destroyers
- Amphibious command and assault ships
- Submarines
- Mobile logistic ships
- Naval and Air Force aircraft
- Marine Expeditionary Units (MEU)
- Army Infantry Units.

Military operations would be conducted at sea and in the air near, and ashore on Tinian, FDM, Guam, and Saipan.

Training in Urban Environment Exercise (TRUEX)

TRUEX is a MEU integration level exercise conducted over a period of weeks. MEU personnel enhance the skills needed for military operations in an urban environment. Events typically take place on Guam and utilize Finegayan Housing, Andersen South, Barrigada Housing, and Northwest Field. TRUEX has been conducted in Saipan as part of the Joint Expeditionary Exercise. TRUEX on Tinian and Rota is possible however due to distance and lack of infrastructure support they are secondary sites.

Joint Multi-Strike Group Exercise

The Joint Multi-Strike Group Exercise demonstrates the Navy's ability to operate a large naval force of up to three Carrier Strike Groups in coordination with other Services. In addition to this joint warfare demonstration, it also fulfills the Navy's requirement to maintain, train, and equip combat-ready naval forces capable of winning wars, deterring aggression, and maintaining freedom of the seas. The Joint Multi-Strike Group conducts training involving Navy assets engaging in a schedule of events battle scenario, with U.S. forces pitted against a notional opposition force. Participants use and build upon previously gained training skill sets to maintain and improve the proficiency needed for a mission-capable, deployment-ready unit. The exercise includes the at sea activities described below:

Command and Control (C2): A command organization exercises operational control of the assets involved in the exercise. This control includes monitoring for safety and compliance with protective measures.

Air Warfare (AW): AW includes missile exercises which involve firing live missiles at air targets. Ships and aircraft fire missiles against air targets. AW also includes non-firing events such as Defensive Counter Air (DCA). DCA exercises ship and aircrew capabilities at detecting and reacting to incoming airborne threats.

Anti-Surface Warfare (ASUW): Naval forces control sea lanes by countering hostile surface combatant ships. Two methods will be utilized for neutralizing opposition force ships: Maritime Interdiction (MI) and Air Interdiction of Maritime Targets (AIMT). MI is the use of Navy ships to counter the surface threat, while AIMT involves the use of U.S. aircraft. Two SINKEX may be conducted. These are live-fire events in which ship hulks are fired upon and sunk. The firing platforms can include aircraft, surface ships, and submarines.

Anti-Submarine Warfare (ASW): During ASW activities, air, surface and submarine units would be used to locate and track opposition force submarines. Methods used to locate and track submarines include acoustic (active and passive sonar), visual, and electronic. ASW may include the use of Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA).

Fleet Strike Group Exercise

The Fleet Strike Group Exercise is a one week event focused on sustainment training for the forward deployed Carrier Strike Group and may integrate joint operations with the U.S. Air Force and U.S. Marine Corps in the Western Pacific. The exercise focuses on integrated joint training among U.S. military forces in the maritime environment with an ASW threat; enabling real-world proficiency in detecting, locating, tracking and engaging units at sea, in the air, and on land, in response to a range of mission areas.

Integrated ASW Exercise

This is a five day Anti-Submarine Warfare (ASW) exercise conducted by the forward deployed Navy Strike Groups to sustain and assess their ASW proficiency while located in the Seventh Fleet area of operations. The exercise is designed to assess the Strike Groups' ability to conduct ASW in the most realistic environment, against the level of threat expected, in order to effect changes to both training and capabilities (e.g., equipment, tactics, and changes to size and composition) of U.S. Navy Strike Groups. The Strike Group receives significant sustainment training value in ASW and other warfare areas, as training is inherent in all at-sea exercises.

The Strike Group must demonstrate strike warfare capabilities of the strike group while establishing and maintaining control over any threats posed by submarines. CSGs must demonstrate the ability to enter a theater, transit through littoral or simulated littoral waterspace that restricts the maneuverability of the strike group, establish an operating area, and conduct air strikes against land and sea based targets. The ESG must demonstrate the ability to enter a theater, transit through littoral or simulated littoral waterspace that restricts the maneuverability of the strike group, establish an operating area, and conduct amphibious warfare operations in a shallow littoral or simulated littoral environment.

Ship Squadron ASW Exercise

The Ship Squadron ASW Exercise overall objective is to sustain and assess surface ship ASW readiness and effectiveness. The exercise typically involves multiple ships, submarines, and aircraft in several coordinated events over a period of a week or less. Maximizing opportunities to collect high-quality data to support quantitative analysis and assessment of operations is an additional goal of this training.

Marine Air Ground Task Force (Amphibious) Exercise

Ship to Objective Maneuver / Noncombatant Evacuation Operation (STOM / NEO)

This exercise may last up to ten days and conducts over the horizon, ship to objective maneuver of the elements of the ESG and the Amphibious MAGTF. The exercise utilizes all elements of the MAGTF to secure the battlespace (air, land, and sea), maneuver to and seize the objective, and conduct self-sustaining operations ashore with continual logistic support of the ESG. Tinian is the primary MIRC training area for this exercise; however elements of the exercise may be rehearsed nearshore and on Guam.

Table D-43: Ship to Objective Maneuver/Noncombatant Evacuation Operation (STOM/NEO)

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
AMPHIBIOUS WARFARE (AMW)						
Amphibious Assault Marine Air Ground Task Force (MAGTF)	1 LHA or LHD, 1 LPD, 1 LSD, 1 CG or DDG, and 2 FFG.	4-14 AAV/EFV or LAV/LAR; 3-5 LCAC; 1-2 LCU; 4 H-53; 12 H-46 or 10 MV-22; 2 UH-1; 4 AH-1; 4 AV-8; Includes temporary FARP construction.	1 event (assault, offload, backload)	4 events (assault, offload, backload)	4 events (assault, offload, backload)	PRI: Tinian Military Leased Area; Unai Chulu, Dankulo and Babui (beach) and Tinian Harbor; North Field. SEC: Apra Harbor; Reserve Craft Beach; Polaris Point Beach (MWR) and Polaris Point Field; Orote Point Airfield; Sumay Cove and MWR Ramp; Tipalao Cove and Dadi Beach

Special Purpose Marine Air Ground Task Force Exercise:

Humanitarian Assistance / Disaster Relief / Noncombatant Evacuation Operations [NEO]

Marine Corps units bring relief to or evacuate noncombatants from an area where the lives of the people are endangered by war, civil unrest, or natural disaster.

Training Scenario

Special Purpose MAGTF, operating in conjunction with Navy ships and aircraft, typically conduct humanitarian and disaster relief, or evacuation of noncombatants from foreign countries to safe havens or back to the United States when their lives are endangered by war, civil unrest, or natural disaster. Normally, there is no opposition from the host country; however Marine Corps Special Purpose MAGTF or MEU(SOC)s normally train for evacuation under a circumstance that requires the use of force in a hostile environment. Much like a raid, a NEO involves the rapid introduction of forces, the evacuation of non-combatants, and a planned withdrawal. A MEU(SOC), H-53, H-46, or H-60 helicopters, LCACs or

other landing craft could be expected to participate in this operation during day or night. Guam is the primary training are for this exercise.

Table D-44: Special Purpose Marine Air Ground Task Force Exercise

Range Activity	Platform	System or Ordnance	No Action Alternative	Alternative 1	Alternative 2	Location
SPECIAL/EXPEDITIONARY WARFARE						
Humanitarian Assistance/ Disaster Relief Operation (HADR)	Amphibious Shipping (1-LHD; 1-LPD; 1-LSD) USMC Special Purpose MAGTF	HMMWV; Trucks; Landing Craft (LCAC/ LCU); AAV/ LAV; H-46 or MV-22	1 event, 3-10 days	2 events	2 events,	PRI: Apra Harbor; Reserve Craft Beach; Polaris Point Beach (MWR) and Polaris Point Field; Orote Point Airfield; Northwest Field; Sumay Cove and MWR Marina Ramp SEC: Tinian Military Leased Area; Unai Chulu (beach) and Tinian Harbor; North Field; Rota Airfield/West Harbor.
Non-Combatant Evacuation Operation (NEO)	Amphibious Shipping (1-LHD; 1-LPD; 1-LSD) USMC Special Purpose MAGTF	HMMWV; Trucks; Landing Craft (LCAC/ LCU); AAV/ LAV; H-46 or MV-22	1 event, 3-10 days	2 events,	2 events,	PRI: Apra Harbor; Reserve Craft Beach; Polaris Point Beach (MWR) and Polaris Point Field; Orote Point Airfield; Northwest Field; Sumay Cove and MWR Marina Ramp SEC: Tinian Military Leased Area; Unai Chulu, Dankulo, and Babui (beach) and Tinian Harbor; North Field. Rota Airfield/West Harbor

Ordnance use by training area

Table D-45: Summary of Ordnance Use by Training Area in the MIRC Study Area[1]

Training Area and Ordnance Type	Number of Rounds Per Year		
	No Action	Alternative 1	Alternative 2
FDM (R-7201)	**BOMBEX [A-G]; MISSILEX [A-G]; GUNEX [A-G]; NSFS**		
Inert Bomb Training Rounds ≤ 2000 lb (nominal weight)	1,800	2,800	3,000
Bombs (HE) ≤ 500 lb (nominal weight)	400	500	600
Bombs (HE) 750 / 1000 / 2000 lb (nominal weight)	1,600	1,650	1,700
Missiles [Maverick; Hellfire; TOW]	30	60	70
Cannon Shells (20 or 25 mm)	16,500	20,000	22,000
Cannon Shells (30 mm)	0	1,500	1,500
AC-130 Cannon Shells (40mm or 105mm)	100	200	200
5-inch Gun Shells	400	800	1,000
Small Arms [5.56mm; 7.62mm; .50 cal; 40mm]	2,000	3,000	3,000
PRIMARY: Guam Maritime > 3 nm from land SECONDARY: W-517	**TORPEX**		
MK-48/MK-46/MK-50/MK-54 EXTORP	20	40	48
MK-46/ MK-50/MK-54 REXTORP	0	7	14
MK-84 SUS (Signal Under Surface Device, Electro-Acoustic)	20	40	48

Table D-45: Summary of Ordnance Use by Training Area in the MIRC Study Area[1] (Continued)

Training Area and Ordnance Type	Number of Rounds Per Year		
	No Action	Alternative 1	Alternative 2
PRIMARY: W-517 **SECONDARY: Marianas Maritime > 12 nm; ATCAAs**	**MINEX; BOMBEX [A-S]; MISSILEX [A-S; S-A; A-A; S-S]; GUNEX [S-S; A-S]; CHAFFEX; FLAREX**		
Air Deployed Mines [MK-62; MK-56] (inert)	320	480	480
Inert Bomb Training Rounds [MK-82 I; BDU-45; MK-76]	48	72	90
MK-82/83/84 / JDAM	1	4	4
5-inch Gun Shells	160	320	400
HELLFIRE	0	2	2
76 mm Gun Shells	60	120	150
.50 cal MG	4,400	16,000	16,000
25 mm MG	1,600	8,000	8,000
7.62 mm MG	30,000	40,000	40,000
20 mm; 25 mm; 30 mm Cannon Shells	8,000	18,500	19,500
RR-144A/AL Chaff Canisters	520	740	920
RR-188 Chaff Canisters	1,500	5,000	5,500
MK-214; MK-216 Chaff Canisters	72	90	108
MK-46 MOD 1C; MJU-8A/B; MJU-27A/B; MJU-32B; MJU-53B; SM-875/ALE Flares	520	740	920
MJU-7; MJU-10; MJU-206 Flares	1,500	5,000	5,500
AIM-7 Sparrow	4	6	8
AIM-9 Sidewinder	4	6	8
AIM-120 AMRAAM	4	6	8
RIM-7 Sea Sparrow/ RIM-116 RAM / **RIM-67 SM II ER**	2	4	6

Table D-45: Summary of Ordnance Use by Training Area in the MIRC Study Area[1] (Continued)

Training Area and Ordnance Type	Number of Rounds Per Year		
	No Action	Alternative 1	Alternative 2
PRIMARY: Marianas Maritime > 3 nm **SECONDARY: W-517**	**TRACKEX; GUNEX [S-S]**		
EER/IEER/AEER	103	106	115
5.56 mm; 7.62 mm; .50 cal; 40 mm	12,000	16,000	20,000
PRIMARY: W-517 **SECONDARY: Marianas Maritime > 50 nm; ATCAAs**	**SINKEX**		
HARM	2	4	4
SLAM-ER	4	8	8
HARPOON	5	10	10
5-inch Gun Shells	400	800	800
HELLFIRE	2	4	4
MAVERICK	8	16	16
GBU-12	10	20	20
GBU-10	4	8	8
MK-48	1	2	2
Underwater Demolitions [100 lb NEW]	2	4	4
PRIMARY: Agat Bay (10 lb NEW max) **SECONDARY: Apra Harbor (10 lb NEW max)**	**Underwater Demolition**		
5 – 10 lb NEW	22	30	30
PRIMARY: Agat Bay (10 lb NEW max) **SECONDARY: Piti (10 lb NEW max)**	**Floating Mine Neutralization**		
5 – 10 lb NEW	8	20	20

[1.] Baseline ordnance expenditure estimates were made from review of FY03-07 service records, databases, schedules, and estimates

Sonar Activity

Table D-46: Summary of Sonar Activity by Exercise Type in the MIRC Study Area

Exercise Type	No Action	Alternative 1	Alternative 2
Multi-Strike Group: One; [3] CSG; April – September; [10] Days	**Activity Guidelines Per CSG: [4] SQS-53; [1] SQS-56 ; [2] Dips per hour; [1] EER/IEER/AEER per hour until 100; [16] DICASS per hour; Reset Time -12 hours**		
Events Per Year	0 or 1 (One Multi-Strike Group Exercise or One Joint Expeditionary Exercise)	1	1
SQS-53	1705 hours	1705 hours	1705 hours
SQS-56	77 hours	77 hours	77 hours
AQS-22	288 dips	288 dips	288 dips
DICASS	1282	1282	1282
Sub BQQ	0	0	0
LFA	LFA support activity conducted in accordance with LFA FEIS		
SINKEX : Two [2] Day Event	**Activity Guidelines: Sonar Hours in TRACKEX/TORPEX below**		
Events Per Year	1	2	2
DICASS	100	200	200
MK-48 (HE)	1	2	2
Joint Expeditionary: One [1] CSG + ESG; [10] Days	**Activity Guidelines: [3] SQS-53; [1] SQS-56; Sonar Hours and Sonobuoys in TRACKEX/TORPEX below**		
Events Per Year	0 or 1 (One Multi-Strike Group Exercise or One Joint Expeditionary Exercise)	1	1
Fleet Strike Group: One [1] CSG; [7] Days	**Activity Guidelines: [4] SQS-53; [1] SQS-56; Sonar Hours and Sonobuoys in TRACKEX/TORPEX below**		
Events Per Year	0	0	1
Integrated ASW: One [1] CSG; [5] Days	**Activity Guidelines: [4] SQS-53; [1] SQS-56; Sonar Hours and Sonobuoys in TRACKEX/TORPEX below**		
Events Per Year	0	0	1

Table D-46: Summary of Sonar Activity by Exercise Type in the MIRC Study Area (Continued)

Exercise Type	No Action	Alternative 1	Alternative 2
Ship Squadron ASW: One [1] DESRON; [5] Days	**Activity Guidelines: [4] SQS-53; [1] SQS-56; Sonar Hours and Sonobuoys in TRACKEX/TORPEX below**		
Events Per Year	0	0	1
MAGTF Exercise (STOM/NEO)	**Activity Guidelines: [2] SQS-53; [1] SQS-56; Sonar Hours and Sonobuoys in TRACKEX/TORPEX below**		
Events Per Year	1	4	4
ASW TRACKEX (SHIP) : One [1] Reset, One [1] Day Event	**Activity Guidelines: [2] SQS-53, [1] SQS-56; Reset Time - 8 hours (sub target), 4 hours (non-sub target); [3] 53C/D, ½ Time Active, [1] 56, ¼ Time Active**		
Events Per Year	10	30	60
SQS-53 C/D	120 hours	360 hours	720 hours
SQS-56	20 hours	60 hours	120 hours
ASW TRACKEX (HELO) : One [1] Reset, One [1] Day Event	**Activity Guidelines: [2] HELO; [1] Dipping HELO 2 dips per hour; Reset Time - 8 hours (sub target), 4 hours (non-sub target)**		
Events Per Year	9	18	62
AQS-22	144 dips	288 dips	576 dips
DICASS	36	72	144
ASW TRACKEX (MPA) : One [1] Reset, [1] Day Per Event	**Activity Guidelines: [1] MPA; Reset Time - 8 hours (sub target), 4 hours (non-sub target)**		
Events Per Year	5	8	17
DICASS	50	80	170
EER/IEER/AEER	5	8	17
ASW TORPEX (SUB) : One [1] Reset, [1] Day Per Event; [1] EXTORP Per Event	**Activity Guidelines: [1] SSN or SSGN; Reset Time - 8 hours (sub target), 4 hours (non-sub target)**		
Events Per Year	5	10	12
Sub BQQ	6 hours	12 hours	15 hours
MK-48 EXTORP	20	40	48

Table D-46: Summary of Sonar Activity by Exercise Type in the MIRC Study Area (Continued)

Exercise Type	No Action	Alternative 1	Alternative 2
ASW TORPEX (SHIP): One [1] Reset, [1] Day per Event; [1] REXTORP	**Activity Guidelines: [2] SQS-53, [1] SQS-56; Reset Time - 8 hours (sub target), 4 hours (non-sub target); ½ Time Active**		
Events per Year	0	3	6
SQS-53 C/D	0	8 hours	16 hours
SQS-56	0	4 hours	8 hours
REXTORP	0	3	6
ASW TORPEX (MPA/HELO): One [1] Reset, One [1] Day Event; [1] REXTORP	**Activity Guidelines: [2] HELO; [1] Dipping HELO; [1] MPA; Reset Time - 8 hours (sub target), 4 hours (non-sub target)**		
Events per Year	0	4	8
AQS-22	0	16 dips	32 dips
DICASS	0	20	40
REXTORP	0	4	8
Portable Underwater Tracking Range	**Activity Guidelines: [4] MK-84 Range Pinger; [7] Transponders; Exercise Time – 8 hours; Reset Time – 24 hours.**		
PUTR Range Days	0	35	35

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APPENDIX E

WEAPON AND RANGE SYSTEMS

Descriptions of weapon and range systems used in the MIRC.

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TABLE E-3: SURFACE AND SUBSURFACE RANGE AND TARGET SYSTEMS USED IN THE MIRC E-2
TABLE E-4: WEAPONS USED IN THE MARIANA ISLANDS RANGE COMPLEX E-3
TABLE E-5: TYPICAL ELECTRONIC WARFARE ASSETS USED IN THE MARIANA ISLANDS RANGE COMPLEX E-5

LIST OF ATTACHED WEAPON and RANGE SYSTEM REFERENCES

a. Fact sheets for Common Targets and Weapons used in the Mariana Islands Range Complex
b. Naval Surface Warfare Center, Corona: Laser Range Safety Report for Commander United States Naval Forces, Mariana Islands, Guam. September 2009.
c. NAVSEA Warfare Center Newport, Portable Underwater Training Range Concept of Operations, pages 8 – 16 (summary), Doc. No. PUTR-PM-002 Version 1, 10 OCT 2006

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Table E-1: Missile Exercise Weapons Used in the MIRC

TYPE	CHARACTERISTICS				
	Weight	Length	Diameter	Range	Propulsion
Air-to-Air Missiles					
		Short Range			
Sidewinder (AIM-9)	84.4 kg (186 lb)	2.9 m (9 ft 6 in)	127 mm (5 in)	18.5 km (10 nm)	Solid fuel
		Medium Range			
Sparrow (AIM-7)	231 kg (510 lb)	3.6 m (11 ft 10 in)	203.2 mm (8 in)	55.6 km (30 nm)	Solid fuel
Slammer (AIM-120)	151 kg (335 lb)	3.7 m (12 ft)	18 cm (7 in)	33km (18 nm)	Solid fuel
Air-to-Surface Missiles					
		Medium Range			
TOW (BGM-71)*	18.9 kg (41.67 lb)	1.16 m (3.81 ft)	0.152 m (0.50 ft)	3,750 m (2.02 nm)	Solid fuel
Hellfire (AGM-114)	45.77 kg (100.9 lb)	1.63 m (64 in)	17.78 cm (7 in)	8000 m (4.3 nm)	Solid fuel
Maverick (AGM-65)	136 kg (300 lb)	2.49 m (98 in)	30.48 cm (12 in)	27 km (12 nm)	Solid fuel
HARM (AGM-88)	366.1 kg (807 lb)	4.2 m (13 ft 9 in)	254 mm (10 in)	18.5 km (10 nm)	Solid fuel
		Extended Range			
Harpoon (AGM 84)	515.25 kg (1,145 lb}	3.84 m (12 ft 7 in)	24.29 cm (13.5 in)	111+ km (60+ nm)	Turbojet
SLAM-ER	635.04 kg (1,400 lb)	4.36 m (14 ft 4 in)	24.29 cm (13.5 in)	278+ km (150+ nm)	Turbojet
Surface-to-Air Missiles					
Sea Sparrow (RIM-7)	225 kg (500 lb)	3.64 m (12 ft)	20.3 cm (8 in)	19+ km (10+ nm)	Solid fuel
RAM (RIM-116) Block 1	73.5 kg (162 lb)	278 cm (109.4 in)	12.7 cm (5 in)	7.5 km (4.5 nm)	Solid fuel
SM-2 ER (RIM-67)	1341 kg (2,980 lb)	7.9 m (26.2 ft)	1.6 m (5 ft 2 in)	185 km (100 nm)	Solid fuel

Source: U.S. Department of the Navy 1998a

Notes:

* Describes the Variant BGM-71B.

Table E-2: Aviation Range Systems Used in the MIRC

TYPE	CHARACTERISTICS			
	Length	Speed (Maximum)	Operational Altitude (Maximum)	Time on Station (Maximum)
		Subsonic		
TALD/ITALD	2.34 m (7ft 8in)	Mach 0.84	12,200 m (40,000 ft)	23.2 minutes
BQM-74E	4 m (13 ft)	525 knots	12,308 m (40,000 ft)	68 minutes

Source: U.S. Department of the Navy 1998a

Notes: N/A: Not Applicable; TALD: Tactical Air Launched Decoy; ITALD: Improved TALD.

Table E-3: Surface and Subsurface Range and Target Systems Used in the MIRC

Type	Category	Name	Fuel Type
Balloon			
	Aerial	Balloon	N/A
Surface			
	Floating	MK-58 (Smoke Float)	N/A
		Ship Hulk	N/A
		Stationary Barge	N/A
		Radar Reflective Surface Balloon (Killer Tomato)	N/A
		Barrel on a Pallet	N/A
		Torpedo Retriever Boat	DFM
		High Speed Maneuvering Surface Target (Proposed)	MOGAS
		QST-35 Tow Boat (Proposed)	DFM
		Low Cost Modular Target (Proposed)	Towed
		Improved Surface Towed Target (Proposed)	Towed
	Land	Hi-fidelity shapes (SAM Launcher)	N/A
		Paper Silhouette	N/A
Sub Surface			
	Self-propelled	EMATT	Battery
		MK-30	Battery
		MK 84 Range Pingers	Battery
		Portable Underwater Tracking Range Transponders (Proposed)	Battery
		Portable Underwater Tracking Range Support Boat	DFM

Source: U.S. Department of the Navy 1988a; Notes: N/A Not Applicable

Table E-4: Weapons Used in the Mariana Islands Range Complex

Type	Category	Name	Propellant Type (Liquid/Solid)
Air Deployed Mines			
	Air	MK-62; MK-56 (non-explosive/inert)	N/A
Underwater Charges			
	NSW and EOD Divers	10 lb / 5lb NEW (C-4) charges for Underwater Detonation or Mine Neutralization. 100 lb NEW for SINKEX.	N/A
Missiles			
	Air	Captive Air Training Missile (CATM)-9	N/A
	Air	Hellfire (AGM-114)	Solid
	Air	TOW (BGM-71)	Solid
	Air	Sparrow (AIM-7)	Solid
	Air	Sidewinder (AIM-9)	Solid
	Air	Slammer (AIM 120)	Solid
	Air	HARM (AGM-88)	Solid
	Air	SLAM ER	Turbojet
	Air/Ship/Undersea	Harpoon (A/R/UGM-84)	Turbojet
	Ship	Sea Sparrow (RIM-7)	Solid
	Ship	RAM (RIM-116)	Solid
	Ship	SM-2 ER (RIM-67)	Solid
Guns			
	Ship	Large Caliber Naval Guns (5” and 76mm)	N/A
	Ship	Mk-38 25 mm Machine Gun	N/A
	Ship	Phalanx/Vulcan (20mm)	N/A
	Ship	9 mm pistol	N/A
	Ship	5.56/7.62 mm/.50 caliber guns	N/A
	Ship	Small Caliber (M-16, M-4, M-249 squad automatic weapon, M-240G machine gun)	N/A
	Ship	M-40 sniper rifle (.308 cal)	N/A
	Air	Small Caliber (.50 cal, 7.62 mm, 9 mm, 5.56 mm, .308 cal)	N/A
	Air	20 mm cannon and 25 mm cannon	N/A
	Air	40mm Bofors and 105mm cannon (AC-130)	N/A
Bombs			
	Air	Mk-82 or GBU-30/38 JDAM (HE and NEPM)	N/A
	Air	Mk-83 or GBU-32 JDAM (HE and NEPM)	N/A
	Air	MK-84 or GBU-31 JDAM (HE)	N/A
	Air	GBU-10	N/A
	Air	GBU-12	N/A
	Air	GBU-16	N/A

Type	Category	Name	Propellant Type (Liquid/Solid)
	Air	M-117	N/A
	Air	BDU-33	N/A
	Air	BDU-50	N/A
	Air	BDU-56	N/A
	Air	BLU-111	N/A
	Air	LGTR (NEPM)	N/A
	Air	BDU-45 (NEPM)	N/A
	Air	MK-76 (NEPM)	N/A
Torpedoes			
	Sub	MK-48 and MK-48 EXTORP	Liquid
	Ship/Helo/MPA	MK-46; MK-50; MK-54 EXTORP	Liquid

Source: Adapted from U.S. Department of the Navy 1998a; Note: N/A Not Applicable.

Table E-5: Electronic Warfare Assets Used in the Mariana Islands Range Complex

TYPE	CHARACTERISTICS	
	Frequency Bands	Power Output (Maximum)
Threat Simulators (Airborne)		
AN/AST6DPT-1(V)	Version V10 7.8-8.5 GHZ	15 MW
	Version V20 8.5-9.6 GHZ	20 MW
	Version V30 14-15.2 GHZ	25 MW
	Version V42 15.5-17.5 GHZ	30 MW
AN/AST 9	Version India (M) 8.5-9.6 GHZ	20 MW
	Version India (T) 8.5-9.6 GHZ	115 KW
	Version Juliet (M) 14-15.2 GHZ	25 MW
	Version Juliet (T) 14-15.2 GHZ	115 KW
Radar Jamming Systems (Airborne)		
AN/ALQ 167	Version V38 425 to 445 MHZ	800 W
	Version V39 902-928 MHZ	800 W
	Version V46 2.9-3.5 GHZ	800 W
	Version V15a/6X 9-10.2 GHZ	800 W
Communications Jamming System (Airborne)		
AN/USQ-113	Version V1 20-500 MHZ	400 W
Chaff (Passive system)		
RR-144A/AL	N/A	N/A
RR-188	N/A	N/A
MK-214	N/A	N/A
MK-216	N/A	N/A
Flares (Infrared Countermeasures)		
Mk-46 MOD 1C	N/A	N/A
MJU-8A/B	N/A	N/A
MJU-27A/B	N/A	N/A
MJU-32B	N/A	N/A
MJU-53B	N/A	N/A
MJU-7	N/A	N/A
MJU-10	N/A	N/A
MJU-24	N/A	N/A
MJU-206	N/A	N/A
SM-875/ALE	N/A	N/A

Source: Adapted from U.S. Department of the Navy 1998a.

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APPENDIX E

Reference

A. Fact sheets for Common Targets and Weapons used in the Mariana Islands Range Complex

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TYPICAL EXISTING TARGET SYSTEMS IN USE

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AIR TARGETS

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The BQM-74E is a turbojet-powered aerial target with high performance capabilities. While emulation of enemy anti-ship cruise missiles is the primary mission; others include simulation of aircraft for training naval aviators in air-to-air combat and support of the test and evaluation of new weapon systems. The BQM-74E and its ground support system are highly portable. This attribute enables shipboard operations in support of deployed naval combatants where maximum flexibility and rapid turnaround are required.

The BQM-74E can carry a variety of internal and wing tip-mounted payloads in support of mission requirements. Payloads include passive and active radar augmentation, infrared (IR) flares, electronic countermeasures (ECM), seeker simulators, scoring, IFF, and dual wing tip-mounted tow bodies. The Integrated Avionics Unit, with its integral Inertial Measurement Unit (IMU), Air Data Computer, and Global Position System (GPS), provides a highly accurate navigation solution. Recently incorporated Low Altitude Control Enhancement (LACE II) software allows the vehicle to perform complex, programmable, 3-dimensional maneuvers and operate down to altitudes of 7 feet.

The BQM-74E can be used with multiple command and control systems, including the Integrated Target Control System (ITCS), Multiple Aircraft GPS Integrated Command Control (MAGIC2), Vega, and System for Naval Target Control (SNTC). It can be employed in either a manual mode or a pre-programmed (hands off) mode.

Since 1968, the MQM/BQM-74 series of aerial targets has been the workhorse of the Navy's subsonic aerial target inventory. Due to its exceptional performance and mission reliability, the BQM-74E has provided over 80 percent of all U.S. Navy target presentations.

Specifications

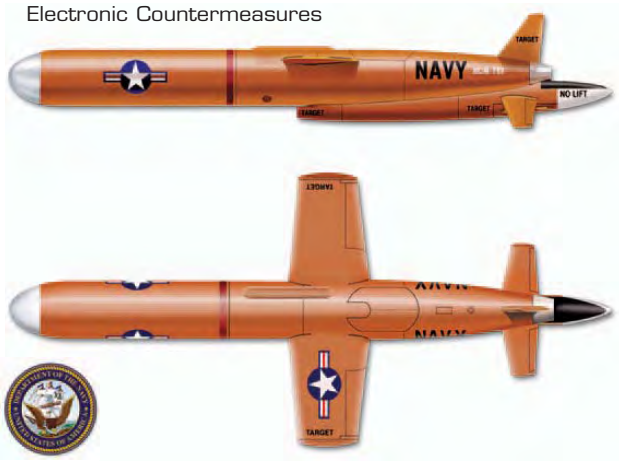
Length	12.95 ft (4.0 m)
Wingspan	5.78 ft (1.8 m)
Range	>350 nm (648.6 km)
Altitude	
Low	7 ft (2.1 m)
High	40,000 ft (12.2 km)
Speed	>515 Knots at Sea Level
Weight	455 lbs (206.4 kg)
Endurance	78 Minutes
Navigation	GPS/IMU
Fuel	Jet Fuel (JP-5, JP-8, or Jet A-1)

The Navy's Premier Aerial Target

The linchpin in RDT & E and training operations since 1978.

Payloads

- Passive or Active Radar Augmentation
- Seeker Simulators
- Infrared Augmentation
- Tow Systems
- Scoring Systems
- IFF
- Electronic Countermeasures



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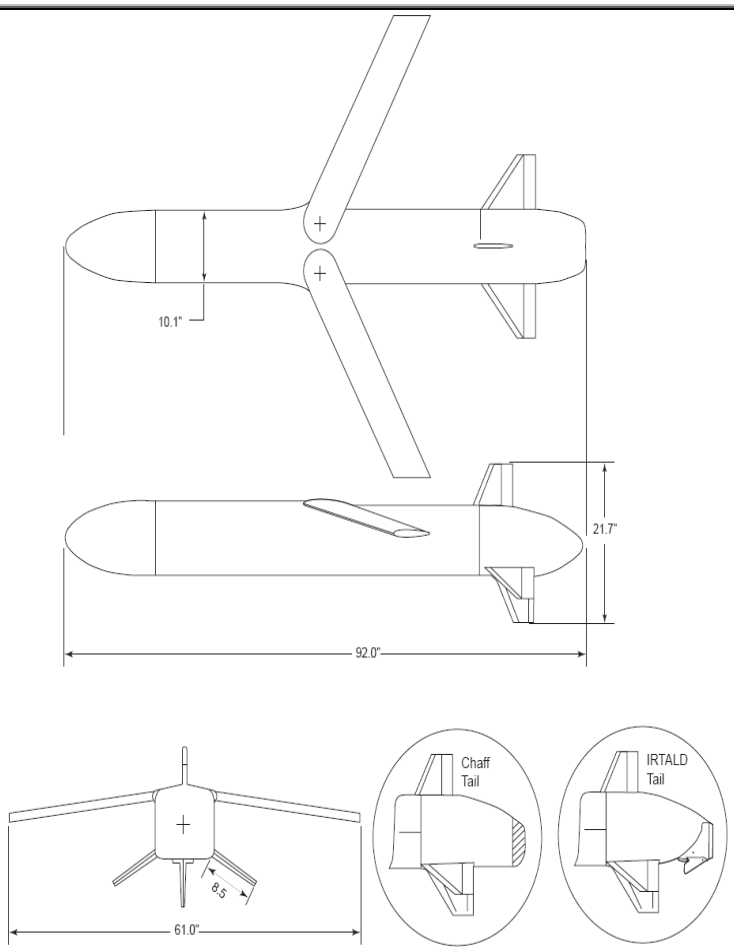
AN-ADM-141A/B Tactical Air-Launched Decoy (TALD)

Description

The TALD (AN-ADM-141A/B) is an expendable glide vehicle with a square fuselage, flip-out wings, and three tail control surfaces. The wings, which are folded during carriage, open 3 seconds after launch. The necessary command sequences are pre-programmed on the ground. The AN-ADM-141A has passive and active radar enhancers.

The TALD is cleared for launch from S-3, A-4, F-4, A-6, A-7, F-14, F/A-18, AV-8 & UK GR7 platforms.

Physical Characteristics



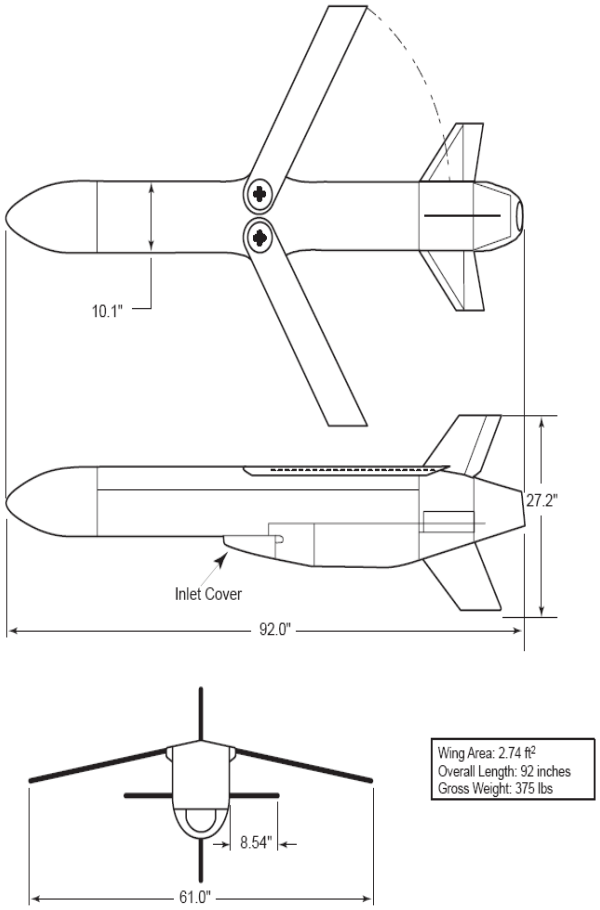
AN-ADM-141C Improved Tactical Air-Launched Decoy (ITALD)

Description

The ITALD (AN-ADM-141C) is a modified propelled version of the TALD which incorporates a turbojet engine, the Teledyne CAE J700-CA-400. The engine starts after launch produces 170 lbs, has a 5.7 gallon fuel bladder and uses JP-10. This engine provides three constant airspeed settings. The necessary command sequences are pre-programmed on the ground. The ITALD is capable of climbs and descents, left or right turns, or an offset maneuver.

The ITALD is only carried on the F/A18C&D. It carries a max loadout of 6 ITALDs.

Physical Characteristics



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SURFACE TARGETS

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Ship Deployable Surface Target (SDST)

Description

The Ship Deployable Seaborne Target (SDST) is a high-speed commercial personnel watercraft. It is designed to provide a remotely controlled target, which can be augmented to present various threat scenarios.

SDST is unique in that it can be launched from Navy ships as well as any standard boat launch ramp. It can operate in at approximately 40 knots in sea state 1 and in a sea state 2 at approximately 20 knots.

Physical Characteristics

Length:	10.8 ft.
Beam:	4 ft.
Freeboard:	N/A
Draft (when static):	1.7 ft.
Hull Construction:	Fiberglass Reinforced Plastic

Performance Data

Maximum Speed:	40 kts. Sea State 1
	20 kts. Sea State 2

Williams Sled

Description

The Williams Sled Tow Target is a surface gunnery target consisting of a tubular framework mounted on two pontoons. The target is towed by approximately 5,000 feet of double-braided nylon line by a seagoing tug at approximately 10 knots or utilized as a freely drifting target. Wire fabric screens are mounted on both sides of the upper quarter of the framework to provide radar augmentation.

Physical Characteristics

Length:	27.8 ft.
Beam:	14 ft.
Freeboard:	10 in. to top of pontoon
Draft:	1.0 ft.
Hull Construction:	Steel

Performance Data

Maximum Tow Speed:	10 kts. Sea State 2

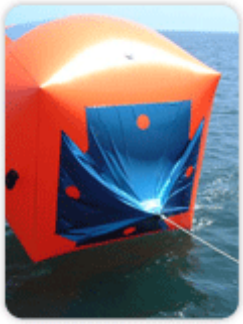
Radar Reflective Surface Balloon (Killer Tomato™)

Description

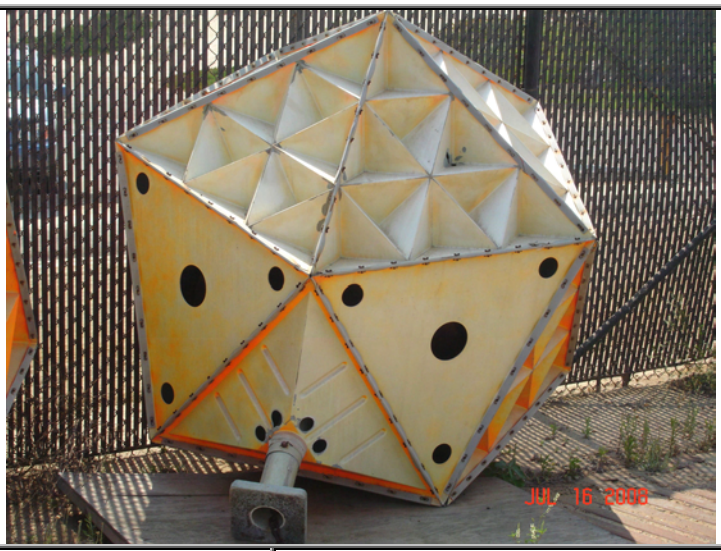
Killer Tomato™ Naval Gunnery Target balloon is an adrift target designed to stand upright on the wave surface without tumbling over in moderate sea states. Yields a radar signature to ship borne radar equipment from corner reflectors mounted in top corners of target. Can be detected 10+ miles away depending on radar equipment and sea state.

Physical Characteristics

This target has a self filling integrated drogue chute / skirt secure bottom of target to sea surface. It is air inflated, bright orange, 3 m^3 (10 x 10 x 10 feet) in size. Made with 12 mil PVC. Stainless steel metal “D-rings” for tie down, handling, minor towing, or floating trip line for recovery purposes. Integrated, self-deploying, drogue chute (no external sea anchor to buy and rig) reduces target wind drift and keeps target useful in more demanding sea state situations. Can be towed once chute is disabled or water ballast is tipped out using tie line. Radar reflective.



Mk 42 Floating At-Sea-Target (FAST)



Description

The Floating At-Sea-Target (FAST) MK42 Mod 0 is a polygon (isodecahedron) shape of 20 sides approximately 6 feet in diameter. It consists of 20 equilateral triangular panels, which are reflector panels. Each reflector panel has nine integral corner reflectors which are coated with conductive paint that provides a radar reflective characteristic simulating the size of a destroyer or frigate-type vessel.

FAST is a reusable shipboard assembled target, deployable and recoverable from any Navy ship in weather conditions up to Sea State 3. FAST uses a Sea anchor to maintain stability. Once deployed, FAST can be used as a target in weather conditions of Sea State 4 or 5. In calm seas, the FAST has a visible range of up to 3.5 miles and can be used for surface to surface gunnery training.

Physical Characteristics

Height:	5.4 ft.
Width:	5.4 ft.
Hull Construction:	Aluminum/Plastic

Performance Data

N/A

TYPICAL EXISTING WEAPONS IN USE IN THE MIRC

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Backgrounder

Integrated Defense Systems
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St. Louis, MO 63166
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Harpoon Block II

Description & Purpose:
Harpoon Block II expands the capabilities of the Harpoon anti-ship weapon. Harpoon, the world's most successful anti-ship missile, features autonomous, all-weather, over-the-horizon capability.

Customer(s):
Twenty-eight countries are Harpoon customers.

General Characteristics:

Length:	182.2 in. ship launch, 151.5 in. air launch
Diameter:	13.5 in.
Weight:	1,160 lb. Air configuration 1,459 lb. ASROC configuration 1,520 lb. TARTAR configuration 1,523 lb. Capsule/canister configuration
Range:	In excess of 67 NM
Propulsion:	Air-breathing turbojet engine (cruise), solid-propellant booster
Guidance:	Terminal: Active Radar Midcourse: GPS-aided inertial navigation
Warhead:	Penetration, high-explosive blast
System Elements:	Missile - Common for all launch platforms Booster - For surface, sub and land based applications Launch Support Structure and Canisters Command and Launch System - Provides engagement planning and launch control
Platforms:	Air, land, surface and sub-surface applications

Harpoon Block II provides accurate long-range guidance for land and ship targets by incorporating the low-cost inertial measuring unit from the Boeing Joint Direct Attack Munition (JDAM) program; and the software, mission computer, integrated Global Positioning System/Inertial Navigation System, GPS antenna and receiver from the Standoff Land Attack Missile Expanded Response (SLAM-ER).

The multi-mission Block II is deployable from all current Harpoon missile system platforms with either existing command and launch equipment or the commercially available Advanced Harpoon Weapon Control System (AHWCS).

Background:
Harpoon Block II is capable of executing both anti-ship and land-strike missions.
To strike targets on land and ships in port, the missile uses GPS-aided inertial navigation to hit a designated target aimpoint. The 500-pound blast warhead delivers lethal firepower against a wide variety of land-based targets, including coastal defense sites, surface-to-air missile sites, exposed aircraft, port/industrial facilities and ships in port.
For conventional anti-ship missions, such as open-ocean and near-land, the GPS/INS eliminates midcourse guidance errors enroute to the target area. The accurate navigation solution coupled with launch system improvements combine to offer better discrimination of target ships from islands, nearby land masses or other ships. These Block II improvements maintain Harpoon's high hit probability against ships very close to land or traveling in congested sea lanes.

Miscellaneous:
More than 7,000 Harpoons have been produced.

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August 2008

Backgrounder

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Harpoon Block III

Description & Purpose:
Harpoon Block III takes the world's most successful anti-ship missile to a whole new level. With the addition of a robust data link system, Harpoon Block III provides in-flight target updates, positive terminal control and connectivity with future network architecture, resulting in more control after the weapon is released. The data link is the perfect addition to a missile that already provides autonomous, all-weather, over-the-horizon capability.

Customer(s):
The Harpoon Block III Weapon System will provide the U.S. Navy and its allies with Surface Warfare (SuW) capabilities from ships and aircraft. Harpoon Block III creates a highly-capable weapon for the open water and littoral warfare environment, adding Global Positioning System capability, littoral performance improvement and a precision moving target solution.

General Characteristics:

Length:	182.2 in. ship launch, 151.5 in. air launch
Diameter:	13.5 in.
Weight:	1,160 lb. air configuration 1,523 lb. surface launch capsule/canister configuration
Range:	In excess of 67 NM
Propulsion:	Air-breathing turbojet engine (cruise), solid-propellant booster
Guidance:	Terminal: Active Radar Midcourse: GPS-aided inertial navigation and In-Flight Target Updates (IFTU) via secure data link.
Warhead:	Penetration, high-explosive blast
System Elements:	Missile - Common for all launch platforms Booster - Added for surface applications Launchers - Uses existing equipment or the Harpoon Canister Launcher Command and Launch System - Provides engagement planning and launch control

Launch Platforms:	Air, surface applications
Ships	Guided Missile Destroyers (DDG) Conventional/Nuclear Guided Missile Cruisers (CG)
Aircraft	F/A-18E/F Super Hornet Multi-Mission Maritime Aircraft (MMA)

The 500-pound blast warhead delivers lethal firepower for conventional anti-ship missions, such as open-ocean, near-land or ships in port. The datalink updated Global Positioning System/Inertial Navigation System improves midcourse guidance to the target area. The accurate navigation solution allows users to discriminate target ships from islands, other nearby land masses, obstructions or ships.

Harpoon Block III will be deployable from Harpoon missile system platforms with existing command and launch equipment, the F/A-18E/F Super Hornet and the Multi-Mission Maritime Aircraft (MMA). Block III is ready to meet the over-the-horizon threat and provide our customers with the right weapon for today's environment.

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August 2008

Raytheon

AIM/RIM-7 Sparrow

Cost-Effective Medium-Range Missile System

The AIM/RIM-7 Sparrow medium-range, radar-guided missile provides a versatile and cost-effective solution for the world's air-defense needs.

Benefits

- Multimission capability
- Combat-proven air defense and air superiority
- Proven reliability
- Committed full-service support program

The AIM/RIM-7 Sparrow missile is a medium-range, all-weather, all-aspect, semiactive guided missile used in multiple roles by the United States and more than 25 international customers.

The AIM/RIM-7M model was developed around a digital monopulse seeker, which greatly improved seeker capability under heavy electronic countermeasures (ECM) and adverse weather conditions. The latest version of Sparrow, the AIM/RIM-7P, has a new higher capacity computer and uplink capability for command midcourse guidance. The AIM/RIM-7P computer incorporates a reprogrammable digital processor with software that may be modified to optimize effectiveness against enemy countermeasures. AIM/RIM-7P software continues to be upgraded for new scenarios and can be loaded via external means.

The RIM-7 Sparrow is the surface-launched (sea or land) version of Sparrow used for ship, airfield and facility self-defense. It can be launched in trainable or vertical launcher configurations. In the vertical launch variant, the RIM-7M/P uses a jet vane control to provide initial missile flight control.

Sparrow continues to be a central element in the air-defense process for the U.S. Navy and many international armies, navies and air forces. Because of its capability and flexibility, Sparrow will remain in service for many years in the future. Raytheon is committed to providing product support for the Sparrow family through 2025.

Upgradeable

Legacy AIM/RIM-7M configurations can be upgraded to AIM/RIM-7M/P configurations:

AIM-7M F1	**Baseline:** Increased memory More prelaunch messages — improve kill probability Trajectory shaping Better multiple target performance
AIM/RIM-7P Computer Kit	**All factory H-build improvements plus:** Reprogrammable circuit cards More memory and throughput increase Improved trajectory shaping performance Improved ground clutter performance Improved ECM
Full AIM/RIM-7P	**All above plus:** Improved low-altitude guidance Will accept 7P++ software

Maintenance Support

Intermediate Level	In-country test capability using the AN/DSM-162B or AN/DSM-156D test set • AN/DSM-162B test set for AIM-7 (Air Force) operations • AN/DSM-156D test set for RIM-7 (Navy/remote test) operations
Depot Level	Raytheon Missile Systems — Tucson, Arizona Sole existing full-service Sparrow depot Proven, experienced, rapid turnaround, low cost

AIM/RIM-7 Specifications

Length:	AIM/RIM without JVC	12 ft	3.66 m
	RIM with JVC	12 ft 7 in	3.85 m
Diameter:	8 in	0.2 m	
Weight:	AIM/RIM without JVC	502 lb	228 kg
	RIM with JVC	650 lb	295 kg
Wing Span:	3 ft 4 in	1 m	
Guidance System:	Semiactive compatible with continuous wave or pulsed Doppler radar illumination		
Warhead:	Annular blast fragmentation expanding continuous rod		
Fuzing:	Proximity and impact fuzing		
Power Plant:	MK-58 boost-sustain solid propellant rocket motor with manual or remote safe and arm		

Sparrow provides customers with:

- Intercepts against high- and low-altitude threats
- Intercepts of aircraft, missiles and surface targets
- Engagements of maneuvering targets in both forward and rear hemispheres
- Engagements of targets in clutter and ECM environments
- Intercepts in snap-up and shoot-down conditions
- Intercepts against multiple closely-spaced threats
- Superior operational ready rate and reliability

Raytheon is fully committed to Sparrow full-service support, including depot repair of AIM/RIM-7M/P Sparrow missiles, through 2025.

Raytheon Company
Missile Systems
Naval Weapon Systems
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Raytheon

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Raytheon

Standard Missile-2
International Fleet Defense

SM-2

The world's premier fleet/air defense weapon.

Benefits

- Rail or vertical launch
- Inertial or command midcourse guidance
- Semiactive terminal homing
- Blast fragmentation warhead

The Standard Missile-2 (SM-2) is the latest in a long history of highly capable antiair warfare weapons. The lineage of SM-2 can be directly traced back over 50 years to the original Talos, Tartar and Terrier air defense missiles.

The current generation of SM-2, Blocks IIIA and IIIB, capitalizes on communication techniques, advanced signal processing and propulsion improvements to substantially increase the intercept range and provide high- and low-altitude intercept capability and performance against the advanced antiship missile threat.

SM-2 also employs an ECM resistant monopulse receiver for semiactive radar terminal guidance, while long-range intercepts are accomplished through the use of Inertial Midcourse Guidance (Tartar) and Command Midcourse Guidance (Aegis). The Tartar and Aegis flight profiles allow the missile to approach the target without the need for a shipboard illuminator until the terminal engagement phase. Target updates are provided through a weapon fire control system for Tartar missiles, while Command Guidance is accomplished via a link for Aegis missiles. A significant advantage of midcourse guidance is the resultant increase in firepower.

The SM-2 Block IIIB configuration incorporates a side-mounted imaging infrared seeker into the proven Standard Missile guidance system. This adjunct sensor provides a significant improvement to the missiles terminal engagement performance against stressing antiship missile threats.

SM-2 is compatible with the MK13 and MK26 rail launchers as well as the MK41 Vertical Launching System.

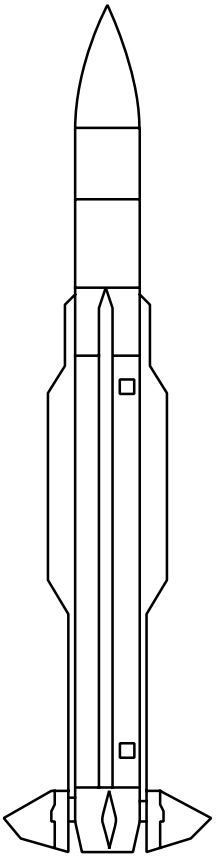
The SM-2 family continues to grow, as Canada, Japan, Germany, Korea, The Netherlands and Spain are deploying compatible surface combatants, and several other navies are in the process of defining requirements and ship configurations to support SM-2 applications.

Standard Missile-2

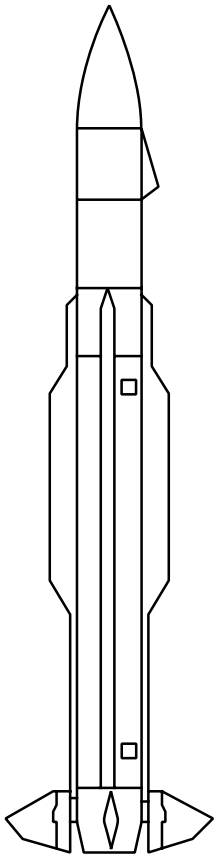
System/Subsystem	Characteristics
Overall System	All-weather, ship-launched, medium-to-long range, fleet air defense missile system
Airframe	Cylindrical body with ogive nosecone, cruciform trapezoidal tail control fins with inlne long chord, fixed dorsal fins immediately forward
Propulsion	Dual-thurst, solid-propellant rocket motor (MK104)
Guidance/Control	Monopulse, solid-state, semi-active radar terminal guidance with digital computer. Inertial or command midcourse guidance. Control effected through electrically activated tail fins
Fuzing	MK45 direct action and proximity fuze
Warhead	Common high-explosive fragmentation warhead (MK125)

Standard Missile-2 Specifications

Length:	15.5 ft	4.72 m
Diameter:	1.1 ft	34.3 m
Span:	3.0 ft	91.5 cm
Weight:	1,558 lb	708 kg
Range, Max:	> 50 mi	> 80.45 km
Altitude:	> 65,000 ft	> 20,000 m
Speed:	Mach 3+	
Other:	MK125 high-velocity fragmentation warhead	



SM-2 Block IIIA



SM-2 Block IIIB

Final video frame from target cockpit camera.

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PD077-099

TS0539-30-03.4

PD079-029

HELLFIRE II®

The HELLFIRE II modular missile system defeats advanced armor and urban point targets in the presence of severe electro-optical countermeasures. It can be launched from multiple air, sea and ground platforms, autonomously or with remote designation.

Apache, Kiowa Warrior, Cobra, Seahawk and Tiger helicopters are all equipped with the HELLFIRE system. HELLFIRE has also been successfully fired from several wheeled and armored vehicles and from various small boats and ships, as well as ground-mounted tripods. The tripod-mounted system is currently in service with the Swedish and Norwegian defense forces.

HELLFIRE II is a combat-proven weapon system for precision kill of high-value armor, air defense, ships, waterborne and fixed targets, with minimal collateral damage. The missile may be employed by lock-on before or lock-on after launch for increased platform survivability. Its multi-mission, multi-target capability with precision-strike lethality and fire-and-forget survivability provides field commanders maximum operational flexibility.

PD079-107; PD079-109

PD079-108; PD079-110

Specifications

Range	0.5 to 8+ km
Guidance	Semi-active laser seeker
Warheads	HEAT, augmented HEAT, blast fragmentation, and MAC
Platforms	Helicopters, tripods, boats, vehicles (from pedestal-mounted to full integration)

AGM-114K (HEAT)

Weight	45.4 kg (100 lb)
Length	163 cm (64 in)
Diameter	17.8 cm (7 in)

AGM-114KA (Augmented HEAT)

Weight	47.3 kg (104 lb)
Length	163 cm (64 in)
Diameter	17.8 cm (7 in)

AGM-114M (Blast Frag)

Weight	48.2 kg (106 lb)
Length	163 cm (64 in)
Diameter	17.8 cm (7 in)

AGM-114N (MAC)

Weight	48.2 kg (106 lb)
Length	163 cm (64 in)
Diameter	17.8 cm (7 in)

Features

- Modular HELLFIRE offers four variants: AGM-114K high-explosive anti-tank (HEAT) warhead neutralizes even the most advanced armored threats; AGM-114KA augmented HEAT warhead defeats lightly armored threats, as well as soft targets in the open; AGM-114M blast fragmentation warhead defeats ships, light armor and urban targets; AGM-114N metal augmented charge (MAC) warhead is highly effective against enclosed structures (caves and bunkers)
- Software driven – digital electronics for seeker growth applications
- Electro-optical countermeasures immunity proven by test; reprogrammable
- Effective target tracking in presence of backscatter, dust, water vapor, smoke and sea spray
- Trajectory shaping for performance in degraded weather
- Automatic target reacquisition after loss of track in low clouds
- Combat proven against a wide array of targets

Lockheed Martin Corporation
Missiles and Fire Control
Business Development
Phone: (407) 356-4464
Fax: (407) 356-7199
www.lockheedmartin.com/mfc

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Front top: PD079-189

Raytheon

AGM-65 Maverick

Man-in-the-Loop Precision, Low Collateral Damage, Anti-tank, Anti-ship, Close Air Support Weapon

AGM-65 Maverick is the precision strike missile-of-choice for the U.S. Air Force, Navy, Marine Corps and 33 international customers.

Benefits

- Launch-and-leave capability with combat-proven high single-pass probability of kill
- Low collateral damage
- Proven capability against high-speed moving and maneuvering targets
- Modular design provides various combinations of seekers and warheads

Today's Maverick provides aircrews with launch-and-leave capability across a wide span of employment ranges and speeds. With its one-meter precision accuracy and lethal warhead, Maverick gives a high single-pass probability of success, with low collateral damage — attributes of the modern battlefield. Its modular design provides nine configurations with choices of three different seeker/guidance options, two different warheads and fuzing options, plus a rocket motor safe-arm option for naval flight deck operations.

Maverick is certified on more than 25 types of aircraft and is effective against nearly all air-to-ground target sets in battlefield, urban and maritime, including field fortifications, bunkers, tanks, armored personnel carriers, parked or taxiing aircraft, radar or missile sites, port facilities, ships, high-speed vehicles, swarming boats and other time sensitive threats. Maverick continues to evolve, providing cost effective solutions to meet current and future capability needs for network centric warfare.

TV Maverick

The first Maverick produced was the television (TV) guided AGM-65A, delivered in 1972, followed in 1975 by the AGM-65B, with scene magnification optics. AGM-65A and B versions are now being upgraded to the newer H, J, JX and K configurations for U.S. and international customers. The newer configurations incorporate modern charge-coupled-device (CCD) TV technology, circuitry and associated software to more than triple the lock-on and launch range of the original versions. The CCD seeker's sharper image gives the aircrew longer acquisition and launch ranges, allowing greater use of the aerodynamic envelope of the missile. The tracking software and cockpit display symbology are the same as those used successfully in infrared (IR) guided missiles. The superior service life of Maverick's center-aft section makes upgrading AGM-65B to AGM-65H missiles a viable and highly affordable option.

Infrared Maverick

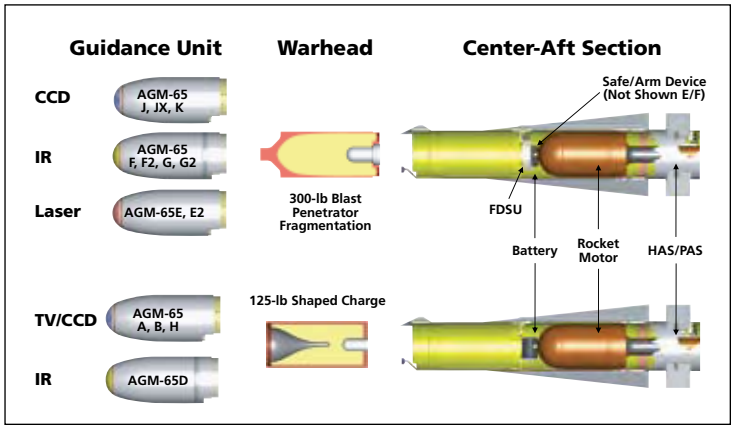
The U.S. Air Force's AGM-65D, G and G2 and the Navy's AGM-65F are equipped with IR seekers that work in both day and night situations. The IR seeker presents a TV-like image on the cockpit display as it senses small differences in heat energy between target objects and the surrounding background. The tracking software for the IR missile has evolved to effectively accommodate a wide spectrum of land and maritime targets.

Laser Maverick

The current Laser Maverick (AGM-65E) uses a semi-active laser (SAL) seeker that

Before

After



Maverick Guidance Warhead Family Chart

AGM-65 Maverick Specifications

Fuze:	Contact (Shaped-charge warhead)	Selectable Delays (Penetrator warhead)
Length:	98.0 in	249 cm
Wing Span:	28.5 in	72 cm
Diameter:	12.0 in	30.5 cm
Weights:		
125-lb Shaped Charge Warhead		
D (IR)	485 lb	220 kg
H (TV)	466 lb	211 kg
300-lb Blast Fragmentation Penetrator Warhead		
E (Laser)	645 lb	293 kg
F, F2, G, G2 (IR)	670 lb	304 kg
J, JX, K (TV)	654 lb	297 kg
Single-Rail Launcher		
LAU-117	135 lb	61 kg

Precision Against High-Speed Moving Targets

tracks laser energy reflected from a target being illuminated by a laser designator device, either airborne or ground-based. It was designed in the 1980s for defeating armored targets and providing close air support beyond the line of battle. Its analog SAL seeker provides long-range, lock-on, fire-and-forget capability that incorporates safety features for collateral damage avoidance by flying long and deactivating the warhead upon loss of laser designation. It remains extremely effective in dynamic combat operations requiring high reliability and surgical lethality.

Warheads

Two warheads are available for the Maverick. The A, B, D and H versions use a 125-pound warhead with a forward-firing, conical-shaped charge for armor penetrations. The E, E2, F, F2, G, G2, J, JX and K versions employ a 300-pound blast fragmentation/penetrator warhead that was developed for maximum effectiveness against larger, reinforced targets. Selectable fuzing gives the aircrew the option of detonating the warhead on impact or after penetration.

The Future of Laser Maverick

Raytheon is designing a new laser guidance and control section (GCS) to allow production of Laser Maverick (AGM-65E2) missiles. This next-generation Laser Maverick uses digital Semi-Active Laser (dSAL™) seeker technology that allows tighter tracking against high-speed moving targets and greater precision in tough urban environments, while minimizing collateral damage. The new Laser Maverick GCS uses key components from existing Mavericks, to include: circuit card assemblies, autopilot, and electrical interfaces. The new GCS can mate to existing Maverick center-aft sections and retains Maverick shape and mass properties to reduce cost and schedule time. The missile uses built-in-test to limit test equipment requirements. Laser Maverick requires no aircraft operational flight program changes and no change in launch aircraft. Incorporating GPS/INS features is under consideration to improve end-game accuracy, permit adverse weather employment, and offer an expanded engagement envelope.

Surgical Precision

Assured Destruction

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LASER MAVERICK

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AIM-132 Advanced Short-Range Air-to-Air Missile (ASRAAM)

Description

ASRAAM (Advanced Short Range Air-to-Air Missile) is the most agile, modern air-to-air missile designed to dominate the combat mission from Within Visual Range to near Beyond Visual Range. The combat concept behind **ASRAAM** is designed to give the pilot the ability to engage the enemy, fire and get away without risking himself or his aircraft in a dogfight. **ASRAAM** unique capabilities enable it to defeat all short-range missiles, existing or planned, in close-in combat.

The missile system performance is attributed to a revolutionary design concept and state-of-the-art technology providing fast reaction time from button press to end game performance and giving **ASRAAM** the highest speed of any short-range missile.

ASRAAM high speed is achieved by means of a combination of low drag and rocket motor size. By using a 166mm (6.5ins) diameter motor, compared with other missiles which use a 127mm (5ins) motor, **ASRAAM** has approximately 70% more thrust and can maintain a high speed throughout its flight time.

Designed to outmaneuver target aircraft in short-range aerial engagements and to allow launch at high off-bore sight angles during such engagements, **ASRAAM** is a highly agile missile. The exceptional maneuverability is provided by a sophisticated control system using innovative body lift technology coupled with tail control.

Physical Characteristics

• **Length**	**2.90 m (9 ft 6 in)**
• **Finspan**	**45 cm (17.7 in)**
• **Diameter**	**16.6 cm (6.5 in)**
• **Weight**	**87 kg (192 lb)**
• **Speed**	**Mach 3+**
• **Range**	**15 km (8 nm)**
• **Propulsion**	**Dual-thrust (boost/sustain) solid-fueled rocket**
• **Warhead**	**10 kg (22 lb) blast-fragmentation**

- **Length** 2.90 m (9 ft 6 in)
- **Finspan** 45 cm (17.7 in)
- **Diameter** 16.6 cm (6.5 in)
- **Weight** 87 kg (192 lb)
- **Speed** Mach 3+
- **Range** 15 km (8 nm)
- **Propulsion** Dual-thrust (boost/sustain) solid-fueled rocket
- **Warhead** 10 kg (22 lb) blast-fragmentation

Reference: http://www.mbda.co.uk/

Raytheon

AIM-9M Sidewinder

A Proven History of Success in Air-to-Air Combat

AIM-9M Sidewinder

Combat-proven, advanced infrared-tracking, short-range air-to-air missile

Benefits

- Advanced countermeasure features
- Improved identification of targets against background clutter
- Improved tracking against low-signal level targets
- Reduced-smoke rocket motor

For more than 40 years, the Sidewinder missile's effectiveness and all-aspect capabilities have been combat proven in several theaters and conflicts around the world.

Manufactured Since 1964

Raytheon has manufactured Sidewinder guidance control sections continuously since 1964 and has provided coalition nations with equipment for in-country missile repair. Since 1971, Raytheon has been the U.S. Navy's Development Industrial Support Contractor. Raytheon has delivered more than 45,000 Sidewinder guidance sections.

Enhanced Performance

The AIM-9M provides significant performance improvements over its predecessor, the AIM-9L. These include advanced countermeasure features, improved identification of targets against background clutter, improved tracking against low-signal level targets and a reduced-smoke rocket motor.

The AIM-9M is configured for easy installation on a wide range of modern tactical aircraft, including the F-4 Phantom II, F-5 Tiger, F-14 Tomcat, F-15 Eagle, F-16 Fighting Falcon, and F/A-18 Hornet fighters; the A-4 Skyhawk, A-6 Intruder, A-7 Corsair II, AV-8B Harrier II, and A-10 Thunderbolt II attack aircraft; and the AH-1 Cobra helicopter. Sidewinder is also integrated on the JAS-39 Gripen, JA-37 Viggen, FA2 Sea Harrier, Tornado GR4, and Jaguar GR3.

Raytheon's Sidewinder reliability has been thoroughly demonstrated, consistently achieving 400 percent above contractual mean time between failure requirements.

AIM-9M Sidewinder

AIM-9M Features

- Combat-proven
- Demonstrated high-kill probability
- High reliability
- Multiple applications
- Minimal size, low drag and weight
- Low per-round cost
- Simplicity
- Adaptability

AIM-9M Specifications

Length:	113 in	2.9 m
Diameter:	5.0 in	12.7 cm
Wing Span:	25 in	63.5 cm
Canard:	22.3 in	56.6 cm
Weight:	190 lb	86 kg
Warhead:	25 lb	11.3 kg
Guidance:	Passive infrared	
Fuzing:	Proximity and content	
Launcher:	Rail	

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Raytheon

AIM-9X Sidewinder

Fifth Generation High Off-boresight, Thrust-Vectored Air-to-Air Missile

AIM-9X Sidewinder provides first-shot/first-kill capability to ensure air combat victory.

Benefits

- Low cost of development and ownership
- Superior performance exceeds tactical requirement
- In production and in the fleet now
- Selected by numerous coalition air forces

AIM-9X Sidewinder

The AIM-9X is the newest member of the AIM-9 Sidewinder short-range missile family in use by more than 40 nations around the world. This next-generation Sidewinder missile passed operational evaluation in November 2003 and was approved for full-rate production in May 2004.

Enhanced Capability

The AIM-9X acquisition plan addresses the urgent warfighting requirement for the development and deployment of a next-generation Sidewinder to replace the AIM-9M. AIM-9X is a launch-and-leave air combat missile that uses passive infrared (IR) energy for acquisition and tracking. The AIM-9X can be employed in both near beyond visual range and within visual range arenas. Complemented by the Advanced Medium-Range Air-to-Air Missile (AMRAAM), the AIM-9X equipped warfighter has offensive firepower that is unmatched by any other weapon systems in the world. The AIM-9X program addresses the requirement for evolutionary improvements to the AIM-9 series missile through revolutionary advancements. This extends the operational effectiveness of existing inventories at an affordable cost while continuing the evolution of the AIM-9 series.

AIM-9X provides the warfighter with the following capabilities: full day/night employment, resistance to countermeasures, extremely high off-boresight acquisition and launch envelopes, greatly enhanced maneuverability and improved target acquisition ranges. The AIM-9X airframe coupled with other advanced features gives fighter pilots a significant tactical advantage in the dogfight arena. The AIM-9X uses an extremely agile thrust vector controlled airframe. Configured with a mature and high-performance staring focal plane array (FPA) sensor and existing AIM-9M components (rocket motor, warhead and fuze), AIM-9X evolutionary design is a low-cost, low-risk, all-up-round evolutionary design with robust performance. The digital design architecture of the AIM-9X provides growth capability to ensure air superiority in the future.

AIM-9X Development AIM-9X is a joint U.S. Navy and U.S. Air Force program with the Navy designated as the Executive Service. Several nations have already selected AIM-9X as their next short-range missile, and potential exists for procurement by numerous other coalition nations. The first AIM-9X air launch was accomplished in March 1999. This milestone was the first in a series of separation and control test vehicle and guided launches. From 1999 to 2001, the AIM-9X program launched 19 separation and control test vehicles and 18 guided launches from U.S. Navy F/A-18 and U.S. Air Force F-15 aircraft. Of the 18 guided firings, 14 resulted in direct hits against QF-4 unmanned drones. The AIM-9X engineering and manufacturing development (E&MD) phase completed the development of the missile

AIM-9X

Unprecedented . . . Fifth Generation . . . Smarter

tactical system design and established the weapons system interface with the F-15C and F/A-18C/D aircraft and the joint helmet-mounted cueing system. U.S. government development and operational testing plans include extensive captive carry reliability testing and free-flight guided launches. In addition to the F/A-18C/D and the F-15C, AIM-9X will be integrated on the Navy F/A-18E/F and the Air Force F-15E, F-16, the Joint Strike Fighter, and the F-22 during Follow-on Test and Evaluation. AIM-9X is fully compatible with the LAU-12X series and the LAU-7 launchers.

The Threat

For more than 40 years, U.S. and coalition fighter pilots have enjoyed air superiority in short-range engagements. Now, however, current threat missiles, aircraft and environments may eclipse this advantage ... demanding a new fifth generation Sidewinder Missile — the AIM-9X.

AIM-9X – The Answer

In modern short-range air-to-air combat, first-shot/first-kill capability is necessary to ensure victory in today's high technology battlefield. Coalition fighter pilots will enter the fight with AIM-9X, a missile that retains the essence of Sidewinder heritage, while employing a fifth-generation seeker and thrust vectoring control for unprecedented performance. The Raytheon team's experience in advanced IR technologies, weapons systems integration and affordable missile production provides an AIM-9X that ensures air superiority for the 21st century.

Unprecedented

Superior Performance Exceeds Tactical Requirement

- Greatly enhanced acquisition ranges in blue sky and clutter
- IR countermeasures resistance to meet the threats of today and tomorrow
- Extremely high off-boresight capability gives the pilot the first-shot first-kill opportunity
- Highly agile airframe
- Inherent growth potential

Fifth Generation

Leadership in Advanced IR Missiles and Weapon Systems Integration Brings the Warfighter Unprecedented Technology Today — AIM-9X

Raytheon's commitment and acknowledged leadership in advanced IR missile design enabled a low-risk, low-cost development phase that ensures air superiority for the U.S. and coalition warfighter. Mature enabling technologies that include staring FPAs, adaptive compensation techniques, and advanced IR signal processing permit a low risk E&MD phase. The Raytheon AIM-9X team is a world leader in advanced digital aircraft weapons integration. This weapon system design experience includes the AMRAAM; the AMRAAM/AIM-9X compatible digital launcher; the F-14D, F/A-18E/F and F-15 advanced radars; and the F-22 weapon system. Raytheon understands the digital combat environment and the critical weapon system parameters necessary to fight and win in the pre- and post-merge arena.

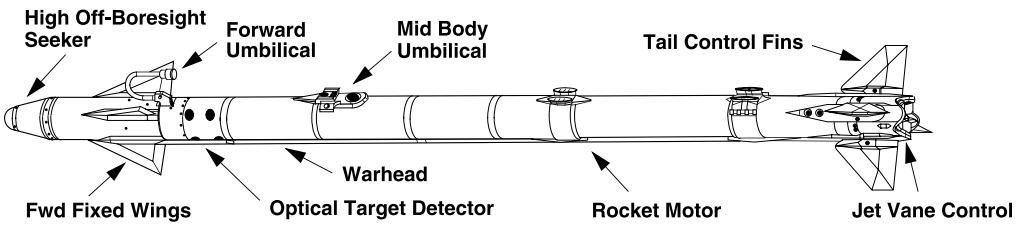
Smarter

Revolutionary Ideas Through Evolutionary Development

The critical path of any missile development is through the seeker. The payoff from leveraging an in-production seeker and Raytheon's extensive commitment to advanced fifth-generation IR technologies is a low-cost, low-risk AIM-9X development. Raytheon's advanced, mature IR FPA sensor and innovative guidance and control design combined with reuse of existing components presents an AIM-9X that is affordable and lethal. Features such as a cryoengine and an extended warranty significantly reduce the cost of ownership while increasing the AIM-9X tactical utility and availability. Raytheon's integrated product team culture and lean manufacturing techniques are combined with acquisition reform initiatives to produce an affordable, low-risk, and highly reliable AIM-9X design.

AIM-9X Sidewinder Specifications

Weight:	118 lb	85 kg
Length:	119 in	3 m
Diameter:	5 in	12.7 cm
Fin Span:	17.5 in	44.45 cm
Wing Span:	13.9 in	35.31 cm



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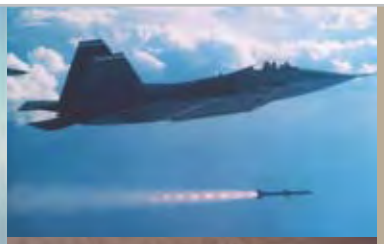
AMRAAM

Advanced Medium-Range Air-to-Air Missile



Advanced Medium-Range Air-to-Air Missile
Combat-proven performance and reliability.

Benefits

- Highest dependability at lowest cost of ownership
- Maximizes operational flexibility
- Multi-shot capability
- State-of-the-art active radar guidance
- Dual use from the same missile (air and surface launch)
- Cost effective life cycle support for both ATA and SL missiles
- Planned performance software upgrades to combat emerging technologies

The Advanced Medium-Range Air-to-Air Missile (AMRAAM) is combat proven, scoring victories over the skies of Iraq, Bosnia, and Kosovo. AMRAAM operational reliability is measured in thousands of hours — an order of magnitude improvement beyond other systems — with mean-time-between-failure rates in excess of 1500 hours of operation. AMRAAMs are currently flown by the majority of coalition air forces. Attesting to AMRAAM reliability, the U.S. Air Force has recently exceeded one million captive carry hours while maintaining field availability well above requirements.

With state-of-the-art active radar guidance, AMRAAM packs unprecedented performance into a lightweight package. AMRAAM's incorporation of the latest digital technology and microminiaturized solid-state electronics makes this remarkable weapon more reliable and maintainable, resulting in the highest dependability at the lowest cost of ownership throughout the intended service life of the missile.

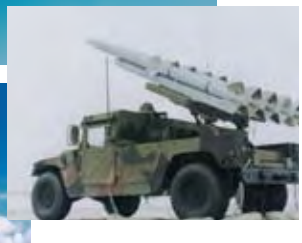
AMRAAM's unprecedented air combat flexibility, including its multi-shot capability, provides pilots the ability to launch at an enemy aircraft day or night, in all weather. In beyond visual range (BVR) engagements, AMRAAM is guided initially by its inertial reference unit and microcomputer. During this midcourse phase of flight, AMRAAM receives target position updates directly from the launch radar system. In the terminal phase of flight, without further reliance on the launching aircraft, the internal active radar seeker acquires the target and independently guides the missile to intercept.

AMRAAM's autonomous guidance capability provides the pilot with critical range preserving launch and leave capability. This substantially improves a pilot's overall survivability by allowing immediate maneuver following missile launch. Immediate post-launch maneuver allows the pilot faster engagement of follow-on targets, as well as the option to maximize his separation from the original engaged threat.

AMRAAM's multi-shot capability is also designed to improve pilot survivability by allowing multiple simultaneous threat engagements. AMRAAM operational capabilities include quick flyout, robust immunity to countermeasures, and improved capability attacking low-altitude targets. The low-smoke, high-impulse rocket motor effectively reduces the visual signature of the missile and thus reduces the overall probability of an enemy pilot's sighting either the launch or the incoming missile.

AMRAAM is operational on the F-22, Eurofighter, F-15, F-16, F/A-18, the German F4F, the United Kingdom's Sea

AMRAAM



Harrier, Tornado, Harrier II Plus, the JAS-39 Gripen, JA-37 Viggen, and the Norwegian Advanced Surface-to-Air Missile System (NASAMS). Raytheon is currently integrating AMRAAM on the Joint Strike Fighter.

AMRAAM sets the global, beyond visual range standard. With more than 33 countries procuring the missile, AMRAAM has attained a level of international procurement that enriches interoperability, ensures commonality, and improves overall logistic support which ensures effective coalition operations.

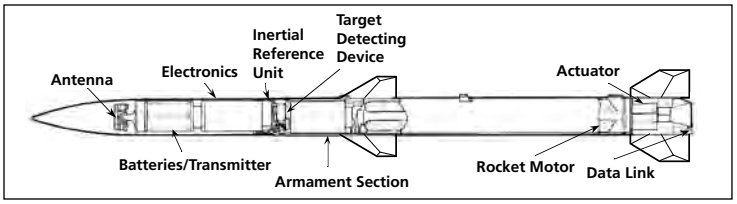
AMRAAM has demonstrated equally outstanding surface-to-air performance. Surface-launch operators find AMRAAM performance extremely effective through increased long-range firepower, multiple target capability, and resilient ECCM features. The NASAMS was the first surface-launch system to take advantage of these unique air defense capabilities and has been operational with the Royal Norwegian Air Force since 1994. The Spanish army has also procured NASAMS. In 1998, NASAMs became the NATO Response Force standard for mobile/deployable netted air-defense systems to counter modern threats.

Recently, the U.S. Army approved an Operational Requirements Document (ORD) for a similar Surface-Launch AMRAAM (SLAMRAAM) capability. The Army expects to field its system in the near future. Internationally, Raytheon promotes SL-AMRAAM capability for HAWK/SHORAD upgrades and air defense systems employing the Mobility and Canister launcher on a variety of alternative vehicles.

The AMRAAM program is a model defense acquisition reform process managed by the Air-To-Air Missile Systems Wing at Eglin Air Force Base, Florida. AMRAAM is in full-rate production at Raytheon's Tucson, Arizona, facility. Raytheon's innovative evolutionary spiral development began early in the AMRAAM program. This remarkably successful spiral development process continues to extend AMRAAM's world-renowned capability well into the future. Performance, reliability, and affordability with state-of-the-art technology are Raytheon's commitments as the producer of the world's preeminent air-to-air missiles.

AMRAAM AIM-120C-7 Specifications

Length:	12 ft	3.65 m
Diameter:	7 in	17.8 cm
Wing Span:	17.5 in	44.5 cm
Fin Span:	17.6 in	44.7 cm
Weight:	356 lb	161.5 kg
Warhead:	45 lb	20.5 kg
Guidance:	Active radar	
Fuzing:	Proximity and contact	
Launcher:	Rail and eject	



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GUNS

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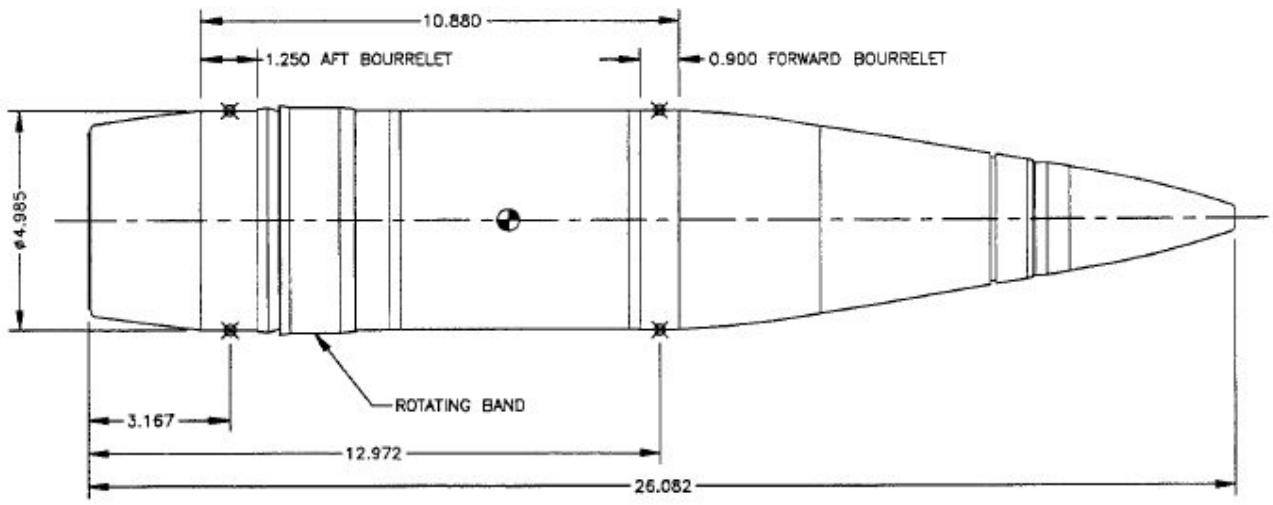
Mk-64 5” / 54 Caliber Blind, Loaded, & Plugged Naval Projectile



Description

The MK64 5 inch 54 caliber naval projectile is the basic round of ammunition for the U.S. Navy's main armament systems.

The forged steel projectiles have a long and streamlined outline, especially the ogive, together with a distinctive boat tail and flat base. The single, wide rotating band is made of copper.

The 5"/54 MK64-2 Projectile Body (MPTS) is a component of the 5"/54 Caliber Blind, Loaded and Plugged (BL&P) MK92-1 Projectile which is a training round that lacks a fuse and is filled with sand.

Physical Characteristics

Reference: www.navweaps.com, www.globalsecurity.com

76mm

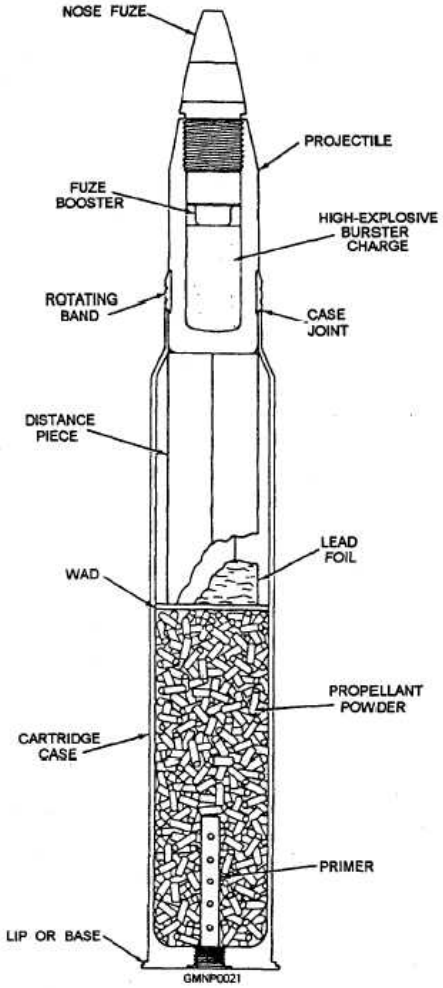
Description

All 76mm round are essentially the same in that they are made of approx. 10 lbs of iron casing with approx. 4 lbs of filler material. The current training allocation show that mostly BL-P (blind load and plug) rounds are used, MK201. As such, the 4 lbs of inert filler in the MK201 rounds is usually sand or cement. Some of the training rounds may contain spotting charges. These rounds are put together as a full up cartridge meaning they are all one piece (Projectile + Casing). The casing has approx. 4 lbs of nitrocellulose propellant.

*Note: the diagram at right shows a live round and not a BL&P round.

Reference: www.navweaps.com, www.globalsecurity.com, www.diehl-bgt-defence.de

Physical Characteristics



Ordnance Technical Data Sheet
U.S. PROJECTILE, 20 MM

Nomenclature: 20 MM Projectile
Ordnance Family: Small Arms
DODIC: A773
Propellant: Nitrocellulose/Nitroglycerin
Propellant weight: 585 grains
Item weight: 3,900 grains (case weight is 1,855 grains and the projectile weighs 1,580 grains)
Diameter: .79 in for projectile
Length: 6.62 in
Maximum Range: N/A

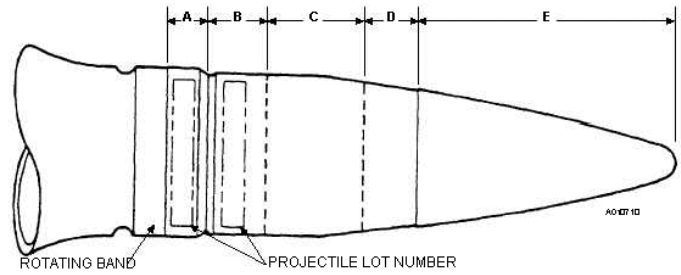
Usage: The PGU-28/B is the only projectile currently used by the Air Force and Navy for fixed wing air-to-air combat. This projectile is fired from the M61A1 gun system that is utilized by the F-14, F-15, F-16, and F/A-18 aircraft.

Description: The improved 20-mm (PGU) configuration ammunition for the M61A1/A2 aircraft guns is issued in the form of cartridges. All service cartridges have matched ballistics and are electrically primed. Initially procured ammunition is not graded, and all accepted lots are serviceable for issue and use in applicable weapons. The M103 brass cartridge cases are marked longitudinally or circumferentially with the caliber/case designation on the first line. The manufacturer symbol is on the second line. The interfix number, lot serial number, and year of manufacture are on the third line. All projectiles have essentially the same external configuration. The rotating band is copper alloy swaged into a circumferential groove near the aft end of the steel body. Ammunition type is identified by the color the projectile is painted and by the lettering on the body of the projectile.

PGU-27/B Target Practice (TP)
The PGU-27/B projectile consists of a steel body with a solid aluminum nosepiece swaged or crimped to the steel body. This cartridge has no explosive filler in the projectile. The cartridge is used in practice firing, for boresighting of weapons, and testing of new guns. The projectile shape and ballistic properties are similar to those of other PGU configuration ammunition.

PGU-28/B Semi-Armor Piercing High Explosive Incendiary (SAPHEI)
The PGU-28/B projectile consists of a steel body with an internal cavity filled with a sponge Zirconium pallet, composition A-4 and RS 40 incendiary mix. The aluminum nose contains RS 41 incendiary mix and is swaged to the steel body. This cartridge is for use against aircraft and light material targets, and functions with semi-armor piercing, high explosive, and incendiary effect.

PGU-30/B Target Practice-Tracer (TP-T)
The PGU-30/B consists of a steel body with an aft cavity containing the tracer pellet. The aluminum nose is swaged or crimped to the steel body. Tracer A tracer pellet is loaded into a cavity machined in the base of the TP-T projectile used in the assembling of the PGU-30/B cartridge. The heat and pressure of the propelling charge ignite the tracer pellet. The tracer is visible for approximately 3.2 seconds during projectile flight. This cartridge is virtually the same as the PGU-27/B projectile, except it incorporates a tracer in the base of the projectile.



Projectile Type	Color of Painting					Color of Marking
	Locations (See Figure 7-10)					
	A	B	C	D	E	
Target Practice (TP) PGU-27/B	No paint (copper)	Blue	Blue	Blue	Blue	White
Semi-Armor Piercing High Explosive Incendiary (SAPHEI) PGU-28/B	No paint (copper)	Black	Yellow	Red	No paint (chromate)	White
Target Practice Tracer (TP-T) PGU-30/B	No paint (copper)	Blue	Blue	Blue	Blue	White with Orange T's (location D)

References: The Aviation Ordnanceman; TRI-DDS website; MIDAS; Global Security.org.

20MM MK 149 (APDS)

PHALANX CIWS (CLOSE-IN WEAPON SYSTEM)

- General Dynamics Ordnance and Tactical Systems is the Sole Developer and Qualified Producer of the MK149 20mm Armor-Piercing, Discarding Sabot Cartridge
- General Dynamics Ordnance and Tactical Systems has Produced in Excess of 20 Million Rounds of Ammunition for the U.S. NAVY's PHALANX Anti-Ship Missile Defense System
- Compatible with all M61 And M197 Gun Systems
- Compatible with all MK15 PHALANX Systems and Block MOD Upgrades
- Increased Impact and Residual Energy at Target over the M50 Series
- Approved for Export

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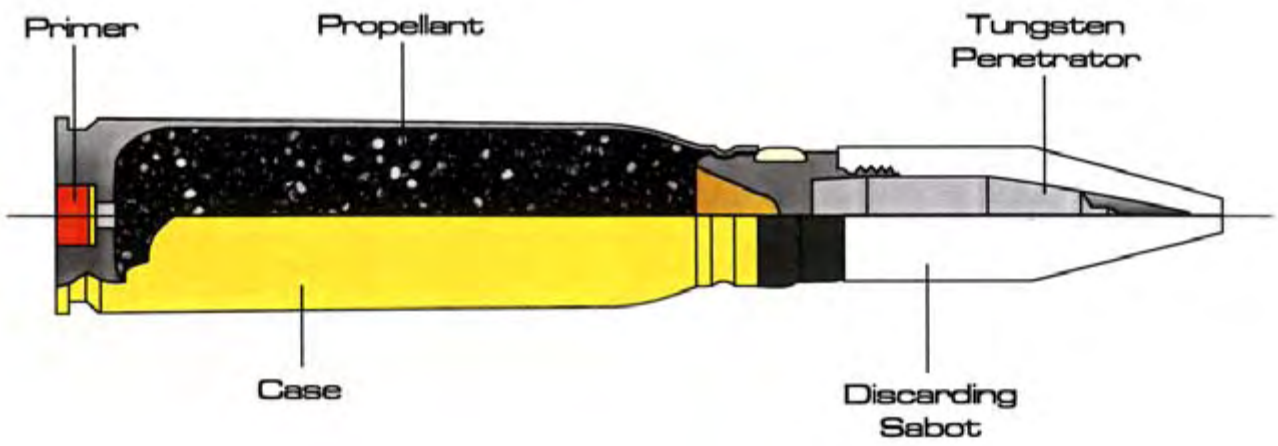
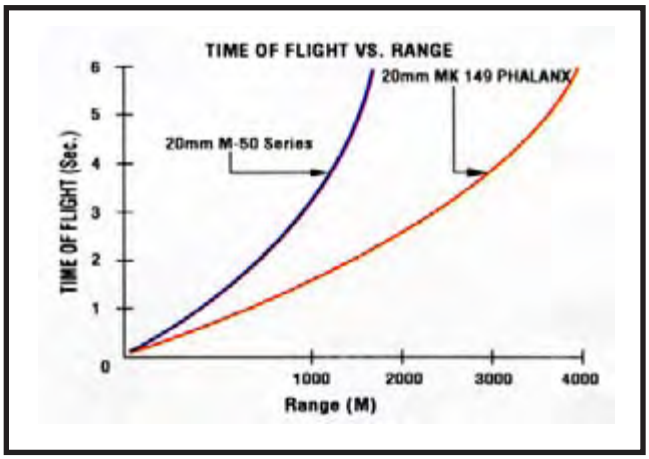
Approved for Public Release 09/30/05

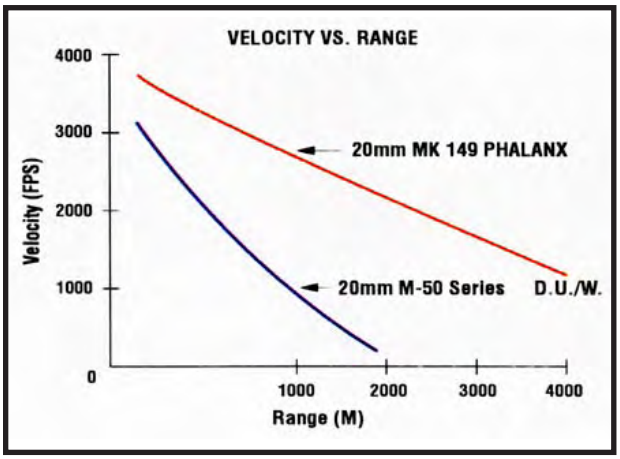
U.S. NAVY PHALANX AMMUNITION

20MM APDS-MK149

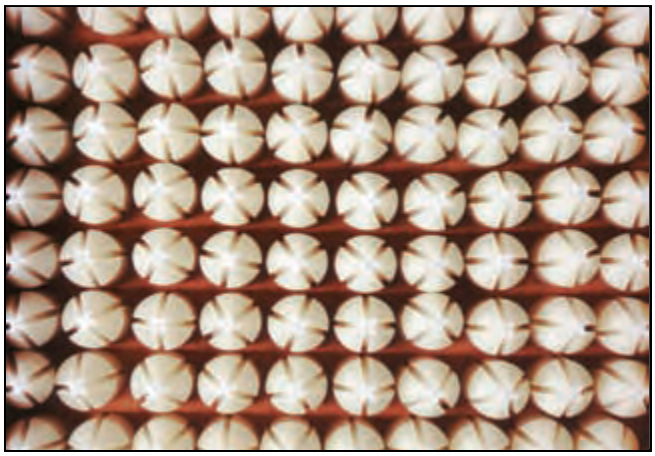




Short Time of Flight to Target



Optimized Exterior Ballistic Performance



Over 20,000,000 Rounds Produced by
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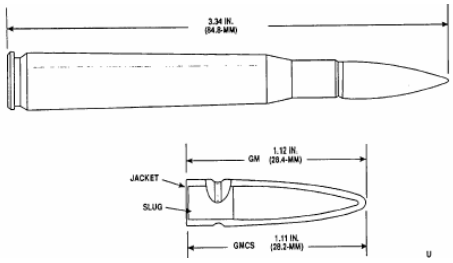
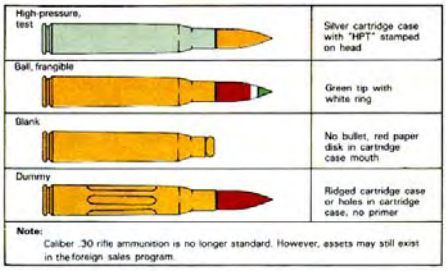
Ordnance Technical Data Sheet

U.S. Cartridge, .30 Caliber Ball, M2





Caliber .30 Cartridges, Colors and Shapes.

Nomenclature:	M2 Cartridge, .30 Caliber, Ball
Ordnance Family:	Small Arms
DODIC:	A212
Filler:	Single or Double Base Powder*
Filler weight:	Mission dependent
Item weight:	26.96 g (416 gr)
Diameter:	7.62 mm (.30 in)
Length:	84.80 mm (3.34 in)
Range:	3475 m (3800 yds)

Usage: Machine Guns, Caliber .30, M37, M1919A4 and M1919A6; and Rifle, Caliber .30, M1. The cartridge is intended for use against personnel or unarmored targets.

Description: Ball Cartridge. The bullet is copper clad and identified by a plain bullet tip.

Reference: TM 43-0001-27

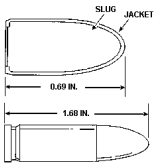
* **Single Base Propellant:** Single base propellants contain nitro cellulose as their chief ingredient. Single-base compositions are used as low-pressure propellants, such as those used in small arms ammunition. They may contain a stabilizer, inorganic nitrates, nitro-compounds, metallic salts, metals, carbohydrates and dyes.

Double Base Propellant: Double base propellants contain nitrocellulose and a liquid organic nitrate, such as nitroglycerine. As with single base, stabilizers and additives may be present. Double base propellants are used in cannon, small arms, mortars, rockets, and jet propulsion units.

Ordnance Technical Data Sheet

U.S. Cartridge .30 Caliber, Ball

CARTRIDGE, CALIBER .30, CARBINE, BALL, M1



Nomenclature:	Cartridge, .30 caliber, Ball
Ordnance Family:	Small Arms Ammunition
DODIC:	A182
Propellant:	Single or Double Base Powder**
Filler:	Lead or Copper Clad Lead
Filler weight:	Not Provided
Item Weight:	Not Provided
Diameter:	7.62 mm (.30 in)
Length:	42.67 mm (1.68 in)
Maximum Range:	2012.00 m (2,200 yds)
Fuze:	Percussion

Usage: Standard general purpose small arms ammunition for the M-1 and M1A1 .30 caliber Carbine.

Description: The cartridge case is brass comprised of 70 percent copper and 30 percent zinc. The bullet is copper clad lead. The propelling charge is either single or double base powder. Ball ammunition is unpainted; tracer ammunition has the tip painted either orange or red.

Reference: Army Technical Manuel TM 9-1300-200.

* Single-base propellant - Contains only one explosive ingredient, normally nitrocellulose.

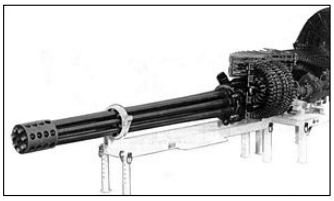
* Double-base propellant - Contains two explosive ingredients, commonly nitrocellulose and nitroglycerin.

Ordnance Technical Data Sheet
U.S. PROJECTILE, 30 MM

Nomenclature: 30 MM Projectile
Ordnance Family: Small Arms
DODIC: B109
Propellant: Nitrocellulose
Propellant weight: .083lbs
Item weight: 360 grams
Diameter: 30 mm
Length: 113 mm or 173mm
Maximum Range: 4500 m

Usage: The 30mm lightweight family of ammunition was developed to optimize the air-to-ground mission of the U.S. Army AH-64 Apache helicopter. It is also used by the A-10. Tanks are the common real world target for 30 mm rounds.

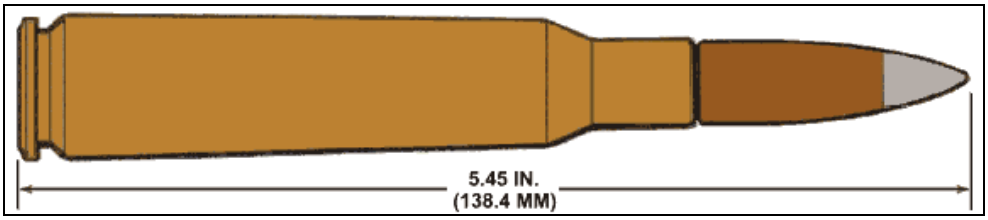
Description: Two airframes use a 30 mm round. The AH-64 Apache Helicopter which uses the M230 chain gun (see picture). The M788 is the practice 30mm round employed and is 30 x 113 mm with an effective range or 1,500 m and a max range of 4,500 m. Several ordnance variants are available, including: M788 Target Practice (TP); M789 High Explosive Dual Purpose (HEDP); and M799 High Explosive Incendiary (HEI).



The A-10 uses the GAU-8A Avenger, 30mm cannon (See picture). It uses PGU-15 30 x 173mm 30 mm ammo. The training round is the PGU-15B. The gun fires 3,900 rpm (rounds per minute).

References: TRI-DDS website; MIDAS; Global Security.org.

<u>Ordnance Technical Data Sheet</u>
U.S. Cartridge, .50 Caliber, Ball M8



Nomenclature: M8, Cartridge, .50 Caliber, Ball
Ordnance Family: Small Arms
DODIC: A576
Propellant: WC860 - Single or Double Base Powder*
Filler: Lead, Steel and/or Copper cladding
Filler weight: ± various
Cartridge weight: 1764 grams
Diameter: 12.70 mm (.50 in)
Length: 138.40 mm (5.45 in.)
Projectile Weight: 622.5 grams
Velocity: 2,910 fps (887 mps)

Usage: Machine Guns, Caliber .50, M2 and M85. The cartridge is intended for use against personnel or unarmored targets. Used by M2 and M85 machine guns, and the M107 Long Range Sniper Rifle. The cartridge combines the functions of the M2 armor piercing bullet and the incendiary bullet, and is used against flammable targets and light-armored or unarmored targets, concrete shelters, and similar bullet-resisting targets.

Description: Ball Cartridge. The cartridge is identified by an aluminum bullet tip.

Single Base Propellant: Single base propellants contain nitro cellulose as their chief ingredient. Single-base compositions are used as low-pressure propellants, such as those used in small arms ammunition. They may contain a stabilizer, inorganic nitrates, nitro compounds, metallic salts, metals, carbohydrates and dyes.
Double Base Propellant: Double base propellants contain nitrocellulose and a liquid organic nitrate, such as nitroglycerine. As with single base, stabilizers and additives may be present. Double base propellants are used in cannon, small arms, mortars, rockets, and jet propulsion units.

Reference: Army Technical Manual TM 43-0001-27; Midas; navy.mil

Ordnance Technical Data Sheet
U.S. Cartridge, 7.62 mm, Ball M80

Nomenclature: U.S. Cartridge, 7.62 mm, Ball M80
Ordnance Family: Small Arms
DODIC: A130
Propellant: 46 grams – WC846 - Nitrocellulose/Nitroglycerin
Cartridge weight: 392 grams
Projectile weight: 146 grams
Diameter: 7.62 mm
Cartridge Length: 2.8 in (71.1 mm)
Velocity: 2,750 fps (838 mps)

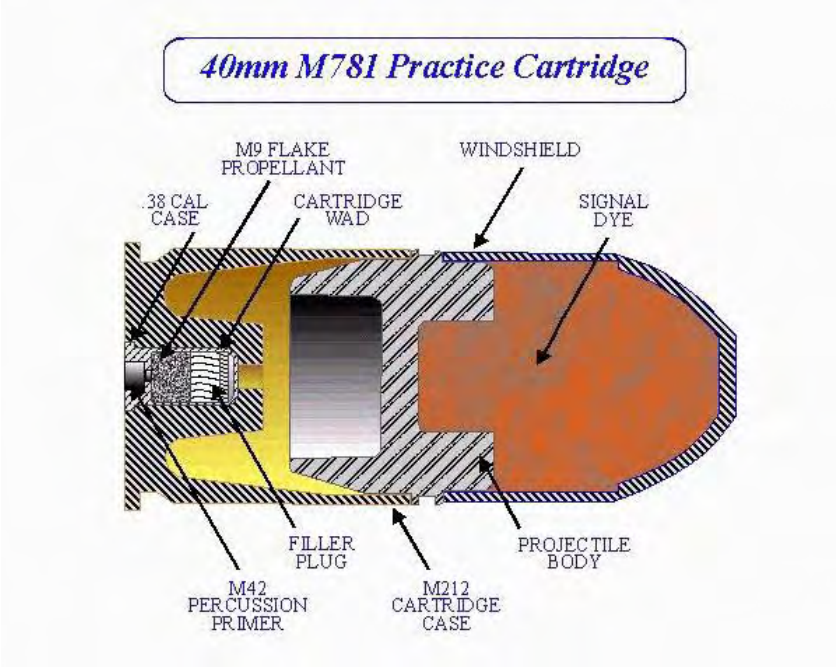
Usage: This cartridge is intended for use against personnel and unarmored targets.

Description: Full metal jacketed bullet and brass cartridge case, center-fired NATO standard small arms.

Single Base Propellant: Single base propellants contain nitro cellulose as their chief ingredient. Single-base compositions are used as low-pressure propellants, such as those used in small arms ammunition. They may contain a stabilizer, inorganic nitrates, nitro-compounds, metallic salts, metals, carbohydrates and dyes.
Double Base Propellant: Double base propellants contain nitrocellulose and a liquid organic nitrate, such as nitroglycerine. As with single base, stabilizers and additives may be present. Double base propellants are used in cannon, small arms, mortars, rockets, and jet propulsion units.

References: ORDATA Online, MIDAS, Army Technical Manuel TM 9-1306-200, Navy.mil

M781 40mm Practice round



Description

This round is blue zinc or aluminum with white markings. It is used for practice and produces a yellow or orange signature on impact

Physical Characteristics

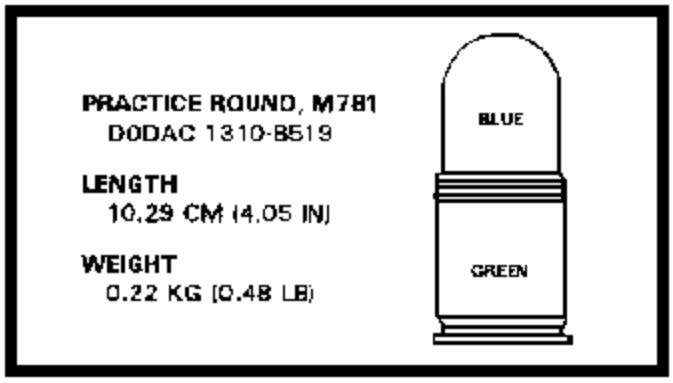


Figure 3-13. Practice round.

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EOD DIVER DEPLOYED UNDERWATER CHARGES

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M112 Composition C4 Block Demolition Charge

Description

M112 composition C-4 block demolition charge is used primarily for cutting and breaching all types of demolition work. Because of its moldability and high brisance, the charge is ideally suited for cutting irregularly shaped targets such as steel. The adhesive backing allows the charge to be attached to any relatively flat, clean, dry surface that is above freezing point.

Physical Characteristics

The M112 block demolition charge consists of 1.25-pounds of Composition C4 packed in a Mylar-film container with a pressure-sensitive adhesive tape on one surface. The tape is protected by a peelable paper cover. In blocks of recent manufacture, Composition C4 is white and packed in an olive-drab, Mylar-film container. Relative effectiveness factor is 1.34.

Reference: www.globalsecurity.com, www.omniexplosives.com

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BOMBS

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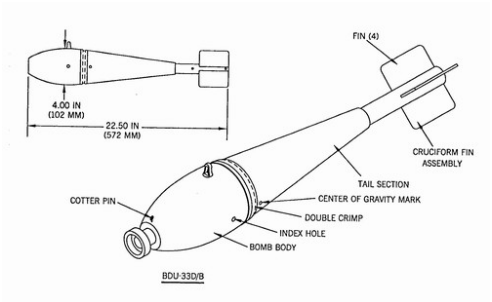
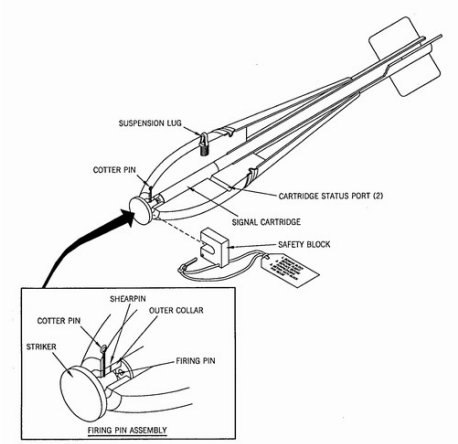
Ordnance Technical Data Sheet

U.S. Bomb, Practice, 25 lb, BDU 33D/B





Nomenclature:	BDU-33D/B Practice Bomb
Ordnance Family:	Bomb
DODIC:	Not Provided
Filler:	Signal Cartridge (see MK 4 Signal Cartridge)
Filler weight:	14.00 g (.49 oz)
Item weight:	11.00 kg (24.25 lbs)
Diameter:	102.00 mm (4.01 in)
Length:	527.00 mm (20.75 in)
Maximum Range:	Not Provided
Fuze:	Impact

Usage: These bombs are signal-generating; impact- or impact-inertia-fired practice/simulated bombs.

Description: The BDU-33D/B bombs are painted light blue; additionally, the BDU-33D/B has white stenciled markings only.

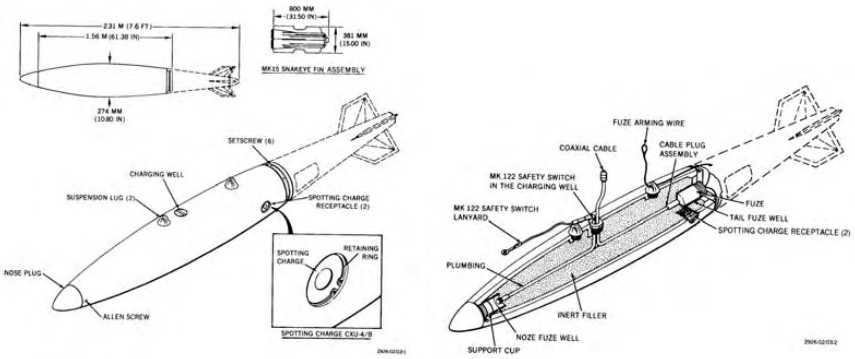
Reference: ORDATA Online.

*__Titanium tetrachloride__ is a colorless to pale yellow liquid that has fumes with a strong odor. If it comes in contact with water, it rapidly forms hydrochloric acid, as well as titanium compounds.

Titanium tetrachloride is not found naturally in the environment and is made from minerals that contain titanium. It is used to make titanium metal and other titanium-containing compounds, such as titanium dioxide, which is used as a white pigment in

Ordnance Technical Data Sheet

U.S. Bomb Unit, 500 lb, Simulated, BDU-45/B, Quiet Bomb



Nomenclature:	BDU-45/B, Bomb Unit, 500 lb, Simulated, Quite Bomb
Ordnance Family:	Bomb
DODIC:	Not Provided
Filler:	None
Filler weight:	Not Provided
Item Weight:	239.00 kg (500 lbs)
Diameter:	274.00 mm (10.79 in)
Length:	1.54 m (5.05 ft)
Maximum Range:	Not Provided
Fuze:	None

Usage: The bomb is a low drag type of the same size and shape as a Mk 82 bomb container. This is a signal generating simulated bomb used for pilot proficiency training with provisions for visual spotting of bombing accuracy. The bomb is loaded with an inert filler and contains no hazardous components. For the hazards of the fuze(s), TDD or sensing element, spotting charge adapter, and spotting charges refer to the appropriate reference.

Description: The bomb is painted blue with the designation BDU-45/B stenciled in white on the forward end of the bomb. Early models of the bomb are stamped with Mk 82 designations between the suspension lugs and with Mk 82 designation, ordnance drawing number, and loading data stenciled in white on the side of the bomb. The bomb fin assembly is painted olive drab.

Reference: ORDATA Online.

Ordnance Technical Data Sheet
U.S. BOMB, PRACTICE BDU-48/B

Photography by John Pitcher, 2007.

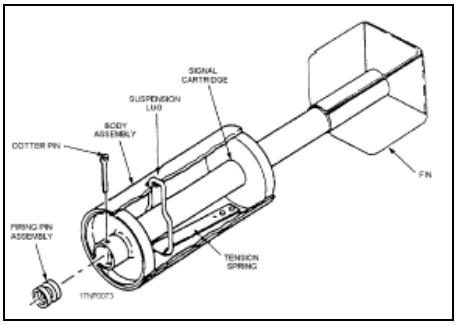
Nomenclature:	U.S. Bomb, Practice, BDU-48/B
Ordnance Family:	Bomb
DODIC:	E962
Filler:	Signal Cartridge, MK-4 MOD 3 or CXU-3A/B
Filler weight:	Not Provided
Item weight:	9.8 lbs
Diameter:	98.00 mm (3.86 in)
Length:	562.00 mm (22.13 in)
Maximum Range:	Not Provided
Fuze:	Impact or impact-inertia fired

Usage: These are air-dropped, impact or impact-inertia-fired signal-generating practice bombs used to train aircrews in the bombing of surface targets.

Description: The BDU-48/B is a 10-pound practice bomb. It is a thin-cased cylindrical bomb used to simulate retarded weapon delivery. The bomb is composed of the bomb body, a retractable suspension lug, a firing assembly, and box-type conical fins. The firing device consists of a firing pin assembly and a cotter pin. The BDU-48/B is painted blue. Identification nomenclature is stenciled in white letters on the bomb body. The bomb can use signal cartridge MK-4 Mod 3, or CXU-3A/B. While handling or transporting bombs, loaders should avoid placing their bodies in line with either end of the bomb.

*__Titanium tetrachloride__ is a colorless to pale yellow liquid that has fumes with a strong odor. If it comes in contact with water, it rapidly forms hydrochloric acid, as well as titanium compounds. Titanium tetrachloride is not found naturally in the environment

and is made from minerals that contain titanium. It is used to make titanium metal and other titanium-containing compounds, such as titanium dioxide, which is used as a white pigment in paints and other products and to produce other chemicals. Military use it as a component of spotting charges. Titanium tetrachloride is very irritating to the eyes, skin, mucous membranes, and the lungs. Breathing in large amounts can cause serious injury to the lungs. Contact with the liquid can burn the eyes and skin.



HAZARDS:

- Explosive
- Red phosphorus or Titanium tetrachloride
- Smoke/incendiary

References: ATSDR; The Aviation Ordnanceman; TRI-DDS website; MIDAS; Global Security.org.

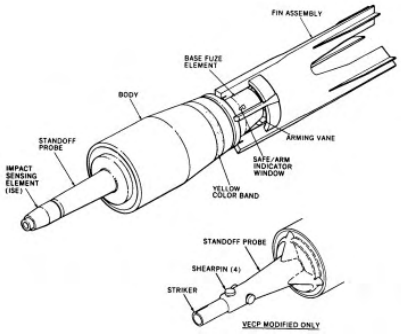
MK-20 Rockeye

Description

The MK-20 Rockeye is a free-fall, unguided cluster weapon designed to kill tanks and armored vehicles. The system consists of a clamshell dispenser, a mechanical MK-339 timed fuze, and 247 dual-purpose armor-piercing shaped-charge bomblets. The bomblet weighs 1.32 pounds and has a 0.4-pound shaped-charge warhead of high explosives, which produces up to 250,000 psi at the point of impact, allowing penetration of approximately 7.5 inches of armor. Rockeye is most efficiently used against area targets requiring penetration to kill. Fielded in 1968, the Rockeye dispenser is also used in the Gator air-delivered mine system. During Desert Storm US Marines used the weapon extensively, dropping 15,828 of the 27,987 total Rockeyes against armor, artillery, and antipersonnel targets. The remainder were dropped by Air Force (5,345) and Navy (6,814) aircraft.

Physical Characteristics

Length:	7.5 ft (2.3 m)
Diameter:	13.2 in (335 mm)
Tail Span	2.8 ft (0.85 m)
Weight:	485 lbs (220 kg)
Filling:	247 bomblets



Drawing: via ORDATA Online Website

Bomb MK 118 MOD 0

Data for MK 118 MOD 0:

Length: 34.3 cm (13.5 in)
Diameter: Body: 53 mm (2.1 in)
Fin assembly: 57 mm (2.25 in)
Weight: 590 g (1.3 lb)
Explosive: 170 g (0.37 lb) Oct

Reference: www.fas.org

Ordnance Technical Data Sheet
U.S. BOMB, 25-LB, PRACTICE, MK-76

Spotting Charge. Photo by J. Pitcher

Nomenclature:	U.S. Bomb, 25-lb, Practice, MK-76
Ordnance Family:	Bomb
DODIC:	E9AF, E9AE
Filler:	Signal Cartridge, typically MK-4 MOD 3 (red phosphorus), CXU-3A/B or CXU-2/B (titanium tetrachloride)
Filler weight:	Various (.16 lbs to .38 lbs)
Item weight:	25 lbs (11,000 grams)
Diameter:	4.00 in
Length:	Dependent on Mod (22.5 in to 25.07 in)
Fuze:	Impact or impact-inertia fired

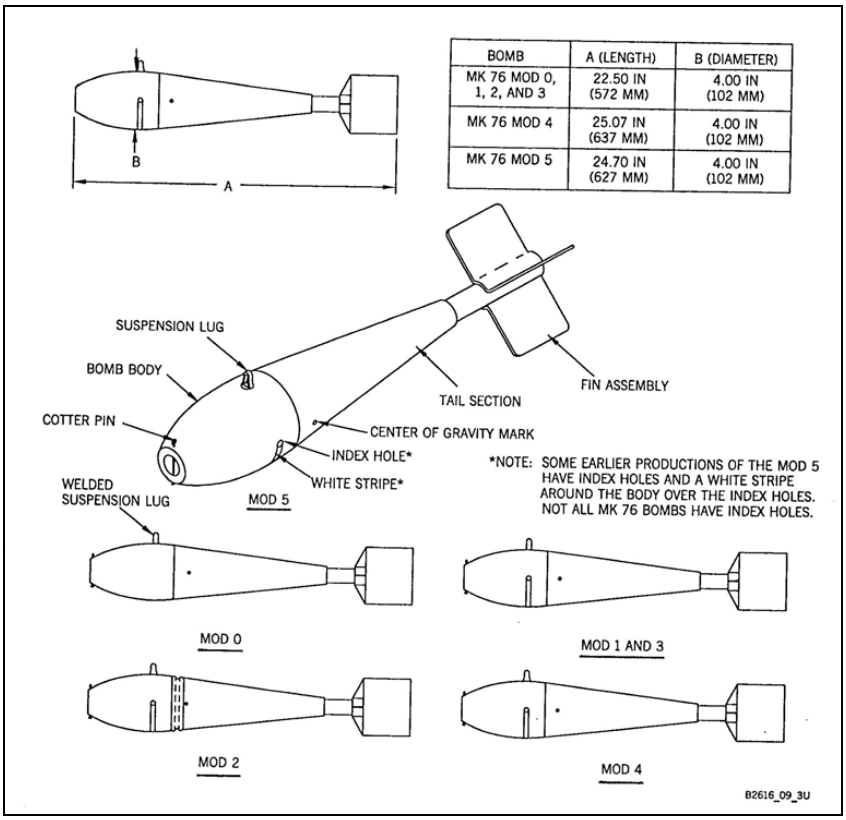
Usage: These are air-dropped, impact or impact-inertia-fired signal-generating practice bombs used to train aircrews in the bombing of surface targets.

Description: The Mk 76-series bombs are painted black or blue. The Mk 76 Mods 1, 2, 3, 4, and some Mod 5 bombs have a 0.25-inch (6-millimeter) white stripe over the index holes. The bombs contain no hazardous components. Hazardous components are contained in the signal cartridge or spotting charge. These bombs are signal-generating, impact-or impact-inertia-fired practice/simulated bombs. These bombs use either the Mk 4-series, Mk 5 Mod 0, CXU-3/B, CXU-3A/B signal cartridge, or the CXU-2/B spotting charge. The Mk 76-series and BDU-33-series bombs are cast iron with sheet steel fin assemblies.

*__Titanium tetrachloride__ is a colorless to pale yellow liquid that has fumes with a strong odor. If it comes in contact with water, it rapidly forms hydrochloric acid, as well as titanium compounds. Titanium tetrachloride is not found naturally in the environment and is made from minerals that contain titanium. It is used to make titanium metal and other titanium-containing compounds, such as titanium dioxide, which is used as a white

pigment in paints and other products and to produce other chemicals. Military use it as a component of spotting charges. Titanium tetrachloride is very irritating to the eyes, skin, mucous membranes, and the lungs. Breathing in large amounts can cause serious injury to the lungs. Contact with the liquid can burn the eyes and skin.

***Red Phosphorus** may be harmful if absorbed through skin, ingested, or inhaled, and may cause irritation of the skin, eyes, upper respiratory tract, gastrointestinal tract, and mucous membranes. Inhalation of red phosphorus dust may cause bronchitis. Ingestion of red phosphorus may also cause stomach pains, vomiting, and diarrhea. Effects may vary from mild irritation to severe destruction of tissue depending on the intensity and duration of exposure. Prolonged and/or repeated skin contact may result in dermatitis. Chronic exposure may cause kidney and liver damage, anemia, stomach pains, vomiting, diarrhea, blood disorders, and cardiovascular effects. Chronic ingestion or inhalation may induce systemic phosphorus poisoning. If red phosphorus is contaminated with white phosphorus, chronic ingestion may cause necrosis of the jaw bone ("phossy-jaw").



BOMB	A (LENGTH)	B (DIAMETER)
MK 76 MOD 0, 1, 2, AND 3	22.50 IN (572 MM)	4.00 IN (102 MM)
MK 76 MOD 4	25.07 IN (637 MM)	4.00 IN (102 MM)
MK 76 MOD 5	24.70 IN (627 MM)	4.00 IN (102 MM)

HAZARDS: Explosive; Red phosphorus or Titanium tetrachloride; Smoke/incendiary.

References: ATSDR; The Aviation Ordnanceman; TRI-DDS website; MIDAS; Global Security.org.

Ordnance Technical Data Sheet
U.S. BOMB, 500-LB, PRACTICE, MK-82

Nomenclature:	MK-82, 500-lb, Practice Bomb
Ordnance Family:	Bomb
DODIC:	E9an or F243
Filler:	None (maybe fitted with spotting charge/signals)*
Filler weight:	Not Provided
Item weight:	226.80 kg (500 lbs)
Diameter:	274.00 mm (10.79 in)
Length:	1.67 m (65.90 in)
Fuze:	Impact
Hazards:	Ejection; EMR: Explosive; Frag; Movement; Proximity; Smoke/Incendiary

Usage: The MK-81 through MK-84 concrete or sand-filled practice bombs are used to train pilots in delivery techniques. These bombs normally do not contain an explosive filler or spotting charge. Explosive-loaded practice bombs have been found; therefore, all MK-81 through MK-84 concrete and sand-filled bombs should be treated as suspect. These bombs may contain live internal fuzes with boosters, live external fuzes and adapter-boosters, or a spotting charge adapter with a signal cartridge installed. They are all designed to function on impact, producing blast and fragmentation or a puff of white smoke.

Description: The MK-82 (modified) bomb has a welded nose plate and the BDU-50/B bomb has a threaded nose with a plastic plug installed. The aft end of the MK-82 (modified) bomb is closed with a removable tail plate for filling operations and the BDU-50/B bomb is closed with a base plate, neither of which contain a threaded fuze well. The bomb body, conical fin assembly, and closure plugs are steel.

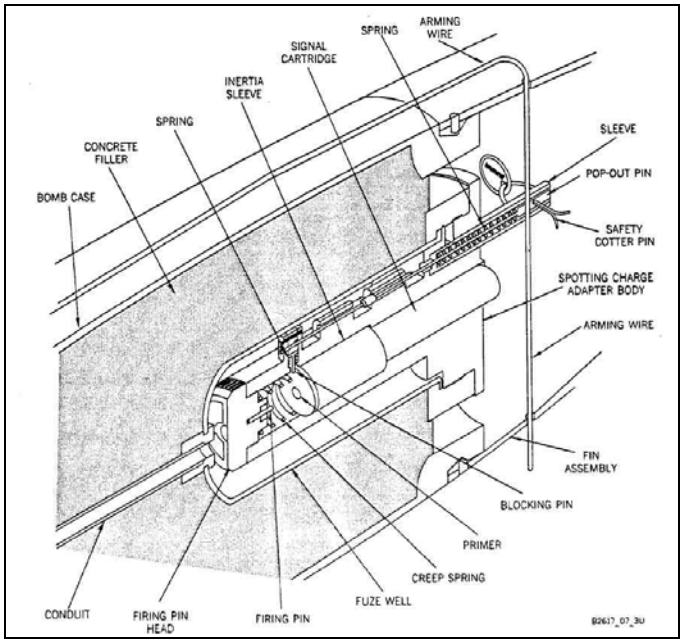
The MK-82 inert bomb is painted olive drab with a 38-millimeter (1.50-inch)-wide yellow band followed by a 51-millimeter (2.00-inch)-wide blue band on the nose. The markings SPOTTING CHARGE INSTALLED, (the date), and 6.25 POUNDS COMPOSITION C4, are stenciled in white on each side of the bomb next to the suspension lugs.

***Titanium tetrachloride** is a colorless to pale yellow liquid that has fumes with a strong odor. If it comes in contact with water, it rapidly forms hydrochloric acid, as well as titanium

compounds. Titanium tetrachloride is not found naturally in the environment and is made from minerals that contain titanium. It is used to make titanium metal and other titanium-containing compounds, such as titanium dioxide, which is used as a white pigment in paints and other products and to produce other chemicals. Military use it as a component of spotting charges. Titanium tetrachloride is very irritating to the eyes, skin, mucous membranes, and the lungs. Breathing in large amounts can cause serious injury to the lungs. Contact with the liquid can burn the eyes and skin.

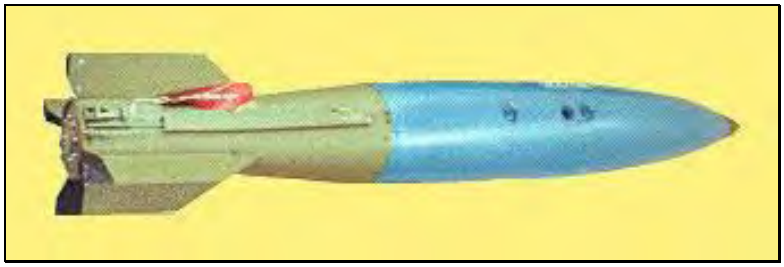
****Pyrotechnic** and screening devices contain combustible chemicals which, when ignited, rapidly generate a flame of intense heat, flash, infrared radiation, smoke or sound display (or combinations of these effects) for a variety of purposes. Compared to other explosive substances, pyrotechnics are more adversely affected by moisture, temperature, and rough handling. Some compositions may become more sensitive, and even ignite, when exposed to moisture or air. Mixtures which contain chlorates and sulfur are susceptible to spontaneous combustion. Most pyrotechnics produce a very hot fire that is difficult to extinguish and most burn without serious explosions. Many chemicals used in pyrotechnics produce toxic effects when ignited. Other pyrotechnics, which contain propelling charges, create an extremely hazardous missile hazard if accidentally ignited.

*** **Composition C-4**: This is a (91/9) RDX and plastic explosive composition. It is semi-plastic putty-like material, dirty white to light brown in color, less sensitive, more stable, less volatile and more brisant than composition C-3. It is a non-hydroscopic material that has found application in demolition blocks and specialized uses.



Reference: ORDATA Online, MIDIAS.

Ordnance Technical Data Sheet
U.S. BOMB, 1,000-LB, PRACTICE, MK-83



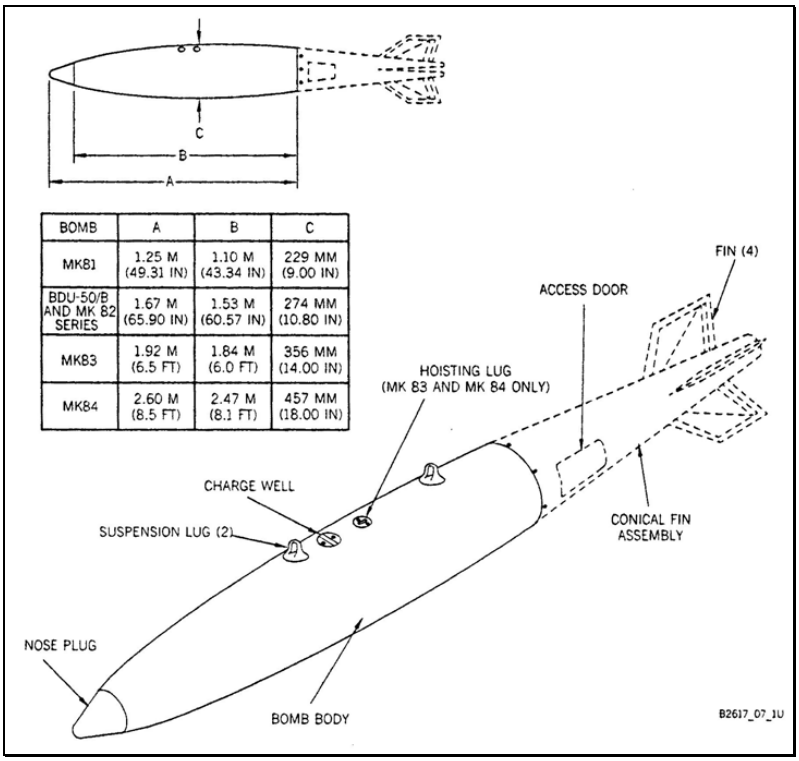
Nomenclature:	U.S. BOMB, 1,000-LB, PRACTICE, MK-83
Ordnance Family:	Bombs
DODIC:	E511
Explosive:	None
Item weight:	1,054 lbs
Diameter:	14 in (356 mm)
Length:	6.5 ft (1.92 m) nose to end of bomb body (does not include fin)
Frag Range:	20 m
Hazard:	Ejection; EMR; Frag; Explosive (HE); Movement; Proximity (VT); Smoke/Incendiary
Explosive Weight:	0 gm
Component Materials:	The bomb body, conical fin assembly, and closure plugs are steel.

Usage: The MK-81 through MK-84 concrete or sand-filled practice bombs are used to train pilots in delivery techniques. These bombs normally do not contain an explosive filler or spotting charge. Explosive-loaded practice bombs have been found; therefore, all MK-81 through MK-84 concrete and sand-filled bombs should be treated as suspect. These bombs may contain live internal fuzes with boosters, live external fuzes and adapter-boosters, or a spotting charge adapter with a signal cartridge installed. They are all designed to function on impact, producing blast and fragmentation or a puff of white smoke.

Description: The tail fuze cavity will be closed with a closure plug, spotting charge adapter, fuze, or conical plug. The nose fuze cavity will be closed with a fuze or nose plug. The nose plug will be either conical with two wrench flats, or streamlined with a spanner hole. Depending on the fuzing, the bombs may have an arming wire assembly, a lanyard, a cable, or an electrical charging receptacle installed. The charging well between the suspension lugs may be closed by a plug or may be fitted with an electrical charging receptacle, a lanyard lock, a fuze initiator, or an arming safety switch. The suspension lugs are 356 millimeters (14.00 inches) apart, except on the MK-84 they are 762 millimeters (30.00 inches) apart. The bombs may be fitted with conical or retarding fin assemblies. The bombs can be internally or externally fuzed. The arming assembly for a

mechanical tail fuze may extend through the base or the side of the conical fin assembly, depending on the arming assembly used. An empty fuze cavity may be closed by a closure plug; however, the presence of a closure plug in a fuze cavity does not indicate the absence of a fuze. Bombs with certain fuzes have a closure plug screwed into the fuze cavity, making direct identification of the fuze impossible. When the fuze is not exposed, identification may be aided by observation of certain fuze-related features such as the type of closure plug in the fuze cavities and the components installed in the charging well. Other features such as the presence of arming vanes and reach rods may also aid in determining the type of fuze used.

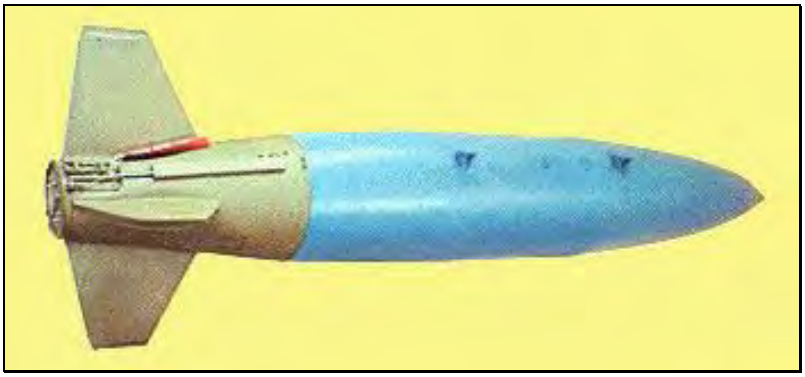
The MK-81 through MK-84 concrete- or sand-filled bombs are painted blue or olive drab, with white or black markings. Bombs fitted with a signal charge will have a brown or yellow band no wider than 76 millimeters (3.00 inches) circumscribed near the nose of the bomb. However, explosive-loaded practice bombs may be found without markings or color band indicating the explosive content. Inert-loaded MK-82 Mod 2 practice bombs may be found with an olive drab thermal coating and a 76-millimeter (3.00-inch)-wide blue nose band. Loading information is stenciled on the thermal coating. Thermally protected practice bombs are also die-stamped on the base plate to indicate their inert filler.



BOMB	A	B	C
MK81	1.25 M (49.31 IN)	1.10 M (43.34 IN)	229 MM (9.00 IN)
BDU-50/B AND MK 82 SERIES	1.67 M (65.90 IN)	1.53 M (60.57 IN)	274 MM (10.80 IN)
MK83	1.92 M (6.5 FT)	1.84 M (6.0 FT)	356 MM (14.00 IN)
MK84	2.60 M (8.5 FT)	2.47 M (8.1 FT)	457 MM (18.00 IN)

References: ORDATA Online; MIDAS.

Ordnance Technical Data Sheet
U.S. BOMB, 2,000-LB, PRACTICE, MK 84

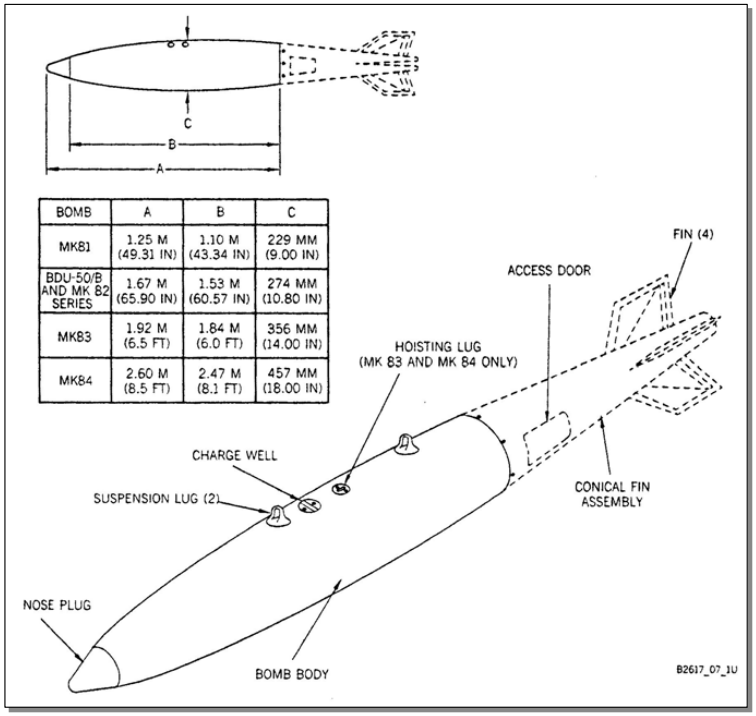


Nomenclature: U.S. BOMB, 2,000-LB, PRACTICE, MK 84
Ordnance Family: Bombs
DODIC: E9bd
Filler: Signal cartridge MK-4 Mod 3 (red phosphorus)
Item weight: 2,039 lbs
Diameter: 18 in (457 mm)
Length: 8.5 feet (2.6 m) without fin
Frag Range: 20 m
Hazard: Ejection; EMR; Frag; Explosive (HE); Movement; Proximity (VT); Smoke/Incendiary

Usage: The MKs 81 through 84 concrete or sand-filled practice bombs are used to train pilots in delivery techniques. These bombs normally do not contain an explosive filler or spotting charge. Explosive-loaded practice bombs have been found; therefore, all MK-81 through MK-84 concrete and sand-filled bombs should be treated as suspect. These bombs may contain live internal fuzes with boosters, live external fuzes and adapter-boosters, or a spotting charge adapter with a signal cartridge installed. They are all designed to function on impact, producing blast and fragmentation or a puff of white smoke.

Description: MK-81 through MK-84 and MK-82 inert bombs. The tail fuze cavity will be closed with a closure plug, spotting charge adapter, fuze, or conical plug. The nose fuze cavity will be closed with a fuze or nose plug. The nose plug will be either conical with two wrench flats, or streamlined with a spanner hole. Depending on the fuzing, the bombs may have an arming wire assembly, a lanyard, a cable, or an electrical charging receptacle installed. The charging well between the suspension lugs may be closed by a plug or may be fitted with an electrical charging receptacle, a lanyard lock, a fuze initiator, or an arming safety switch. The suspension lugs are 356 millimeters (14.00 inches) apart, except on the MK-84 they are 762 millimeters (30.00 inches) apart. The

bombs may be fitted with conical or retarding fin assemblies. The bombs can be internally or externally fuzed. The arming assembly for a mechanical tail fuze may extend through the base or the side of the conical fin assembly, depending on the arming assembly used. An empty fuze cavity may be closed by a closure plug; however, the presence of a closure plug in a fuze cavity does not indicate the absence of a fuze. Bombs with certain fuzes have a closure plug screwed into the fuze cavity, making direct identification of the fuze impossible. When the fuze is not exposed, identification may be aided by observation of certain fuze-related features such as the type of closure plug in the fuze cavities and the components installed in the charging well. Other features such as the presence of arming vanes and reach rods may also aid in determining the type of fuze used.



BOMB	A	B	C
MK81	1.25 M (49.31 IN)	1.10 M (43.34 IN)	229 MM (9.00 IN)
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MK83	1.92 M (6.5 FT)	1.84 M (6.0 FT)	356 MM (14.00 IN)
MK84	2.60 M (8.5 FT)	2.47 M (8.1 FT)	457 MM (18.00 IN)

The MK-81 through MK-84 concrete- or sand-filled bombs are painted blue or olive drab, with white or black markings. Bombs fitted with a signal charge will have a brown or yellow band no wider than 76 millimeters (3.00 inches) circumscribed near the nose of the bomb. However, explosive-loaded practice bombs may be found without markings or color band indicating the explosive content. Inert-loaded MK-82 Mod 2 practice bombs may be found with an olive drab thermal coating and a 76-millimeter (3.00-inch)-wide blue nose band. Loading information is stenciled on the thermal coating. Thermally protected practice bombs are also die-stamped on the base plate to indicate their inert filler.

References: ORDATA Online; MIDAS.

Backgrounder

Integrated Defense Systems
P.O. Box 516
St. Louis, MO 63166
www.boeing.com

Joint Direct Attack Munition

Description & Purpose:
The Joint Direct Attack Munition (JDAM) is a low-cost guidance kit produced by Boeing that converts existing unguided free-fall bombs into accurately guided "smart" weapons. The JDAM kit consists of a tail section that contains a Global Positioning System/Inertial Navigation System and body strakes for additional stability and lift.

Additional growth to the JDAM low-cost family of weapons includes Laser JDAM, the incorporation of a laser sensor that improves JDAM's current near-precision accuracy to precision accuracy and facilitates prosecution of targets of opportunity (including moving targets); JDAM Extended Range (JDAM ER), the incorporation of a low-cost wing set to extend JDAM's standoff range to greater than 40 miles, and the incorporation of JDAM guidance on other warheads such as naval mines, heavy penetrator warheads and new specialty warheads.

Customer(s):
Both the U.S. Air Force and U.S. Navy employ JDAM. Its first operational use was during Operation Allied Force in the Balkans in 1999. JDAM has been used extensively in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom. The first international sale was made to Israel in 2000. Since then, 18 additional international customers have purchased JDAM.

General Characteristics:
Currently, MK-84 2,000-pound and BLU-109 2,000-pound (900-kg) bombs (GBU-31); MK-83 (GBU-32); and MK-82 500-pound (225-kg) bombs (GBU-38) are in production to make the cost-effective JDAM. When employed, these weapons have proven highly accurate and can be delivered in any flyable weather. JDAM can be launched from more than 15 miles from the target with updates from GPS satellites to help guide the weapon to the target.

The JDAM production team includes Honeywell Inc. (inertial measurement unit); Rockwell Collins (global positioning system receiver); HR Textron (tail actuator subsystem); Lockheed Martin Tactical Defense Systems (mission computer); Lockely (tail fairing); Enser and Eagle-Picher (battery); and Stremel (strakes and cable cover).

Background:
The full-scale production decision (milestone III) for JDAM was made by the U.S. Department of Defense (DoD) in March 2001. In November 2004, Boeing delivered the 100,000th JDAM to the U.S. military. As of June 2008, Boeing has delivered more than 195,000 JDAM tail kits and still produces over 1,200 JDAMs every month. The DoD now plans to procure about 217,000 JDAM kits in several configurations to fit the various warheads.

Contact: Tim Deaton
Global Strike Systems
The Boeing Company
(314) 232-5886
timothy.r.deaton@boeing.com

August 2008

Raytheon

JSOW
Family of Precision Strike Weapons

The Joint Standoff Weapon is a modular, affordable, highly-lethal weapon revolutionizing strike warfare.

Benefits

- Increased weapon and platform survivability
- Multiple launch capability
- Tactical flexibility
- Jointness and interoperability
- Cost effective

Joint Standoff Weapon (JSOW)
This new generation glide weapon ensures warfighter survivability by enabling precision air strike launches from well-beyond most enemy air defenses, at kinematic standoff ranges up to 70 nm (130 km). JSOW Block II development significantly reduced JSOW unit costs and added Selective Availability/Anti-Spoofing Module (SAASM) Global Positioning System (GPS) capability. It was completed in 2006.

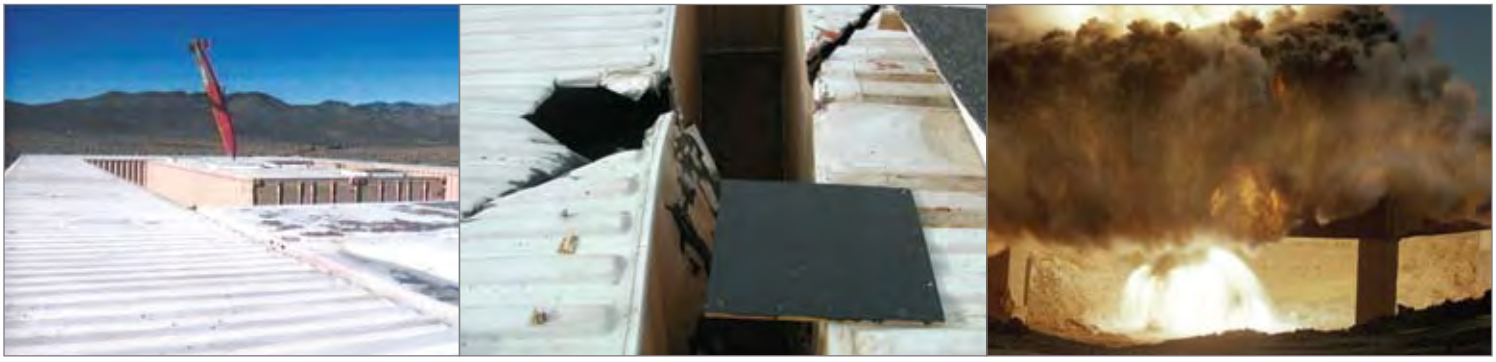
The family of JSOW precision strike weapons is modular in design with variants that can integrate different lethal submunitions, and a blast/fragmentation unitary warhead and a hardened target penetrator that can be programmed for blast and fragmentation effects. JSOW targets vary from all types of area targets to hard point targets. JSOW's low radar cross section and infrared signature are key stealth features and ensure a high probability of survival en route to heavily defended targets.

The blast/fragmentation unitary variant incorporates the insensitive 500-pound BLU-111 (MK-82). The BROACH penetrator/blast/fragmentation variant incorporates an uncooled Imaging Infrared (IIR) autonomous terminal seeker and tracker, and integrates the BROACH dual-stage blast/fragmentation and/or penetrator warhead. This variant enables precision attack of point targets.

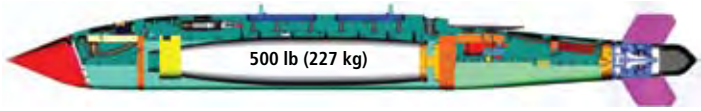
Since 1999, JSOW has been combat proven in operations Southern Watch, NATO Allied Force, Enduring Freedom and Iraqi Freedom with more than 400 weapons employed. More than 3,400 JSOWs have been produced.

Operations
Today, JSOW variants can engage and destroy virtually the entire target set for U.S. forces spanning a range of threat environments. All JSOW variants are guided to the target area by a highly-integrated GPS and Inertial Measurement System. JSOW receives the targeting information in preplanned mode, in the cockpit with data received while airborne through onboard sensors, or through other third-party targeting assets. After the AGM-154C BROACH variant arrives in the target area, it utilizes the IIR seeker for autonomous guidance in the terminal phase of the flight to attack with precision accuracy.

Modularity/Growth
JSOW is designed to take advantage of new developments in payloads and sensors through design modularity of the air vehicle. The payload bay can accommodate lethal and nonlethal payloads — from warheads to pamphlets to sensor packages. The terminal seeker space can accept the latest sensors as they are developed.



JSOW-C with the BROACH Warhead



JSOW-A-1 with the BLU-111 Warhead

A technology demonstration phase is currently underway leading to a spring 2009 JSOW Extended Range (ER) Free Flight Test.

Performance
JSOW demonstrated all standoff accuracy and lethality requirements in a highly-successful development and operational test program. This demonstrated the ability to launch from high or low altitudes and accurately navigate to the target area via selected waypoints, further enhancing weapon and aircrew survivability.

JSOW A-1 (BLU-111) is currently in production for FMS only. JSOW C is currently in production for four international FMS customers.

The AGM-154C (BROACH) has demonstrated precision accuracy within approximately four feet in developmental and operational tests. The weapon is in full-rate production and achieved initial operating capability in February 2005.

JSOW C-1 adds a two-way datalink and moving maritime target capability, is in full-scale development and scheduled for initial operation capability in FY 2010.

JSOW is integrated on the F-15E, F-16, F/A-18, B-2 and B-52 aircraft. JSOW is also a threshold internal bay weapon for the F-35 Joint Strike Fighter initial operational capability. The aircraft compatibility built into the JSOW design will minimize integration costs for future aircraft platforms. The maturity and proven capabilities within the JSOW make this a user-friendly, highly-reliable, cost-effective system.

JSOW Specifications

Length:	160 in	(4.1 m)
Weight:	~1,050 lb	(475 kg)

Aircraft Compatibility:
- F-16, F-15E, F/A-18, B-2, B-52, P-3, F-35 (JSF), JAS 39 Gripen, Eurofighter 2000, Tornado
- Multiple carriage capable on BRU-55/BRU-57 twin launchers
- MIL-STD-1553/1760 and NATO STANAG 3837 AA interface for full capability

Range (unpowered):
- Low altitude 500-ft launch 12 nm (22 km)
- High altitude 40,000-ft launch 70 nm (130 km) maximum kinematic range

JSOW-ER (powered): – In technology demonstration phase
- ~155 nm (290 km) — Spiral 0

Warheads:
- 500-lb BROACH — Blast/fragmentation and/or penetrating warhead
  Demonstrated 5 ft (1.5 m) concrete penetration
- 500-lb BLU-111 — Unitary blast/fragmentation warhead

Raytheon Company
Missile Systems
Air Warfare Systems
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520.663.8138 fax

www.raytheon.com

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UK-DTI license required. Printed in the U.S.A. MS 1/09 80657Ra 1.5K

APPENDIX E

Reference

B. Naval Surface Warfare Center, Corona: Laser Range Safety Report for Commander United States Naval Forces, Mariana Islands, Guam. September 2009.

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DEPARTMENT OF THE NAVY
NAVAL SURFACE WARFARE CENTER
CORONA DIVISION
PO BOX 5000
CORONA, CA 92878-5000

IN REPLY REFER TO
1200
Ser FT30/033
02 Sep 09

From: Commanding Officer, Naval Surface Warfare Center, Corona Division
To: Commanding Officer, Commander United States Naval Forces, Marianas Islands, Guam

Subj: LASER RANGE SAFETY REPORT FOR COMMANDER UNITED STATES NAVAL FORCES, MARIANAS ISLANDS, GUAM

Ref: (a) Commander, US Pacific Fleet N0534A09WR001D0
(b) OPNAVINST 5100.27B/MCO 5104.1C
(c) E-mail correspondences between Lt. Pike, CNM AT, Mr. Randall Wong, PMRF, Mr. Larry Rustigian, NSWC Corona, and Ms. Ashleigh Lizarraga, NSWC Corona, from 15 August 2009 through 25 August 2009.

Encl: (1) Range Laser Safety Report for Commander United States Naval Forces, Marianas Islands, Guam 27 August 2009.

1. In accordance with reference (a) tasking and funding, we conducted an on-site laser range safety survey on the Island of Guam under the ownership of Commander Naval Marianas Area Training (CNM AT) on 07 July 2009. The survey results are provided in enclosure (1). We determined that laser operations at CNM AT to be in full compliance with reference (b). The CNM AT Range Safety Department personnel provided comments and concurrence on the original draft by reference (c).

2. If additional information is required, please contact Mr. Larry Rustigian (FT33) at (951) 273-5029 or DSN 933-5029.

M. C. GAMMON
By direction

NAVAL SURFACE WARFARE CENTER CORONA DIVISION

LASER SAFETY SURVEY REPORT

For

COMNAVMARIANAS AREA TRAINING

27 August 2009

Prepared by:
Lorrie R. Agnew (TLSO, RLSS)

Compiled by:
Ashleigh Lizarraga (TLSO)

1. INTRODUCTION

1.1 The on-site laser safety survey was performed on the Island of Guam under the ownership of COMNAVMARIANAS Area Training (CNM AT) laser ranges on 07 July 2009.

1.2 The next range laser safety survey for CNM AT should be completed no later than July 2012.

1.3 CNM AT laser ranges are under the operational control of the United States Navy.

1.4 This report is valid for three (3) years from the date of this report, 27 August 2012.

2. CONDITIONS, LIMITATIONS, AND DISCLAIMERS

2.1 The safe lasing profiles discussed in this report are not to be construed as mandated aircraft flight paths, but rather as boundary limits at a given location that distinguish between safe and unsafe laser use conditions.

2.2 This evaluation addresses only the systems approved for general training scenarios by the Navy Laser Safety Review Board (LSRB). A separate evaluation should be done on a case-by-case basis by the Range Laser Safety Specialist (RLSS) on laser systems used in non-traditional modes, research & development applications, and prototype systems.

2.3 Force on force scenarios are not evaluated in this report and should only be allowed with the express consent of the Range LSO using safety measures established by the LSRB.

2.4 A magnetic declination of 1˚ 21’ East from True North was used for this report. The magnetic declination changes by 0˚ 0’ West per year from True North.

2.5 Bearings shown in the graphic images used to define the Laser Hazard Danger Zones (LHDZs) are referenced to True North and Magnetic North.

3. SOURCE DOCUMENTS/REFERENCES

3.1 OPNAVINST 5100.27B/MCO 5104.1C

3.2 NSWC Dahlgren Division ltr 8240.2 Ser G71-237 of 21 Jul 2003.

3.3 *W-517 Certification In-Brief* presented by Lieutenant Pike

3.4 Data for reporting has been sourced from multiple documents and geographic datums. Geographic datums used have included; North American Datum of 1927 (NAD27), North American Datum of 1983 (NAD83), and World Geodetic System of 1984 (WGS84). Coordinates are converted from NAD27 to WGS84 using GEOTRANS V2.2.2. Coordinates are converted from NAD27 to NAD83 and reverse by using CORPSCON. All coordinates shown in this report are referenced in WGS84.

3.5 The Military Grid Reference System (MGRS), Universal Transverse Mercator (UTM), and Geodetic (Latitude/Longitude – LAT/LONG) grid coordinates were used to describe the various ranges, target areas, and firing locations.

4. DESCRIPTION

4.1 **Location.** W-517 is located in Guam, which is the largest southernmost island of the Mariana Archipelago. The island is approximately 6,000 miles West of San Francisco; 3,700 miles Southwest of Honolulu; 1,500 miles Southeast of Tokyo; 2,100 miles Southeast of Hongkong; 1,500 miles East of Manila; and 3,100 miles Northwest of Sydney at 13 North latitude and 144 East longitude.

4.2 **Restricted Airspace**. W-517 does not lie within restricted airspace.

4.3 **CNM AT Target Areas (TAs).** CNM AT consists of one (1) Target Area that is designated for Aerial Lasing only. The area is bounded as follow:

4.3.1 CNM AT TA W-517 TA is defined by the following coordinates:

Geodetic		
Latitude	**Longitude**	**MGRS**
12 54 59.3N	144 33 17.4E	55PBQ3468029166
12 55 04.4N	144 42 38.5E	55PBQ5160329166
12 44 57.4N	144 36 48.2E	55PBQ4086610601
12 45 01.5N	144 30 33.8E	55PBQ2957110832

4.4 **CNM AT Firing Line (FL).** CNM AT consists of one (1) Firing Line that is designated for Aerial Lasing only. The area is bounded as follow:

4.4.1 CNM AT FL W-517 FL is defined by the following coordinates:

Geodetic		
Latitude	**Longitude**	**MGRS**
12 59 1.3N	144 34 23.8E	55PBQ3675536587
12 59 1.2N	144 42 29.4E	55PBQ5139336446

4.5 **Aerial Lasing**. All operations on W-517 consist of Aerial Lasing.

5. RANGE CERTIFICATION

5.1 **Survey.** Mr. Lorrie Agnew and Ms. Ashleigh Lizarraga performed the physical site inspection, took all GPS readings, and provided all GIS support to all personnel in Guam on 07 Jul 2009. Mr. Agnew is a representative of the Naval Surface Warfare Center Corona Division, Force Training Department, Range Sustainment and Geomatic Engineering Branch (FT33) in Corona, CA. He holds certification as a Technical Laser Safety Officer (TLSO) and a Range Laser Safety Specialist (RLSS). Lieutenant Pike, and Commanding Officer Everly were also present during the inspection and took active roles in the In-Brief discussions. Electronics Technician Master Chief Robert Reilly, Lieutenant Conway, and Randall Wong were not present during the on-site inspection, but as well took active roles.

5.2 **Analysis.** Mr. Agnew also performed the analysis for CNM AT Safety Report. Mr. Agnew is from the Naval Surface Warfare Center Corona Division, Force Training Department, Range Sustainment and Geomatic Engineering Branch (FT33) in Corona, CA. He holds a certification as a Technical Laser Safety Officer (TLSO) and a Range Laser Safety Specialist (RLSS).

5.3 **Report.** Ms. Lizarraga gathered information for the compilation of the CNM AT Laser Safety Report. Ms. Ashleigh Lizarraga is a representative of the Naval Surface Warfare Center Corona Division, Force Training Department, Range Sustainment and Geomatic Engineering Branch (FT33) in Corona, CA. She holds a certification as a Technical Laser Safety Officer (TLSO).

6. EVALUATION

6.1 **Aerial Lasing.** The approved aerial lasing systems are limited to 5mrad and 10mrad buffer angles; satisfying both, helo stationary and moving.

6.2 Appendix A contains images of the TAs with a corresponding coordinate information table for each aerial operation.

6.3 Appendix B contains images of the safe lasing profiles in nautical miles (nmi) and feet (ft).

6.4 Appendix C contains all coordinates in UTM, Geodetic, and MGRS formats.

7. RESULTS

7.1 **Aerial Lasing**. Aerial lasing is permitted on all TAs and listed in Appendix B, provided the pilot and crew adhere to the approved laser Standard Operating Procedures (SOPs) and Range Regulations. Table 7-1 displays the available flight headings for the TAs. The safe lasing profiles are contained in Appendix B.

Table 7-1: Training Areas with Appropriate Headings

TAs	Heading (Magnetic)
W-517 (Helo in Hover)	Left Lateral Limit: 204° Right Lateral Limit: 179°
W-517 (Fast Mover)	Left Lateral Limit: 000° Right Lateral Limit: 360°

7.2 Nominal Ocular Hazard Distance (NOHD) was used to generate the LHDZ when analyzing the Helo in Hover/Moving operation. Only systems with a maximum NOHD (12cm aided) of 87.59 km or less are approved.

8. RECOMMENDATIONS & FINDINGS

8.1 For this report, natural terrain mitigation based on the laser system's platform was used. If the natural terrain of the range does not contain the laser energy, then it is the responsibility of the Range Laser Safety Officer to contact NSWC Dahlgren for specific information such as Nominal Ocular Hazard Distances (NOHDs), Optical Densities (ODs), and other laser weapon system parameters to determine whether the hazardous energy levels are within the limits of the range boundary. If a Standard Operating Procedure (SOP) for a certain exercise proscribes scenarios that are less restrictive than described in this report, then it will be the Range Safety Department's responsibility to ensure safe laser use.

8.2 CNM AT has a laser safety program that is in compliance with OPNAVINST 5100.27B/MCO 5104.1C.

8.3 All laser systems used on CNM AT laser ranges are to be used only against targets located within the designated TAs.

8.4 CNM AT should post visible markings that indicate the extreme boundaries of the TAs.

8.5 No adverse conditions to aerial lasing were observed on CNM AT laser ranges during the on-site inspection.

8.6 If standing water, glass, or any other reflective materials becomes present within or near any of the established TAs or LHDZs, then it will be the responsibility of the training facility LSO to either suspend the exercise or ensure personnel that are not within the Nominal Ocular Hazard Distance (NOHD) of the system in use.

8.7 All laser operators should meet the following minimum requirements:

8.7.1 Have received the appropriate laser range briefing from the training facility LSO prior to use of any laser range, if deemed necessary by the LSO.

8.7.2 Are familiar in detail with CNM AT Safety Program and adhere to the procedures established therein.

8.7.3 Communicate with range safety/control during laser operations, if deemed necessary by the training facility LSO.

8.7.4 Fire aerial lasers only after positive identification of the approved targets.

8.8 The following are suggested general laser safety guidelines that apply to laser personnel during laser exercises:

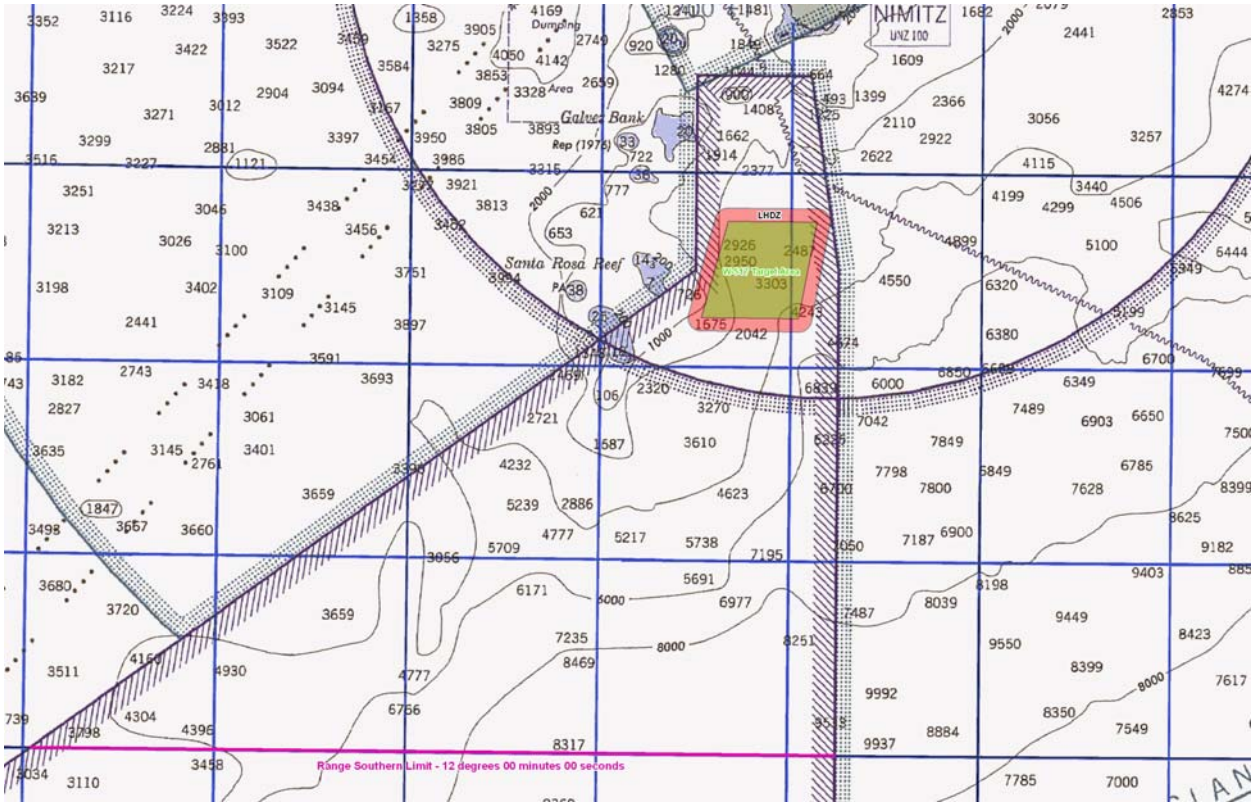
8.8.1 Prior to laser operations, pilots should make a ‘cold pass’ to ensure that the TAs and corresponding LHDZs are clear of unauthorized personnel.

8.8.2 The training facility LSO should ensure that all personnel in the vicinity of the laser range remain outside the TAs and LHDZs during laser operations and/or wear the appropriate eye and skin protection.

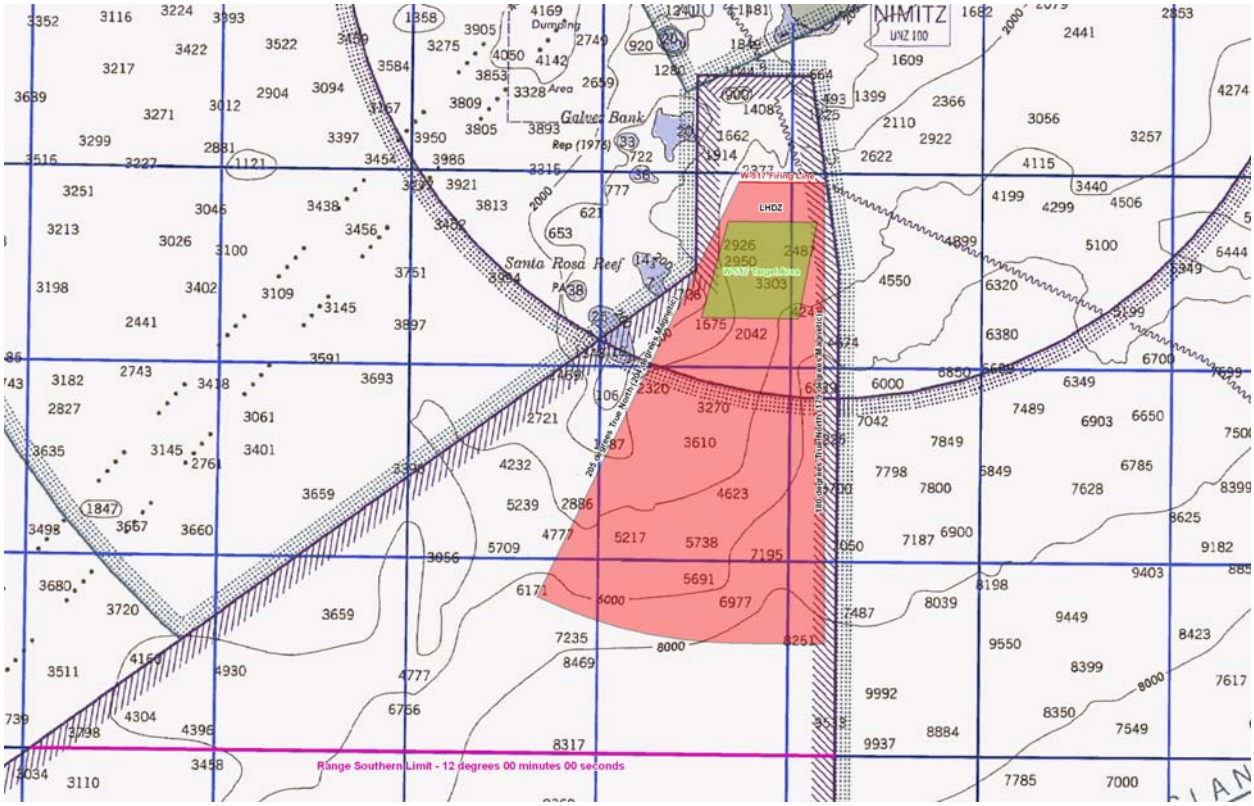
8.9 Applicable Notice to Airmen (NOTAM) and Local Notice to Mariners (NOMAR) should be issued as required for any planned operations.

Appendix A

Airborne Laser Systems Laser Danger Zones



TA	Maximum Allowable Buffer	Aircraft Heading
W-517	5 mrad	000 to 360 degrees.
TA Coordinates (MGRS)	55PBQ3468029166 to 55PBQ5160329166 to 55PBQ4086610601 to 55PBQ2957110832 to 55PBQ3468029166.	
Approved Platform(s)	Fixed Wing Aircraft System.	



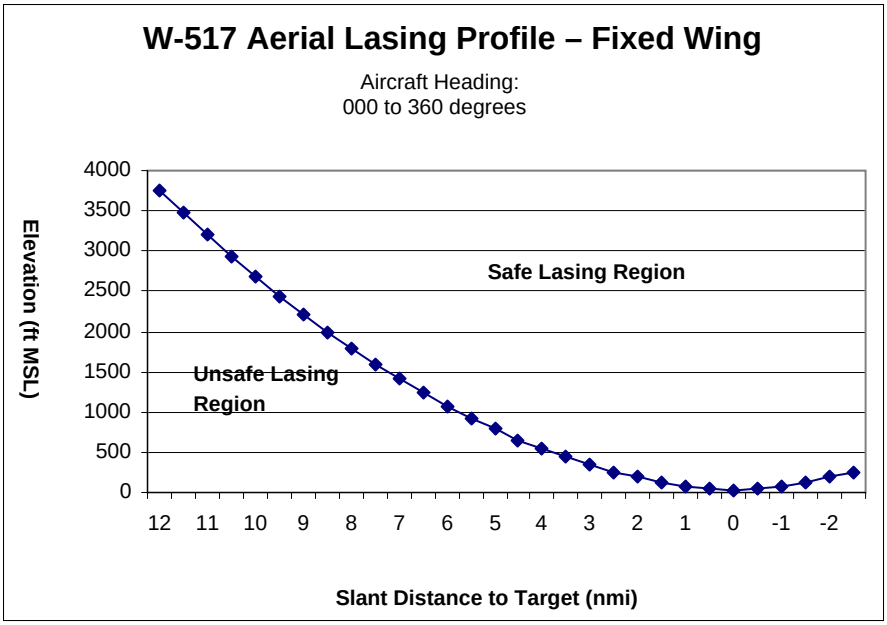
TA	FL	Maximum Allowable Buffer	Lateral Limits
W-517	W-517	10 mrad	Left Lateral Limit: 204° Magnetic Right Lateral Limit: 179° Magnetic
FL Coordinates	55PBQ3675536587 to 55PBQ5139336446.		
LTA Coordinates (MGRS)	55PBQ3468029166 to 55PBQ5160329166 to 55PBQ4086610601 to 55PBQ2957110832 to 55PBQ3468029166.		
Approved Platform(s)	Helicopter in Hover/Moving.		

*Only systems with a maximum NOHD (12cm aided) of 87.59 km are approved.

Appendix B

Airborne Laser Systems

Safe Lasing Profiles



Slant Distance (nmi)	Altitude (feet)	Slant Distance (nmi)	Altitude (feet)
12.0	3753	4.5	657
11.5	3468	4.0	541
11.0	3194	3.5	436
10.5	2932	3.0	342
10.0	2680	2.5	259
9.5	2440	2.0	188
9.0	2211	1.5	128
8.5	1994	1.0	79
8.0	1787	0.5	41
7.5	1592	0.0	15
7.0	1408	-0.5	41
6.5	1235	-1.0	79
6.0	1074	-1.5	128
5.5	924	-2.0	188
5.0	785	-2.5	259

Appendix C

Target Areas (TAs)
C-2

Firing Lines (FLs)
C-3

COMNAVMARIANAS Area Training TA Coordinates Table

		UTM			Geodetic		Military
ID	**Zone**	**Hemisphere**	**Easting**	**Northing**	**Latitude**	**Longitude**	**MGRS**
W-517	55	N	234680	1429166	12 54 59.3N	144 33 17.4E	55PBQ3468029166
	55	N	251603	1429027	12 55 04.4N	144 42 38.5E	55PBQ5160329166
	55	N	248066	1410601	12 44 57.4N	144 36 48.2E	55PBQ4086610601
	55	N	229571	1410832	12 45 01.5N	144 30 33.8E	55PBQ2957110832

COMNAVMARIANAS FL Coordinates Table

	UTM				Geodetic		Military
ID	**Zone**	**Hemisphere**	**Easting**	**Northing**	**Latitude**	**Longitude**	**MGRS**
W-517	55	N	236755	1436587	12 59 1.3N	144 34 23.8E	55PBQ3675536587
	55	N	251393	1436446	12 59 1.2N	144 42 29.4E	55PBQ5139336446

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APPENDIX E

Reference

C. NAVSEA Warfare Center Newport, Portable Underwater Training Range Concept of Operations, pages 8 – 16 (summary), Doc. No. PUTR-PM-002 Version 1, 10 OCT 2006

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1 INTRODUCTION

1.1 Document Purpose

The purpose of this document is to establish a preliminary Concept of Operations (ConOps) for the planned PUTR, reflecting both the capabilities and characteristics of the planned system and the expected operational training environments in which it will be used. This ConOps is intended to promote understanding of the respective roles of the Navy training ranges and training customer activities. Specifically, this ConOps accomplishes the following:

- Relates the key design features and functional capabilities of the PUTR to the FDNF USW exercise requirements to be served.

- Establishes the PUTR operational context in terms of physical and environmental surroundings, participants, and event planning and control in accordance with Reference (A), the PUTR Capability Development Document (CDD).

- Develops a logical sequence of operations for the PUTR, defining the roles of the training range activity and supported customers throughout the cycle of system preparation, transportation, deployment, operation, recovery, and post-exercise restoration and storage for the next cycle.

1.2 Document Organization

This ConOps is organized as follows:

- Section 1, Introduction (this section): Defines the objectives and perspectives guiding the development of the PUTR system. References are provided to PUTR documents describing program background and requirements.

- Section 2, Operational Context: Presents the PUTR mission requirements and related top-level performance requirements, and describes the operational and support environments in which PUTR will be used.

- Section 3, Functional Description: Describes and illustrates the overall PUTR design concept and system architecture, subsystem functions, and principles of operation.

- Section 4, PMRF/Range User Interaction: Explains the role of each key individual involved in the PUTR employment cycle, and describes the information exchanges among operators and between them and the PUTR system.

- Section 5, Acronyms and Abbreviations: Defines the acronyms and abbreviations used in this document.

1.3 References

All PUTR documentation will be located on SCOUTTRACK and on the Code 70 Server at *L:\PUTR\ISO\CM\Approved,* for approved documents or *L:\PUTR\ISO\CM\In Review*, for documents that are in process or in review. SCOUTTRACK is a secure website which will provide access to program information and documentation and is available to all members of the PUTR Team. The following are PUTR documents describing the program plan and requirements:

A) Training Instrumentation Operational Requirement/Acquisition Program Baseline Abbreviated Capability Development Document (CDD) Short Form

B) Integrated Master Schedule (IMS) for the Portable Undersea Training Range (PUTR)

C) System Subsystem Specification (SSS) for the Portable Undersea Training Range (PUTR)

D) Systems Engineering Management Plan, (SEMP)

E) Configuration Management Plan

F) Acquisition Logistics Support Plan (ALSP)

1.4 System Purpose

PUTR employs modern technologies to support coordinated USW training for FDNF and SUBPAC. The PUTR provides a self-contained, portable, undersea training capability supporting current Navy requirements to exercise and evaluate sensor systems, weapons systems, and crews in environments that replicate potential combat areas. This is of critical importance for USW due to the impact of the environment on sensor and weapon performance. The PUTR will complement the capabilities of existing fixed ranges by facilitating training of FDNF Anti Submarine Warfare (ASW) assets that are operating in environmentally approved remote areas not serviced by conventional fixed undersea range facilities.

1.5 System Capability Overview

The PUTR system provides command and control and real-time tracking and data display for several vehicles equipped with MK 84 acoustic pingers. Acoustically tracked vehicles include submarines, surface ships, weapons, targets, and unmanned undersea vehicles. The PUTR system is planned for use at operating sites near Maui, Okinawa, Guam, and near the Southern California Offshore Range (SCORE). The PUTR capability resides in a group of acoustic, electronic, and mechanical components, all transportable by sea, land or air. At-sea deployment and recovery of PUTR subsystems can be accomplished by a vessel of opportunity with capabilities comparable to the Acoustic Pioneer, shown in Figure 1.1-1. Many hardware components will be Commercial-Off-The-Shelf (COTS) and Government-Off-The-Shelf (GOTS) items that can be easily replaced or upgraded.

Figure 1.1-1. Acoustic Pioneer

1.6 History of Development

The PUTR Transponder Subsystem builds upon the existing Portable Acoustic Range (PAR) and Australian Portable Tracking Range (PTR) technologies. PAR successfully demonstrated MK 84 tracking in deep-water, and PTR successfully demonstrated shallow-water tracking. The PUTR Transponder Subsystem will merge the two range concepts into a common hardware base, and provide enhancements to overcome shortcomings of the existing PAR and PTR systems. The PUTR system utilizes existing PMRF Underwater Tracking System (UTS) software and PMRF Range Operations and Control System (ROCS) software.

2 OPERATIONAL CONTEXT

The PUTR initiative responds to the emergent training needs of advanced FDNF assets by providing a capability to safely and effectively conduct coordinated USW training in realistic environments. The PUTR provides a fully portable training range capability; easily deployed and recovered using existing naval assets or commercial vessels of opportunity. The PUTR provides a valuable adjunct to existing fixed-range training facilities, able to satisfy the training requirements of USW forces in remote operating areas anywhere in the world. The PUTR will reduce the need for Environmental Impact Studies (EIS) and Environmental Assessments (EA) by enabling training in areas relatively free of environmental and encroachment constraints. The PUTR will be capable of tracking submarines, surface ships, weapons, targets, and unmanned undersea vehicles (UUVs), equipped with a MK 84 tracking pinger and distribute the data to display systems aboard ship, or at a shore site via satellite.

2.1 Mission Requirements

The primary mission of the PUTR is to support complete coordinated training of forward deployed USW assets such as ships, submarines, torpedoes, UUVs, and undersea targets. PUTR can support in-water tracking of weapons deployed by naval aircraft. Tracking of the aircraft itself requires integration of assets such as the Large Area Tracking Range (LATR). Integration of LATR is not planned in the current system, but could be integrated in future enhancements. As a training range, PUTR is required to support voice/data communication components for range safety in compliance with Department of Defense (DoD) and Range Commanders Council (RCC) standards. Acoustic remote control of MK 30 Mod-1 targets is required.

2.1.1 Primary Users

The primary users of PUTR are FDNF. These units are USW mission capable surface ships such as destroyers, frigates and cruisers. Each may be outfitted with one or more helicopters. Carriers may also embark a squadron of ASW helicopters to provide limited close-in support. Fast attack submarines (SSNs) will use the PUTR, either alone or in conjunction with surface ships. Submarines may act as targets for surface ships or other submarines. The range support vessel may deploy, control, and recover MK 30 Mod-1 acoustic targets.

2.1.2 Mission Engagement Scenarios

The principal type of exercise conducted on the PUTR would be ASW for a wide range of platforms (e.g., ships and aircraft), non-explosive exercise weapons, and training-related devices. Submarines, surface ships, and aircraft all conduct ASW and would be the principal users of PUTR. The requirements of threat realism on the PUTR necessitate training with a variety of sensors, non-explosive exercise weapons, target submarine simulators, and other associated hardware. Many of the materials used on the PUTR are recovered after use; however, some would be abandoned in place. All ordnance used would be non-explosive.

Submarines, surface ships, and aircraft conduct ASW, either individually or as a coordinated force, against submarine targets. Submarine targets include both actual submarines and other mobile targets that simulate the operations of an actual submarine. All undersea target platforms will be equipped with a Fleet standard MK 84 Tracking Pinger. ASW exercises are complex and highly variable. These exercises have been grouped into the four representative scenarios described below. Table 2.1-1 provides additional details regarding the four training scenarios. Table 2.1-2 provides a comprehensive list of the typical platforms supported by PUTR. Table 2.1-3 describes the typical target simulators supported by PUTR. Table 2.1-4 describes typical exercise weapons systems utilized in PUTR training scenarios. Table 2.1-5 describes typical sensor systems utilized in PUTR training scenarios.

- **Scenario 1: One Ship with Helicopter vs. One Submarine.** A ship, with a helicopter embarked, approaches the range area and launches its helicopter to conduct a "stand-off" localization and attack against a submarine serving as a target for the first half of the exercise. Typically, for the second half of the exercise, the ship deploys the helicopter to localize and attack. In some exercises, the ship conducts its own "close in" attack simulation. Each exercise period typically involves the firing of one exercise torpedo by the ship or the helicopter or, in some cases, by both. Some ships carry two helicopters, but only one participates in the exercise at any one time. While the ship is searching for the submarine, the submarine may practice simulated attacks against the ship.

- **Scenario 2: One Submarine vs. Another Submarine**. Two submarines on the range practice locating and attacking each other. If only one submarine is available for the exercise, it practices attacks against a target simulator, such as a MK 30, Mod-1 Mobile Target, or MK 39 Expendable Mobile ASW Training Target (EMATT), or a range support boat. A single submarine may practice shallow water maneuvers without any attack simulation.

- **Scenario 3: Two Ships and Two Helicopters vs. One Submarine**. This scenario involves the same action as Scenario 1, but with two ships and two helicopters searching for, locating, and attacking one submarine. Typically, one ship and helicopter at a time are actively prosecuting while the other ship and helicopter are repositioning. While the ships are searching for the submarine, the submarine may practice simulated attacks against the ships.

- **Scenario 4: One Aircraft vs. One Submarine.** An aircraft flies over the range area and the crew conducts a localized search for a target submarine using available sensors. After the crew detects the submarine, it simulates an attack. Each exercise period typically involves the firing of one exercise torpedo; additional attack phases may be conducted with simulated torpedo firings.

Table 2.1-1: Portable Undersea Training Range Scenarios

Component	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Exercise Participants	One ship and one helicopter vs. submarine target	One submarine vs. one submarine target	Two surface ships and two helicopters vs. submarine target (AKA; "Group SAILEX")	One fixed or rotary wing aircraft vs. one submarine target
Non-explosive Exercise Weapons Used	Lightweight and heavyweight exercise torpedoes	Heavyweight exercise torpedoes	Lightweight and heavyweight exercise torpedoes	Lightweight exercise torpedoes
Active Acoustic Sensors/ Sources Used	Ships' sonar, sonobuoys, range pingers, dipping sonar, torpedo sonar, fathometers, and underwater communication devices	Submarine sonar, range pingers, fathometers, torpedo sonar, and underwater communication devices	Ships' sonar, sonobuoys, range pingers, dipping sonar, torpedo sonar, fathometers, and underwater communication devices	Sonobuoys, dipping sonar, range pingers, fathometers, torpedo sonar, and underwater communication devices
Other Devices Used	Sonobuoys (active and passive), target simulators, expendable bathythermographs, submarine acoustic countermeasures	Submarine acoustic countermeasures, submarine target simulators, expendable bathythermographs	Sonobuoys (active and passive), target simulators, expendable temperature probes, submarine acoustic countermeasures	Sonobuoys (active and passive), target simulators, submarine acoustic countermeasures, expendable bathythermographs
Duration of Exercise	Six hours	Six hours	Six hours	Six hours
Frequency of Exercise	5 events per year	3 events per year	5 events per year	10 events per year
Comments	Submarine targets can be an actual submarine or submarine target.	One submarine simulates a quiet diesel submarine. The other attempts to detect, locate, and simulate attack.	None	Submarine targets can be an actual submarine or submarine target.

Table 2.1-2: Typical Platforms Used in PUTR Training Scenarios

Item	Description
COMBATANT PLATFORMS	
Surface Ships	Multi-mission surface combatants including destroyers, cruisers, and frigates.
Submarines	Submarines are designed to seek and destroy enemy submarines and surface ships. The two types are attack submarines and ballistic missile submarines.
Helicopters	Helicopters operate from zero to 760 m (2,500 ft). Ship-based, anti-submarine & anti-surface threat capability. General purpose is to extend/increase ship sensor/weapon capabilities against submarines, surface ships, and patrol craft. Equipped with search radar, electronic support, dipping sonar, acoustic data link, magnetic anomaly detection gear, and active & passive sonobuoys. SH60 Seahawk is a twin-engine helicopter. SH-60B is based on cruisers, destroyers, and frigates, while SH-60F is carrier based. SH-60R is an upgrade of the SH-60B.
Fixed Wing Aircraft	Naval aircraft operate from near the surface to 3,050 m (10,000 ft). They have advanced submarine detection sensors such as active and passive sonobuoys, directional frequency and ranging (DIFAR), and magnetic anomaly detection (MAD) gear, and have the longest on-station time of any ASW aircraft.
Range Support Craft	Approximate 61-m (200-ft) range support boat. The boat is used for launching and recovering targets, and for recovering exercise torpedoes. On some days, the range boat would retrieve multiple pieces of equipment.

Table 2.1-3: Typical Target Simulators Used in PUTR Training Scenarios

Item	Description
TARGET SIMULATORS	
MK 30 ASW Target Simulator	The MK 30, a torpedo-sized, electrically propelled target, is the current standard US Navy submarine target simulator. The target has a 54-cm (21-in) diameter, a 6.2-m (20-ft) length, and a 1,220-kg (2,700-lb.) weight. It can be launched from a surface craft or dropped by a helicopter, and may be recovered by either surface craft or helicopters. The MK 30 can tow a 92-m (300-ft) array consisting of a hydrophone, a projector (to simulate submarine signatures), and a magnetic source (to trigger magnetic anomaly detection [MAD] gear). They either run a preprogrammed trajectory or are controllable by acoustic signals transmitted from the range. The MK 30 can run for about six hours (depending on the speed selected) and is then fully recovered at the end of each run. It is reconditioned and reused. MK 30 targets will be equipped with a Fleet standard MK 84 Pinger.
MK 39 Expendable Mobile ASW Training Target (EMATT)	EMATT is an electrically propelled air- or ship-launched submarine simulator. It is 12.4 cm x 91.4 cm (4.9 x 36 in) and weighs 9.6 kg (21 lb). EMATT acts as an echo repeater for active SONARs and as a transponder for the MK 48 torpedo. The EMATT also can deploy a 30.5-m (100-ft) wire to produce a recognizable MAD signature. It contains lithium batteries. Following deployment from a launch aircraft, the EMATT separates from its parachute assembly. The parachute is jettisoned and sinks away from the unit. When the EMATT enters the water following the launch from the test aircraft, it typically travels 9 m (30 ft) downward, then activates itself and begins its preprogrammed run for several hours. At the completion of the run, the EMATT scuttles.

Table 2.1-4: Typical Exercise Weapons Used in PUTR Training Scenarios

Item	Description
EXERCISE WEAPONS	
MK 46, MK 54, and MK 50 Lightweight Exercise Torpedoes	MK 46 is a deep-diving, high-speed lightweight torpedo that is launched from helicopters, fixed-wing aircraft, and surface ships. It has an OTTO II fuel propulsion system and uses active acoustic homing. The MK 50 lightweight torpedo was specifically developed to counter the most advanced submarine threats. The MK 50 is carried by aircraft or fired from surface ship torpedo tubes. It has a stored chemical energy propulsion system (SCEPS). The MK 54 is a hybrid torpedo comprised of the MK 50 acoustic front end and MK 46 propulsion system. The MK 54 is launched similar to the MK 46. An exercise torpedo that actually "runs" is referred to as an "EXTORP". Only about 10 percent of the lightweight shots would be "runners". All MK 54 shots are "runners". The remaining shots are non-running "dummy" torpedo shapes called "REXTORPs". All torpedoes are recovered.
MK 48 Heavyweight Mod 4, Mod 5, Mod 6, Mod 7, ADCAP Exercise Torpedo (EXTORP)	MK 48 is the current standard US Navy heavyweight torpedo for use by submarines and has an OTTO-fueled propulsion system. It uses active or passive sonar for target detection and tracking. The MK 48 ADCAP (advanced capability) is an extensively modified version of the MK 48 torpedo, capable of greater speed and endurance. The torpedo uses passive and active acoustic homing modes, and also can operate via wire guidance from the submarine. All MK 48 exercise shots would be EXTORPS. All torpedoes would be recovered.

Table 2.1-5: Typical Sensors Utilized in PUTR Training Scenarios

Item	Description
SENSORS	
SONARs	There are two basic types of SONARs, active and passive. Both are used to search for, detect, localize, classify, and track submarines. Passive systems do not emit any energy. Active sonar systems are deployed on ships and submarines. Submarines are also equipped with several types of auxiliary sonar systems for ice and mine avoidance, for top and bottom sounders to determine the submarine's distance from the surface and the bottom in the water column, and for acoustic communications. SONARs are evaluated in detail for their potential effect on marine animals.
Dipping Sonar	Dipping sonar are active or passive sonar devices that are lowered on cable by helicopters to detect or maintain contact with underwater targets. SH-60 B helicopters do not have dipping sonar. SH-60F (carrier based) do have dipping SONAR, and would be involved in Scenario 1 runs when 60Fs are used, or about 10 percent of the time Scenario 1 is run. The SH-60R, a planned replacement for the SH-60B, will also have dipping SONAR.
Expendable Bathythermograph (XBT)	The XBT is thermal sensor deployed from surface ships. The sensor is mounted inside a small, streamlined body that sinks to the bottom. Signals from the sensor are transmitted up a wire to a receiver on board the vessel. Data collected by the XBT are used to calculate sound speed profile (SSP). After use, the body and wire are abandoned in place.

2.2 Operational Configuration

2.2.1 Basic PUTR Operational Configuration

The basic PUTR operational configuration is shown in Figure 2.2-1, which consists of an array of bottom-mounted transponders, transponder subsurface link (hub), a range support vessel with a Shipboard Range Operations Center (SROC), and a satellite link to a shore-based Remote Display Center. Acoustic data telemetry between the transponders and the Shipboard Processing Unit (SPU) in the SROC is via the transponder subsurface link (hub) suspended below the range support vessel. The SROC capabilities include acoustic remote control of the deployed in-water hardware, command and control functions, data processing, tracking, and display of Time Space Positional Information (TSPI) data by the SROC Display Center. Command and control functions include radio and underwater voice communications (WQC Hi-Band) and MK 30 Mod-1 Acoustic Command Link (ACL). PUTR Build 2 incorporates more transponders and one or more Station Keeping Buoys (SKB) as uplink receivers to expand the area of tracking coverage.

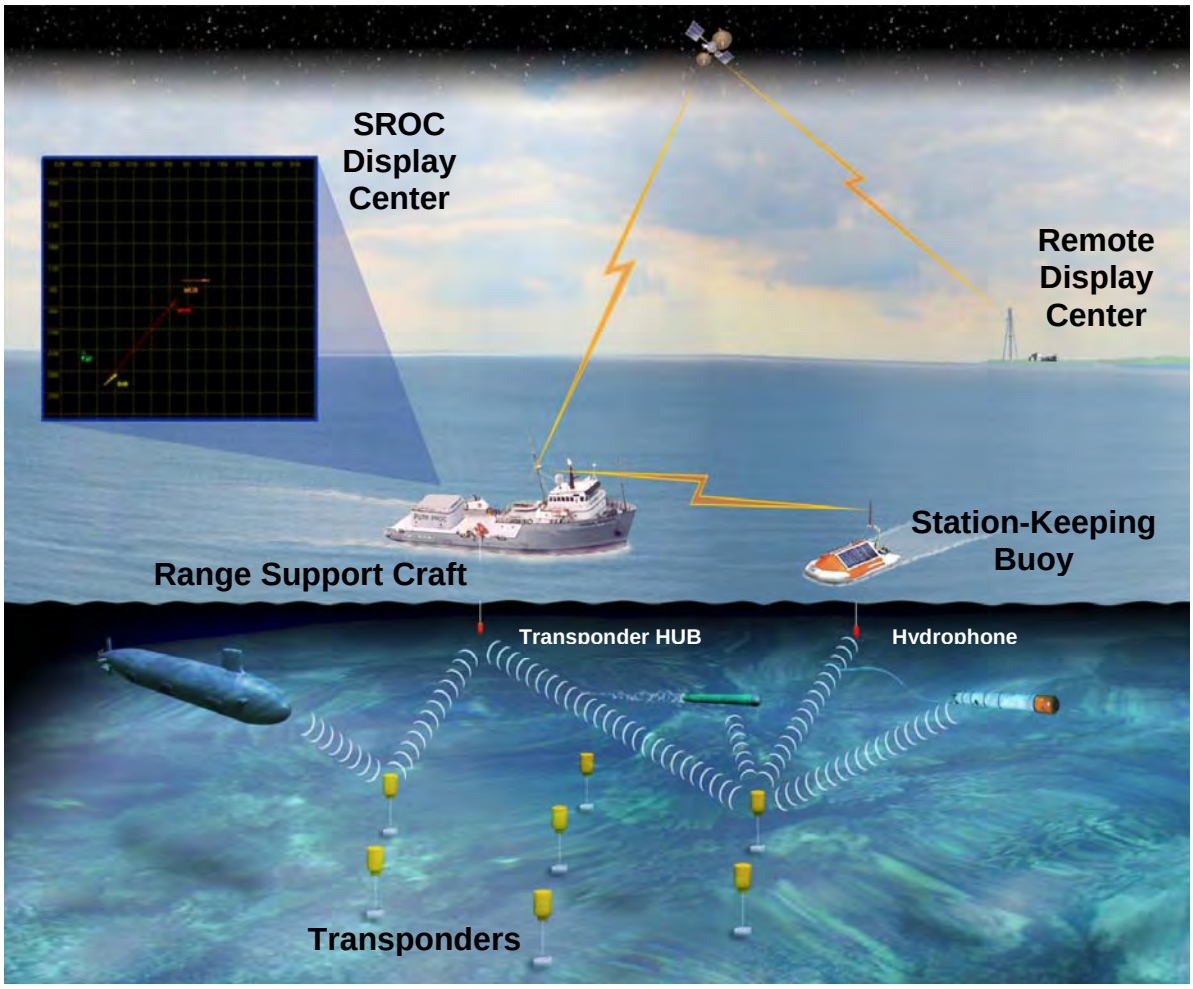

Figure 2.2-1. Portable Undersea Training Range Operational Configuration