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WORK PLAN FOR CONTAMINATED SOIL INVESTIGATION AND DISPOSAL SITE
ATLANTIC 7012 MCAS CHERRY POINT NC
7/1/2000
OHM REMEDIATION SERVICES CORP.

WORK PLAN
CONTAMINATED SOIL EXCAVATION AND DISPOSAL
SITE ATLANTIC 7012
MARINE CORPS OUTLYING LANDING FIELD
NORTH CAROLINA

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-97-D-5000
Task Order No. 0059

Prepared by:

OHM Remediation Services Corp.
(A member of The IT Group)



P. Taylor Sword, C.P.G.
Sr. Project Manager



William Hughes, P.G.
Project Scientist



Roland Moreau, P.E.
Program Manager

July 2000

OHM Project No. 808345

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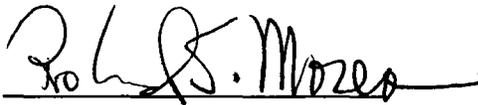
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LIST OF ACRONYMS

AFVR	Aggressive Fluid Vapor Recovery
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EAD	Environmental Affairs Department
EPA	Environmental Protection Agency
ESCP	Erosion and Sedimentation Control Plan
FSP	Field Sampling Plan
HASP	Health and Safety Plan
LANTDIV	United States Navy Atlantic Division
LDR	Land Disposal Restriction
LQMP	Laboratory Quality Management Plans
MCOLF	Marine Corps Outlying Landing Field
NTR	Naval Technical Representative
OHM/IT	OHM Remediation Services, Inc. (a member of The IT Group)
PPE	Personal Protective Equipment
QA	Quality Assurance
QC	Quality Control
RAC	Remedial Action Contract
RCRA	Resource Conservation and Recovery Act
ROICC	Resident Officer In Charge of Construction
SARA	Superfund Amendment and Reauthorization Act
SB	Small Business
SDB	Small Disadvantage Business
T&D	Transportation and Disposal

1.0 INTRODUCTION

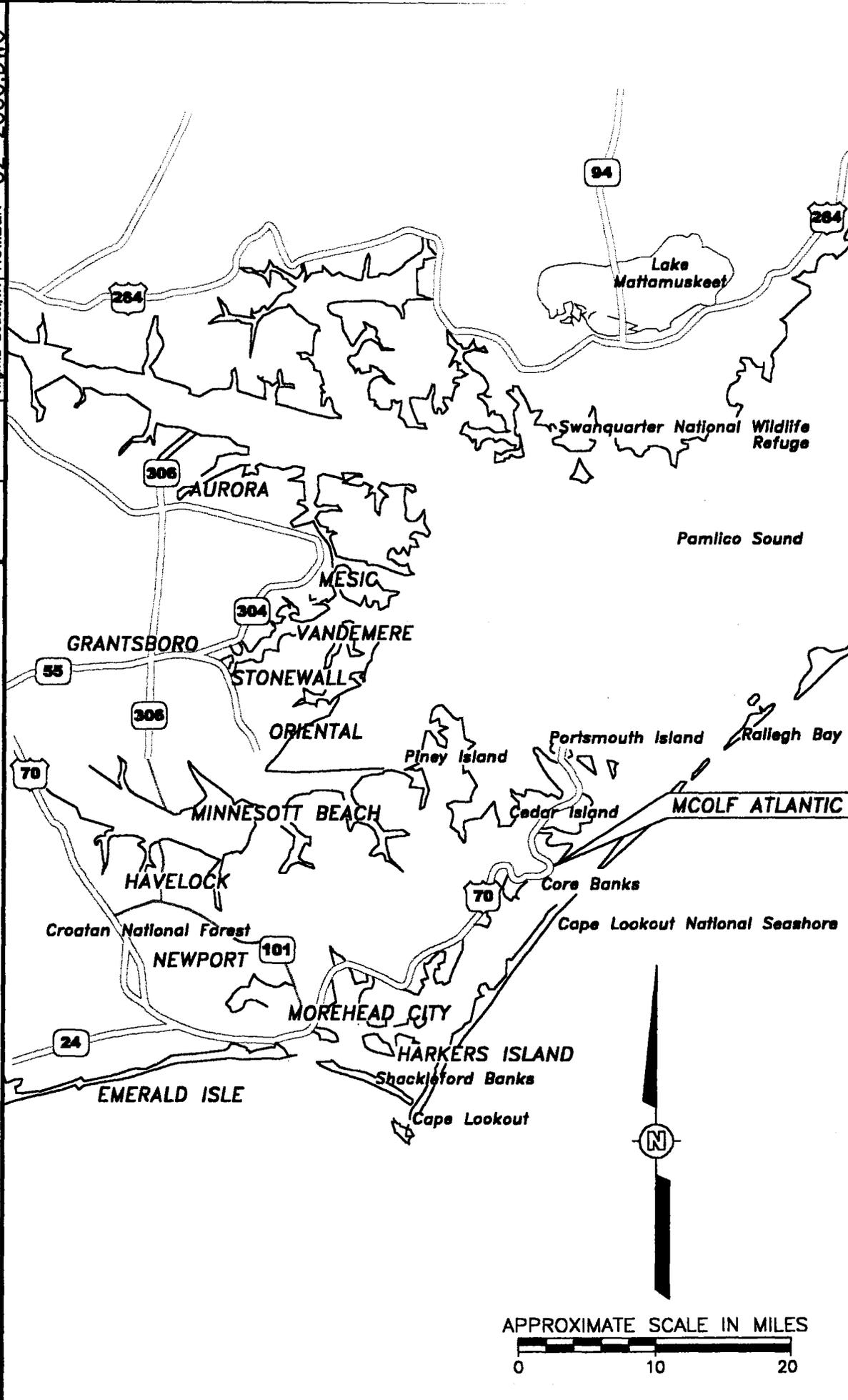
OHM Remediation Services, Inc. (a member of The IT Group) (OHM/IT) has been retained by the United States Navy Atlantic Division (LANTDIV) under Remedial Action Contract (RAC) Contract No. N62470-94-D-5000, Task Order 059. The Task Order includes the characterization of contaminated soil, excavation, and disposal of approximately 200 cubic yards of petroleum contaminated soil at the Atlantic 7012 site, Marine Corps Outlying Landing Field (MCOFL) Atlantic, North Carolina (*Figure 1*).

1.1 BACKGROUND DESCRIPTION

The Atlantic 7012 site is located at the MCOFL Atlantic, North Carolina. The site contained one former No. 2 fuel oil underground storage tank (Tank 7012) and associated piping (*Figure 2*). The wells at the site have been consistently monitored since October 1997. Eight Aggressive Fluid Vapor Recovery (AFVR) events were performed during 1997, resulting in the removal of 53 pounds of hydrocarbons. The AFVR events have been discontinued and the wells at the site are currently monitored on a monthly basis. AFVR has been discontinued as the recovery verses cost has experienced diminishing returns. Currently the monitoring wells at the site are gauged monthly and groundwater samples are collected biannually. The depth to water at the site is approximately 6 feet below grade.

IMAGE X-REF OFFICE
 Virginia Beach, VA
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 NUMBER -02 2000.DWG

PLOT DATE: 07/08/2000
 FORMAT REVISION 02/25/2000



DEPARTMENT OF THE ARMY NAVY FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NAVY STATION MARINE CORPS AIR STATION REMEDIATION OF PETROLEUM CONTAMINATION ATLANTIC 7012 SITE LOCATION MAP		OHM Remediation Services Corp. PROJECT NO. 000343		DESIGNED BY BH DRAWN BY TPR CHECKED BY BH APPROVED BY		REV DATE BY DESCRIPTION/ISSUE	
SCALE: AS SHOWN		SHEET: A		DELIVERY ORDER NO.		REVISIONS	
CONTR. CONTRACT NO. N62470-97-D-5000		NAFFC DRAWING NO.		SHEET LD.		FIGURE 1	

2.0 PRE REMEDIATION ACTIVITIES

Safety is of primary importance during all tasks associated with this project. A site-specific Health and Safety Plan (HASP) has been prepared prior to initiation of the work described herein. A copy of the HASP is presented in *Appendix A*.

2.1 MOBILIZATION

Upon receipt of notice to proceed, the site supervisor will meet with the Resident Officer In Charge of Construction (ROICC) and MCOLF Atlantic field personnel to discuss and establish the work areas. Factors such as utilities (electrical and water), site access, signing of waste manifests, traffic routes for equipment deliveries and waste removal will also be determined.

2.2 CONSTRUCTION INTERFERENCE UTILITIES SURVEY

Prior to excavation activities and monitoring well installation, exclusion and decontamination zones will be established around and proximal to the planned work areas, by marking the areas with orange safety fencing and steel posts as approved by the ROICC. Only personnel who have received proper health and safety training will be allowed to enter the exclusion zone. The excavation limits will be clearly marked on the ground and the area surrounding the work area will be surveyed for utilities to be sure that there are no obvious underground lines, overhead clearance issues or other obstructions to the work area. To obtain all utility clearances, OHM/IT will contact the public underground utility location center and obtain a confirmation number that the notification was made. With the assistance of the ROICC, OHM/IT will request an underground utility search from the base. Under circumstances that warrant further investigation for determining location of utilities a private contractor may also be utilized for specific scanning of the site with electromagnetic equipment as approved by the ROICC.

2.3 TEMPORARY FACILITIES, STORAGE/LAYDOWN AREA

Portable toilet and storage tanks will be mobilized to the site. Equipment and material storage areas will be established at the site. These areas will be located such that deliveries can easily be made and work at the site and MCOLF Atlantic activities will not be interrupted.

2.4 WASTE CHARACTERIZATION SAMPLING

Soil samples will be collected and submitted to a Navy approved laboratory for characterizing the material for disposal. Two soil samples will be collected and submitted to a laboratory for analysis for the presence of petroleum hydrocarbons by Environmental Protection Agency (EPA)

method 3550/8015 and 5030/8015 and ignitability by EPA Method 1030. The samples will be collected using the procedures specified in the Field Sampling Plan (FSP) (*Appendix B*).

3.0 REMEDIATION ACTIVITIES

The purpose of this activity is to remove the soil impacted with adsorbed-phase petroleum hydrocarbons which is acting as a source of contamination to the groundwater. An Erosion and Sedimentation Control Plan (ESCP) was prepared to ensure that local bodies of water are not impacted. A copy of the ESCP is presented in *Appendix C*.

3.1 EXCAVATION PERIMETER DEFINITION

Prior to beginning the excavation of contaminated soil, the limits of the excavation will be clearly marked with flagging. Silt fencing and hay bales will be used to control erosion and sedimentation around the excavation areas, as needed and in accordance with the ESCP.

Two groundwater monitoring wells (25GW01 and 25GW13) are located within the area to be excavated. These wells will be abandoned by a state certified well contractor in accordance with 15A NCAC 2C, well construction standards. A well abandonment record (Form GW-30) will be submitted to the NCDENR Division of Water Quality, Groundwater Section within 30 days of completion of abandonment.

3.2 EXCAVATION PROCESS

Contaminated soils encountered during the excavating will be visually screened and a headspace reading taken prior to collection of environmental samples. It is anticipated that the soil is impacted in an area that is approximately a 40 by 40-foot square and extends approximately from 5 to 8 feet below ground surface or 1 to 2 feet below the water table.

It is anticipated that approximately 1 to 2-feet of overburden is not impacted or contains petroleum hydrocarbon concentrations less than the NCDENR cleanup guidelines. This overburden will be stockpiled and covered by plastic sheeting for reuse as backfill material.

Following the removal of the overburden that is classified as clean through field screening, the contaminated soil will be excavated to the top of the water table. The contaminated soil will be directly loaded into dump trucks for transport to a Navy approved Subtitle D landfill. Excavation below the water table will be conducted in a manner to allow the groundwater to drain from the soil back into the excavation to minimize the volume of water loaded into the dump trucks. The soil has a high sand content and it is anticipated that it will drain of water relatively quickly. Techniques to drain the water from the soil include temporarily stockpiling the soil above the water table in the excavation, dewatering the excavation and allowing the

water to drain from the bucket of the excavator during work or by bench excavation/stockpiling within the excavation. The best method will be determined in the field.

OHM/IT personnel will immediately inform the ROICC of the presence and extent of contaminated soils. The scope of work has initially estimated the excavation of 200 cubic yards of contaminated soil, however, assumed volume calculations indicate that 177 cubic yards of contaminated soil is present. For budgeting purposes it is assumed that no more than 200 cubic yards of contaminated soil is present. If contaminated soil is still present after 200 cubic yards have been removed; a modification to the existing task order will be requested to continue the over excavation of contaminated soil.

Dewatering of the excavations may be necessary to facilitate removal of contaminated soil and to allow proper backfill and compaction of the excavation. If dewatering is necessary, OHM will provide and maintain pumps, sumps, suction and storage tanks, or other dewatering system components necessary to perform this task.

Water in the excavation will be pumped to a temporary storage tank located on the site. The water in the tank will be sampled and analyzed for the presence of volatile organic compounds and xylenes by EPA Method 602. Where possible, surface trenches or earth berms will be used to prevent surface water from entering the excavations.

3.3 CONFIRMATION SAMPLING OF EXCAVATION AREA

After the contaminated soil is removed, confirmation samples will be collected from the each of the excavation sidewalls and at the bottom prior to backfilling. The soil samples will be analyzed for the presence of petroleum hydrocarbons by EPA SW-846 5030/8015 and EPA SW-846 3550/8015. The samples will be collected using the procedures specified in the FSP (*Appendix B*).

3.4 BACKFILL AND SITE RESTORATION

The excavation will be backfilled in 1-foot lifts with clean borrow material. Backfill will be compacted to the appropriate maximum density. Compaction will be achieved using a heavy, self-propelled footed roller. Compaction testing is not required. Following the completion of the backfilling of the excavation, the excavated area will be seeded.

4.0 QUALITY CONTROL

The intent of this section is to provide general guidance to the field construction crew for items that require inspection during field activities. In addition, this section identifies some of the critical items that require spot inspection. **Appendix D** contains the Construction Quality Control Plan for this work effort. This section highlights key areas.

4.1 CONSTRUCTION INSPECTION

Contractor quality control is the means by which OHM/IT ensures that all construction, including that performed by subcontractors and suppliers, complies with the requirements of the Task Order. The efforts of inspection establishes the means by which verification of the quality of the work performed and compliance with specific requirements including the inspection of materials and workmanship before, during, and after each definable feature of work. The controls defined will be adequate to cover all construction. The Quality Control Manager's Representative will make adequate inspections to ensure adherence to the work plan for the following activities.

4.2 TESTING

Requirements of testing are provided in the Field Sampling Plan (*Appendix B*) for this project.

4.3 SUBMITTALS

Project submittals will be prepared and submitted to the Navy for review and acceptance. Submittals will include analytical laboratory reports and waste manifests.

5.0 WASTE MANAGEMENT PLAN

There are several waste management activities anticipated during this remedial action. All of the wastestreams are anticipated to be classified as non-hazardous. The non-hazardous wastes includes:

- Construction generated non-hazardous waste
- Personal Protective Equipment (PPE) and Decontamination Products
- Potential Nuisance Groundwater

Detail for sampling and procedures are outlined in the FSP (*Appendix B*).

5.1 GENERAL CONSTRUCTION DEBRIS AND WASTE

Any non-hazardous solid waste that is generated as a result of mobilization and construction activities at the site will be properly disposed at a Subtitle D as appropriate, or as directed by the Navy. PPE will be decontaminated. Decontaminated PPE will be disposed by placing the materials in double plastic garbage bags and disposing it in a Subtitle D landfill or as directed by the Navy.

5.2 DECONTAMINATION PRODUCTS

All equipment will be decontaminated on site using sealable tubs or 5-gallon buckets. The volume of water generated during the described remediation activities is anticipated to be minimal. The decontamination water will be generated primarily during cleaning of equipment involved with construction and during system operations. Therefore, any generated decontamination water will be collected in a 55-gallon drum. Drummed decontamination water will be managed as described in Section 5.1. Under no circumstances will excess cleaning solutions (e.g., isopropanol) which are not contaminated or spent be added to decontamination water. In addition, no solvents that could generate an F-listed waste will be used or discharged at this site. All unused decontamination solutions will be removed from the Base at the time of demobilization.

5.3 SOIL

OHM/IT will complete characterization and disposal analysis of the soils to be excavated. OHM/IT will collect samples in accordance with the FSP and perform appropriate characterization and disposal analysis of the soil.

OHM/IT will assign a Transportation and Disposal (T&D) Coordinator for this project who will report to the Project Manager as a single point-of-contact for all waste management activities. The individual assigned to this project will be familiar with all the applicable portions of RCRA, CERCLA, and SARA regulations, especially 40 CFR 261 (Identification and Listing of Hazardous Wastes). In addition, this individual will be familiar with the State of North Carolina regulations related to hazardous and solid waste treatment, storage, disposal and transportation. The T&D Coordinator will also be responsible for preparing documentation to be sent to the selected disposal facility and coordinating disposal approvals.

The T&D Coordinator, in consultation with the Project Manager and procurement personnel, will or have reviewed potential vendors to pre-qualify T&D companies based on:

- Notice of violation status
- Ability to handle the wastes identified
- Cost effectiveness of the available T&D options
- Past experience
- Small Business (SB) and Small Disadvantage Business (SDB) contract goals

All bids will be obtained based on a written solicitation and all bid responses will be in writing. All bids will be made in conjunction with OHM/IT's procurement policies. A condition of OHM/IT's purchase order will be that the selected vendors must provide OHM/IT with addresses, the name of a single point of contact, EPA ID numbers, permit verification, NOV status and any other qualifying data necessary. The NTR will be notified once a facility has been selected for disposal.

OHM/IT will prepare or oversee the preparation of all paperwork associated with off-site disposal for review and signature by LANTDIV and MCOLF Atlantic representatives. This will include bill of lading or non-hazardous manifest. The selected Vendor(s) will be required to provide all manifests and other shipping paperwork. A completed example of all manifests and other shipping paperwork will be provided for OHM/IT's review and approval at least one week in advance of the scheduled start of shipments. After these documents are viewed by OHM/IT, they will be provided to the Navy's representative for review and signature. OHM/IT's on-site personnel will receive final copies of all labels, manifest, Land Disposal Restriction (LDR) forms and other shipping paperwork at least five days in advance of the scheduled start of shipments.

The disposal Vendors will provide written verification that the proposed disposal site is permitted to accept the contaminated materials generated from the site. A written verification that all vehicles and containers were decontaminated prior to leaving the disposal facility will be provided within six days of receipt of the waste materials. A written verification that wastes were actually delivered to the disposal facility will be provided within 14 days of receipt of waste materials.

If soil is to be disposed of outside the quarantine area for imported fire ants, it will be accompanied by a valid inspection certificate issued by an officer of the Plant Protection and Quarantine Program of the U.S. Department of Agriculture.

The T&D Coordinator/Site Supervisor will contact the selected vendor and schedule waste pick-ups in a timely manner to coordinate with the project schedule. Prior to shipment of wastes, OHM/IT's on-site personnel, in conjunction with the T&D coordinator, will complete a Waste Disposal Activities Checklist. This checklist is to be completed for each waste shipment leaving the site. A copy of the completed form will be provided to the NTR prior to the waste transportation and with the Closeout Reports.

OHM/IT will maintain chronological organized files of weight tickets, manifest copies, and other shipping paperwork for each shipment. OHM/IT will also maintain a database of all pertinent information regarding each off-site shipment. Copies of the manifest files and database printouts will be provided to the LANTDIV and MCOLF Atlantic representatives upon request and at the completion of the project.

5.4 WATER

OHM/IT will complete characterization and disposal analysis of the water generated during excavation activities. Surface runoff or groundwater that may enter the excavation and water generated during decontamination activities will be pumped into a portable storage tank for temporary storage of the water. OHM/IT will collect samples in accordance with the FSP and perform appropriate characterization and disposal analysis of the water.

OHM/IT will prepare or oversee the preparation of all paperwork associated with off-site disposal for review and signature by LANTDIV and MCOLF Atlantic representatives. This documentation and the analytical data will be submitted to the Industrial Water Treatment Plant at MCAS Cherry Point for treatment and disposal of the water. Manifests and shipping documents will be provided to the Navy's representative for review and signature. The water will be removed from the storage tank using a vacuum truck and transported to the IWTP at

MCAS Cherry Point. While the vacuum truck is on site, the inside of the storage tank will be decontaminated with a pressure washer and the fluids removed for disposal.

A written verification that wastes were actually delivered to the disposal facility will be provided within seven days of receipt of waste materials. Copies of the manifest files and database printouts will be provided to the LANTDIV and MCOLF Atlantic representatives upon request and at the completion of the project.

6.0 SPILL PREVENTION

The objective in the event of an oil spill is to prevent the discharge of oil into nearby surface water bodies, or the surrounding environment. The person who detects a spill has the responsibility to report the spill to his supervisor. If a spill is in progress when detected, the person detecting the spill has the additional responsibility of initiating action to stop the spill, if safe to do so and the person is adequately trained and authorized to do so.

Rapid containment is necessary to facilitate recovery. The person detecting a spill if adequately trained and authorized, is responsible for initiating action required to contain the spill if safe to do so. The person's supervisor and the appropriate superintendent should be informed of the spill as soon as conditions permit. If available personnel on duty cannot contain the spill at the time of the spill, the supervisor has the responsibility of arranging for the callout of additional personnel necessary to contain the spill.

There is a potential for a spill during the refueling of equipment, operation. This section describes this activity that may result in a spill and provisions for spill prevention. Activities associated with the refueling of equipment will be conducted in a manner to ensure that product or fuel is not released to the environment. When conducting operations that may result in possible fuel release, the work will proceed in accordance with best management practices to preclude a spill. Provision for spill prevention and control that will be used during the transfer of fuel will include:

- Performing manual level checks in the portable fuel tank prior to refilling.
- Performing manual level checks in the equipment tank prior to refueling.
- Manual transfer of fuel.
- Surveillance monitoring: all tanks checked during refueling operations to ensure that overflow conditions do not occur.
- Use of process controls where feasible.
- Proper lines and berms to prevent migration of contaminants if a spill occurs.
- Immediate availability of spill mitigation equipment (e.g. absorbent materials).
- Notification: immediate notification made to MCOLF fire department and then to MCAS Environmental Affairs Department (EAD) personnel, if a spill occurs.

Other provisions and procedures will be discussed with the Navy prior to implementation of the refueling or transfer operations depending on the specific circumstances. The cognizant

responsible Health and Safety representative to ensure availability of prevention controls will perform daily inspections of the refueling operations during field activities.

7.0 *SITE RESTORATION*

Upon completion of all field activities, restoration activities will commence. The purpose of site restoration is to return the site to its original condition. All areas disturbed by OHM/IT will be restored prior to demobilization is completed.

8.0 DEMOBILIZATION

Demobilization activities include:

- Demobilization of construction equipment;
- Demobilization of site personnel;
- Site clean up;
- Removal of all temporary structures, appurtenances and equipment;
- Removal of all disposable items, dumpsters, and portable toilets; and
- ROICC approval and acceptance of site conditions.

OHM/IT personnel will demobilize from the site upon completion of all site restoration activities and after the demobilization activities listed above are performed.

9.0 PROJECT MANAGEMENT PLAN

The project manager is the primary focal point for control of the project activities. The project manager will be supported by the Quality Assurance (QA) Management team, which will provide reviews, guidance, and technical advice on project execution issues. Members of this staff will be available on an "as-needed" basis to assist in smooth project execution. The project manager will be supported by the project team consisting of a supervisory, health and safety, technical, and QA/QC staff to ensure that the project is safely executed in compliance with applicable laws, regulations, statutes, and industry codes. Individuals of the project team are responsible for fulfilling appropriate portions of the project QA program, in accordance with assignments made by the project manager. The project manager is responsible for satisfactory completion of the project QA program. The project manager may assign specific responsibilities to the deputy project manager and other members of the project staff.

An organizational chart of the project team is presented in Section 10.

The responsibilities of the key members in the project organization are:

Project Manager – Taylor Sword

The project manager is responsible for the overall direction of this project executed under his supervision. He provides the managerial administrative skills to ensure that resource allocations, planning, execution, and reporting meet contract requirements. He is ultimately accountable for all work activities undertaken on this project. The global quality-related responsibilities of the project manager can include, but are not limited to, the following:

- Organization of the project staff and assignment of responsibilities.
- Understanding of contract and scope of work for a specific project. Communication to the project staff regarding client requirements and QA practices.
- Identification, documentation, and notification to the client and project staff and QA personnel of changes in the scope of work project documentation and activities.
- Supervision of preparation and approval of project-specific procedures, work plans, and QA project plans.
- Approval of project design bases, design parameters, drawings, and reports.
- Approval of project remedial action/construction methodologies.
- Dissemination of project-related information from the client such as input parameters, and drawings.

- Liaison for communications with the client and subcontractors. Liaison between the project staff and other internal groups.
- Decision of whether or not drawings require independent review.
- Investigation of nonconformances, notification of QA personnel, and implementation of corrective actions.
- Determination of the effect of nonconformance on the project and the appropriateness for reporting such items to the client, and providing appropriate documentation for reporting.
- Determination that changes, revisions, and rework are subject to the same quality control (QC) requirements as the original work.
- Serve as final reviewer prior to release of project information.
- Approve and sign outgoing correspondence.
- Custodian of all project related documents.

The project manager may assign some of these responsibilities to the Site Supervisor, who will remain on site throughout the project field activities.

Site Supervisor – Robert Taylor

The site supervisor is responsible for the day-to-day management of this specific delivery order. He will ensure sufficient resource allocations to maintain project schedule and budget. He will provide daily feedback to the project manager on project progress, issues requiring resolution, etc. The quality-related responsibilities of the site supervisor include, but are not limited to, the following:

- Notification to the project manager if the project cannot be completed with regard to quality, schedule, or cost.
- Oversight and control of subcontractor services.
- Liaison for communications with OHM project staff and other internal groups as well as with the NTR and on-site inspector.
- Supervision of day-to-day site activities in accordance with project and program requirements.
- Preparing the Contractor Production Report.
- Preparing the Quality Control Reports.
- Initiating corrective actions for non-conformance identified on-site.

Project Chemical QA Officer and Laboratory Coordinator-- Dorothy S. Small

The chemical QA responsibility is to implement the project chemical QA program. The officer is responsible for informing the project manager of any site-specific QA issues. The laboratory coordinating function is responsible for the procurement of a certified laboratory based on the requirements needed for the project. The responsibilities include, but are not limited to, the following:

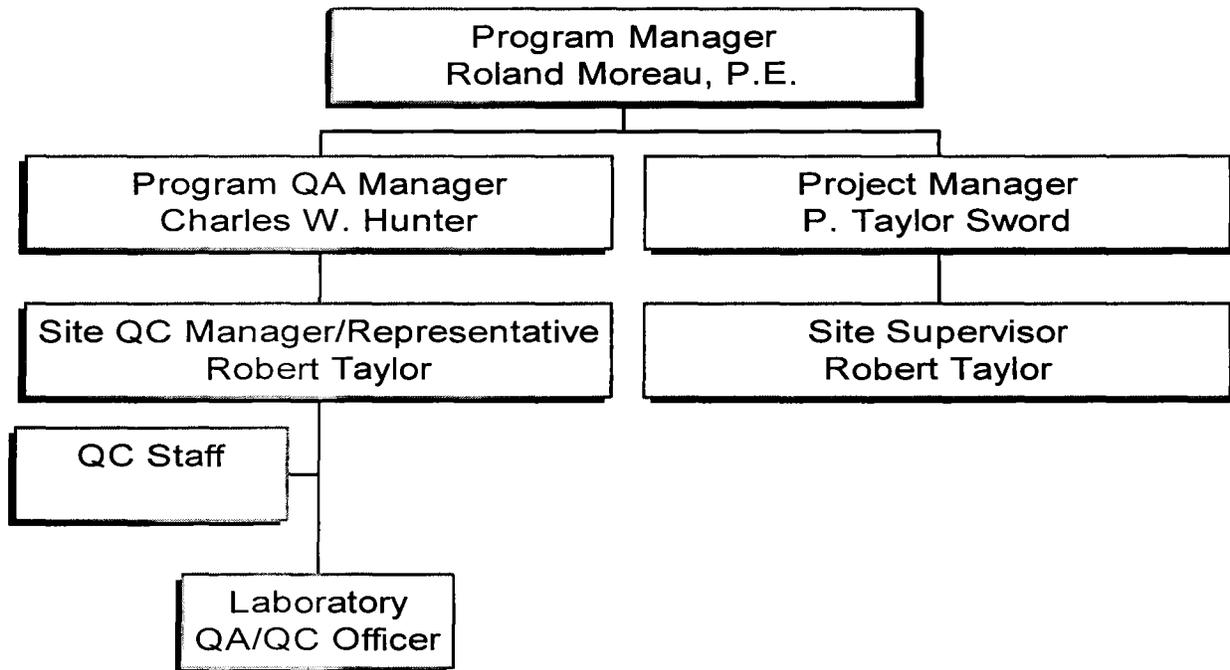
- Reviewing subcontractor's QA Manuals and/or Laboratory Quality Management Plans (LQMPs) and if possible, performing audits on the labs.
- Certifying the level of QA that has been achieved during the generation of analytical data.
- Initiating and overseeing all audit functions.
- Stopping work if quality objectives are not being met.
- Initiating investigations for nonconformance, identifying appropriate corrective actions, and performing follow-up audits to ensure that the corrective actions were successful.
- Selection of qualified laboratories and control of laboratory services requests.
- Assist coordination of laboratory with field sample shipments.
- Management of laboratory data in conjunction with the field chemist.
- Liaison between the field and the laboratories when changes are required in the FSP and Purchase Orders.

10.0 PROJECT ORGANIZATIONAL CHART

A project organizational is prepared to clearly define the roles of all project personnel. *Figure 3* shows the roles and chain of reporting for personnel working on this project.

Figure 7

Project Organization Chart

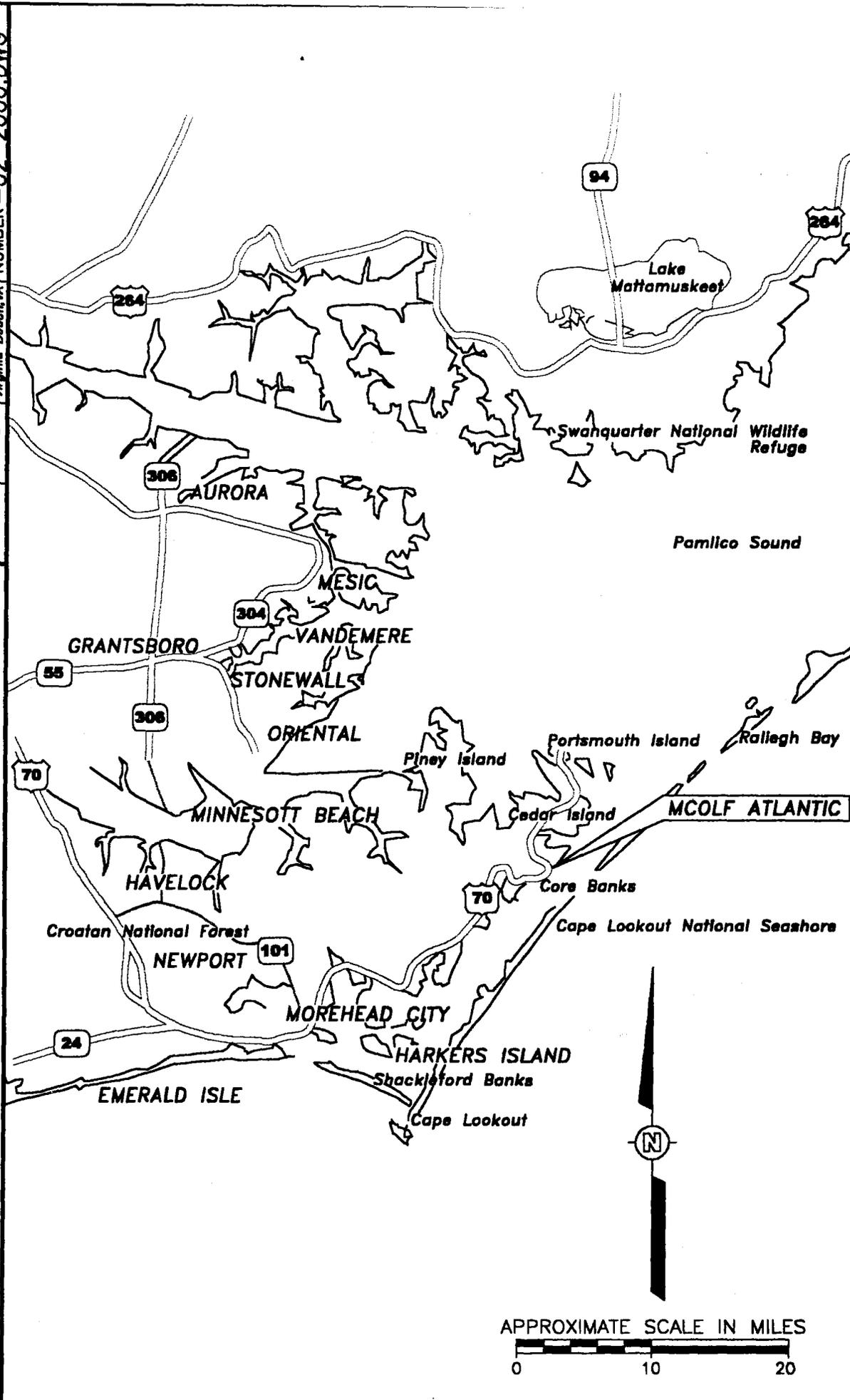


10.1 SCHEDULE

A schedule has been prepared for the project to be used to track progress and ensure that milestones are met. A copy of the project schedule is presented in *Appendix E*.

IMAGE X-REF OFFICE Virginia Beach, VA
 DRAWING NO. I-ATL7012
 NUMBER -02 2000.DWG

PLOT DATE: 07/08/2000
 FORMAT REVISION 02/25/2000



DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NAVAL STATION CHERRY POINT, NORTH CAROLINA REMEDIATION OF PETROLEUM CONTAMINATION ATLANTIC 7012 SITE LOCATION MAP		OHM Remediation Services Corp. PROJECT NO. 808345		DESIGNED BY: BH DRAWN BY: YFR CHECKED BY: BH APPROVED BY: -		REV. DATE BY CHK'D/APP'VD REVISIONS	
SCALE: AS SHOWN		SHEET: A		DELIVERY ORDER NO.		CONTROL CONTRACT NO. N62470-87-D-6000	
NAUTIC DRAWING NO.		SHEET LD.		FIGURE 1		SITE LOCATION	

Appendix A

Health and Safety Plan



IT CORPORATION

A Member of The IT Group

***SITE-SPECIFIC
HEALTH & SAFETY PLAN FOR THE
EXCAVATION AND DISPOSAL OF CONTAMINATED
SOILS AT THE ATLANTIC 7012 SITE
CHERRY POINT, NORTH CAROLINA***

Prepared for:

Department of the Navy
Contract No. N62470-97-D-5000
Task Order No. 0059

Prepared by:

OHM Remediation Services Corp.
(A member of The IT Group)

Alison Harwood, ASP
Health and Safety Coordinator III

Reviewed and Approved by:

Robert A. Brooks, CSP
Health and Safety Manager

June, 2000
IT Project 808345
Revision 0

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1 INTRODUCTION

1.1 OBJECTIVE

The objective of this plan is to provide a mechanism for establishing safe working conditions at the site. The safety organization, procedures, and protective equipment have been established based upon an analysis of potential hazards. Specific hazard control methodologies have been evaluated and selected to minimize the potential of accident or injury.

1.2 POLICY STATEMENT

The policy of OHM Remediations Services, a subsidiary of the IT Group (OHM/IT) is to provide a safe and healthful work environment for all employees. OHM/IT considers no phase of operations or administration to be of greater importance than injury and illness prevention. Safety takes precedence over expediency and shortcuts. At OHM/IT, it is believed all accidents and injuries are preventable. OHM/IT will take every reasonable step to reduce the possibility of injury, illness, or accident.

This Health and Safety Plan (HASP) prescribes the procedures that must be followed during referenced site activities. Operational changes that could affect the health and safety of personnel, the community, or the environment will not be made without the prior approval of the Project Manager and the Health and Safety Manager.

The provisions of this plan are mandatory for all personnel and subcontractors assigned to the project. All visitors to the work site must abide by the requirements of the plan.

1.3 REFERENCES

This HASP complies with applicable Occupational Safety and Health Administration (OSHA), U.S. Environmental Protection Agency (EPA), and IT Group Health & Safety policies and procedures. This plan follows the guidelines established in the following:

- Standard Operating Safety Guides, EPA (Publication 9285.1-03, June 1992).
- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, NIOSH, OSHA, USCG, EPA (86-116, October 1985).
- Title 29 of the Code of Federal Regulations (CFR), Part 1910.
- Title 29 of the Code of Federal Regulations (CFR), Part 1926.
- Health and Safety Requirements Manual, US Army Corps. Of Engineers, EM 384-1-1, 1996
- LANTDIV Program Health and Safety Procedures Manual.

1.4 DISCLAIMER

The following (HASP) has been designed for the methods presently contemplated by OHM/IT for execution of the proposed work. Therefore, the HASP may not be appropriate if the work is not performed by or using the methods presently contemplated by OHM/IT. In addition, as the work is performed, conditions different from those anticipated might be encountered and the HASP

may have to be modified. Therefore, OHM/IT only makes representations or warranties as to the adequacy of the HASP for currently anticipated activities and conditions.

2 SITE HISTORY/SCOPE OF WORK

2.1 SITE HISTORY/BACKGROUND

The Atlantic 7012 site is located at the MCAS Cherry Point, North Carolina. The site contained one former No. 2 Fuel oil underground storage tank (Tank 7012) and associated piping. The wells at the site have been consistently monitored since October 1997. Eight Aggressive Fluid Vapor Recovery (AFVR) events were performed during 1997, resulting in the removal of 53 pounds of hydrocarbons. The AFVR events have been discontinued and the wells at the site are currently monitored on a monthly basis. AFVR has been discontinued as the recovery verses cost has experienced diminishing returns.

2.2 SCOPE OF WORK

This Health and Safety Plan focuses on surveying and sampling activities.

The principal tasks to be conducted are listed below:

- Monitoring Well Abandonment
- Installation of Silt Fence
- Soil Excavation
- Soil Loadout and Disposal
- Soil Sampling
- Equipment Decontamination
- Backfilling
- Groundwater Well Monitoring and Sampling

These activities have been analyzed for potential hazards for which control measures are provided in Appendix D Activity Hazard Analysis.

3 KEY PERSONNEL AND MANAGEMENT

The Project Manager (PM), Site Supervisor (SS), Site Safety Officer (SSO), Health and Safety Coordinator (HSC), Program Industrial Hygienist (CIH) and the Program Health and Safety Manager (HSM) are responsible for formulating and enforcing health and safety requirements, and for implementing this HASP. The supervisor's and employee safety responsibilities are detailed in SOP's 1-6 and 1-7. The following summarizes the health and safety responsibilities of the site management.

3.1 PROJECT SAFETY RESPONSIBILITIES

The PM has the overall responsibility for the project and to assure that the requirements of the contract are attained in a manner consistent with the HASP requirements. The PM will coordinate with the SS and the SSO to assure that the work is completed in a manner consistent with the HASP. The SS is responsible for field implementation of the HASP. The SS will be the main contact in any on-site emergency situation and will insure off-site emergency agencies have been contacted prior to the start of work. The HM and SSO are authorized to administer this HASP. The HM and SSO is authorized to stop work when an imminent health or safety risk exists. The HSC and/or HSM are responsible for reviewing the HASP and ensuring that the HASP is complete and accurate. The HSC and/or HSM also provide technical and administrative support for the Health and Safety Program and will be available for consultation when required. Each employee is responsible for personal safety as well as the safety of others in the work area.

3.2 KEY SAFETY PERSONNEL

The following individuals share responsibility for health and safety at the site:

Project Manager	Taylor Sword (757) 363-7190 ext. 246 (office)
Site Supervisor	Robert Taylor (252) 444-8302
Site Safety Officer	TBD
ROICC	Karen Boyd (252) 466-4731 (office)
Health and Safety Coordinator	Alison Harwood (770) 663-1428 (office)
Certified Industrial Hygienist	Paul Lawless, CIH 609-588-6391 (office)
Program Health and Safety Manager	Robert Brooks, CSP (732) 469-5599 ext. 681 (office)
Vice President, Health & Safety	Warren Houseman, CIH (412) 858-3741 (office)

4 ACTIVITY HAZARD ANALYSIS

This section outlines the potential chemical and physical hazards, which workers may be to during work at Site 7012. Table 4.1 lists know contaminant at the Site 7012. Chemicals which may be brought to the site for which an MSDS is necessary, is located in the Appendix A.

4.1 CHEMICAL HAZARDS

Based on site historical records and previous investigations, the primary site contaminant at Site 7012 site is Fuel Oil #2:

TABLE 4-1

CHEMICAL	EXPOSURE ROUTES	PEL/TLV	HEALTH HAZARDS/ PHYSICAL HAZARDS
Fuel Oil #2 (Mineral Spirits)	Skin, eye, Inhalation, Ingestion	300 ppm	<ul style="list-style-type: none">• May be poisonous if inhaled or absorbed through the skin. Vapors may cause dizziness or suffocation. Contact may irritate the skin and eyes.• Fire may produce irritating or poisonous gases. Run off from control or dilution water may cause pollution.

The following general symptoms may indicate exposure to a hazardous chemical. Personnel will be removed from the work site and provided immediate medical attention if the following symptoms occur:

- Dizziness or stupor
- Nausea, headaches, or cramps
- Irritation of the eyes, nose, or throat
- Rashes or burns

4.2 HAZARD COMMUNICATION

The purpose of hazard communication (Employee Right-to-Know) is to ensure that the hazards of all chemicals located at this field project site are transmitted (communicated) according to 29 CFR 1926.59 to all personnel and subcontractors. Hazard communication will include:

4.2.1 Container Labeling

OHM/IT personnel will ensure that all drums and containers are labeled according to contents. These drums and containers will include those from manufacturers and those produced on site by operations. All incoming and outgoing labels shall be checked for identity, hazard warning, and name and address of responsible party.

4.2.2 Material Safety Data Sheets (MSDSs)

There will be an MSDS located on site for each hazardous chemical known to be used on site. All hazardous chemical MSDSs will be located in Appendix A of the SSHP.

4.2.3 Employee Information and Training

Training employees on chemical hazards is accomplished through an ongoing corporate training program. Additionally, chemical hazards are communicated to employees through daily safety meetings held at OHM/IT field projects and by an initial site orientation program.

At a minimum, OHM/IT and related subcontractor employees will be instructed on the following:

- An in-depth review of the soil and surface contaminants of concern identified listed in Section 4.1.
- OSHA regulated chemicals and their hazards in the work area
- How to prevent exposure to these hazardous chemicals
- What the company has done to prevent workers' exposure to these chemicals
- Procedures to follow if they are exposed to these chemicals.
- How to read and interpret labels and MSDSs for hazardous substances found on OHM/IT sites
- Emergency spill procedures
- Proper storage and labeling

Before any new hazardous chemical is introduced on site, each OHM/IT and related subcontractor employee will be given information in the same manner as during the safety class. The site supervisor will be responsible for seeing that the MSDS on the new chemical is available for review by on site personnel. The information pertinent to the chemical hazards will be communicated to project personnel.

Morning safety meetings will be held and the hazardous materials used on site will be discussed. Attendance is mandatory for all on site employees.

Refer to Appendix A of the site safety plan to find a list of hazardous chemicals anticipated to be brought to the site and the corresponding MSDSs for these chemicals.

4.3 PHYSICAL HAZARDS

To minimize physical hazards, OHM/IT has developed standard safety protocols that will be followed at all times. Failure to follow safety protocols will result in removal of an employee from the site and appropriate disciplinary actions.

The SS and SSO will observe the general work practices of each crew member and equipment operator, and enforce safe procedures. The crew leaders and SS will inspect Work areas. All hazards will be corrected in a timely manner. A variety of physical hazards may be encountered during work activities at this site. Activity Hazard Analyses will be developed for each principal activity and will identify all major hazards to which employees may be exposed. Hard hats, safety glasses, and steel-toe safety boots are required in all areas of the site. Site-specific hazards and all necessary precautions will be discussed at the daily safety meetings.

Physical hazards include safety and environmental hazards. The following physical hazards may be present during project activities:

- Heat stress
- Biological hazards (Poison Ivy ,Ticks, Lyme Disease)
- Manual lifting/back strain

- Vehicle Traffic
- Confined Space (excavations greater than 5 feet)
- Noise
- Lightening

Heat stress Prevention procedures will be implemented according to HS400. Personal noise exposures will be controlled by instituting the Hearing Conservation Program, according to HS402. Confined space procedures outline in HS300 will be implemented if personnel are required to enter excavations greater than 5 feet.

4.4 LIGHTNING

The procedures provided below will be used to protect site personnel from lightning related injuries.

4.4.1 Training

A tailgate safety meeting will be conducted to increase awareness to the hazards and prevention of lightning related incidents.

4.4.2 Detection of Lightning

The Site Supervisor will be proactive in monitoring conditions that may produce thunderstorms and lightning. A daily and weakly weather forecast will be tracked and communicated to site personnel. When signs of impending storms, i.e., increasing wind, darkening skies, or lightening appear, local weather monitoring will be increased. The National Weather Service (www.nws.noaa.gov/) should be consulted frequently. Personnel will be notified when thunderstorms may impact the site.

The "flash/bang" (f/b) technique of measuring the distance to lightning will be reviewed with all personnel. The f/b technique is defined as: for each five seconds from the time of observing the lightning flash to hearing the associated thunder, the lightning is one mile away.

4.4.3 Suspension/Resumption of Activities

All outside activities will be suspended when a lightning flash is immediately in the area or a f/b of 20 seconds (4 miles away) is noted. Personnel may continue indoor work activities. Outdoor activities will resume when 30 minutes has passed since the last observable f/b is 20 seconds or greater.

4.4.4 Lightning Protection

When notification is given, all outside work activities will stop and personnel will gather in the support zone for a head count and further instructions. Indoor work will continue, except for the use of electrical equipment, telephones and computers. When a safe location is not present and personnel are caught by a sudden lightning event, employees should seek the lowest possible area, away from large objects which might attract lightning or fall over, e.g., trees, utility poles. The employee should assume a crouching position with their head lowered and hands over their ears. **AVOID: WATER, HIGH GROUNDS, HEAVY EQUIPMENT AND TALL, ISOLATED OBJECTS.**

4.4.5 First Aid

An employee that is struck by lightning needs immediate assistance (call 911). The body will not carry an electrical charge, but receives a severe electrical shock and may be burned. Personnel certified in first aid/CPR should inspect for shock and burns around fingers, toes, buckles and jewelry. Stay with the injured employee until medical help arrives.

4.5. VEHICLE SAFETY MANAGEMENT

Motor vehicle incidents are the number one cause of occupational fatalities, accounting for one in three deaths. Fifty percent or more of vehicle safety incidents occur while backing up. OHM/IT employees involved in the operation and use of OHM/IT and/or leased or rented vehicles will comply with the *IT Motor Vehicle/Commercial Vehicle Operation and Maintenance Procedures* (HS800/810). OHM/IT requires employees to use seat belts at all times when traveling in IT owned or leased/rented vehicles. The SS and/or SSO will develop a parking area plan, including backing vehicles into parking spaces, using spotters for backing vehicles and policy mandated vehicle inspections.

OHM/IT employees are expected to incorporate safe actions and preparations to avoid vehicle accidents and personal injury during work and off-hours. Breaks should be planned into lengthy job mobilizations and demobilizations, including rotation of drivers at regular intervals. If parking areas are busy or crowded and more than one worker is traveling in the same vehicle, one worker should remain outside the vehicle as it leaves the parking space to assist the driver with traffic observation. Vehicles traveling before dawn and at dusk in rural or wooded areas should be prepared for wildlife, e.g. deer crossing roadways.

OHM/IT employees arriving at work areas should park vehicles away from delivery, heavy equipment and vehicle loading/unloading locations to prevent parked vehicles from damage by various deliveries. Heavy equipment operators should inspect areas and request vehicles to be moved or spotters used if necessary, to maneuver equipment in tight areas. Employees who observe near misses or potential risks to parked or moving vehicles must report these to the SS or SSO immediately.

OHM/IT employees are expected to use the vehicle inspection form and check/test the safety systems on the vehicle on a daily basis. Check the following: brakes, mirrors, seat belts, tires, leakage from the undercarriage, lights and turn signals. Vehicles with safety deficiencies must be reported immediately and not driven until properly repaired. Vehicles running errands from different project sites should have telephone numbers of the job site in the vehicle in case calls for assistance are required.

Because of the different ways alcohol can affect behavior, even in very small amounts, the best and safest course is not to drink before driving. At OHM/IT, a driver with blood alcohol concentration (BAC) over 0.04% is considered to be under the influence and subject to disciplinary action. Personnel involved in motor vehicle incidents are subject to drug and alcohol testing. Whenever an employee is convicted or pleads no contest to a company related driving under the influence, he/she will be immediately terminated in accordance with HS800.

Weather conditions can have a profound effect on driving. On slippery roads, drive more slowly. Stop and turn with care. Keep several car lengths from other vehicles. At speeds in excess of 35 mph, the chances of hydroplaning increase with speed. In general, keep back 1 car length for

every 10 mph to prevent striking the car ahead.

Vehicles will be operated in accordance with the requirements listed below:

- Seatbelt use is mandatory for all passengers;
- Personnel may not ride in the back of cargo vehicles;
- The driver must make a 360 degree walk around the assigned vehicle prior to vehicle movement;
- A ground guide is used to back up any vehicle;
- Vehicle speed is limited to the posted speed limits for developed roadways, 25 mph maximum on dirt roads and 10 mph maximum off-road (based on conditions);
- Vehicle driven in four wheel low and low gear when on dirt roads or off road driving where steep grades dictate;
- All operators must possess a valid drivers license;
- Fuel or gasoline are not transported inside the passenger compartment;
- No vehicle is left running when unattended; and
- Parking brakes are used when vehicles are parked.

In the event of a vehicle incident, notify your Site Supervisor *immediately* and complete all required reports.

4.6 ACTIVITY HAZARD ANALYSES

Appendix D contains Activity Hazard Analyses (AHA) for primary site tasks. They contain detailed information on physical and chemical hazards, and provide control measures for these hazards. The AHA's will be field checked by the SS/SSO on an ongoing basis and revised as necessary. All revisions will be communicated to the work crew.

5 WORK AND SUPPORT AREAS

To prevent migration of contamination from personnel and equipment, work areas will be clearly specified as designated below prior to beginning operations. Each work area will be clearly identified using signs or physical barriers.

- Exclusion Zone
- Contamination Reduction Zone
- Support Zone

A log of all personnel visiting, entering or working on the site shall be maintained by the SSO.. Visitors will attend a site orientation given by the SSO and sign the HASP.

The following are standard safe work practices that apply to all site personnel and will be discussed in the safety briefing prior to initiating work on the site:

- Eating, drinking, chewing gum or tobacco, smoking is prohibited in the EZ/CRZs.
- Hands and face must be washed upon leaving the EZ and before eating, drinking, chewing gum or tobacco and smoking.
- A buddy system will be used. Hand signals will be established to maintain communication.
- During site operations, each worker will consider himself as a safety backup to his partner. Off-site personnel provide emergency assistance.
- Visual contact will be maintained between buddies on site when performing hazardous duties.
- All personnel must comply with established safety procedures. Any staff member who does not comply with safety policy, as established by the SS, will be immediately dismissed from the site.
- Proper decontamination procedures must be followed before leaving the site.
- All employees and visitors must sign in and out of the site.

6 PROTECTIVE EQUIPMENT

This section specifies the levels of personal protective equipment (PPE) which are or may be required for each principal activity performed at this site. All site personnel must be trained in the use of all PPE utilized. The PPE program contained in HS600 will be applied to project activities.

6.1 ANTICIPATED PROTECTION LEVELS

The following protection levels have been established for the site work activities.

Task	Initial PPE Level	Upgrade PPE Level	Skin Protection	Respiratory Protection	Other PPE
Well abandonment, Silt fence installation, Soil excavator operator, Soil loadout and disposal and Backfilling.	Level D	None	Generally none; Some clearing activities may require Tyvek coveralls to prevent insect bites/contact with poisonous plants or if in direct contact with contaminated soil (i.e. sweeping off the sides of the truck)	None	Hard-hat, Steel-toe work boots, hearing protection, leather work gloves.
Spotter for soil excavation	Level D+	Level C	Tyvek coveralls, inner latex gloves, outer nitrile gloves, boot covers	Initial: None Upgrade: Full face air purifying respirator	Hard-hat, Steel-toe work boots, hearing protection.
Soil sampling, Groundwater sampling/ monitoring and Decontaminate equipment	Level D+	None	Sample gloves, goggles/face shield when in contact with liquid contamination	None	Hard-hat, Steel-toe work boots, and hearing protection >85 dBA
General SZ Activities	Level D	None	None	None	Hard-hat, Steel-toe boots, Safety glasses, hearing protection

6.2 PROTECTION LEVEL DESCRIPTIONS

This section lists the minimum requirements for each protection level. Modification to these requirements may have been noted above.

6.2.1 Level D

Level D consists of the following:

- Safety glasses with side shields
- Hard hat
- Steel-toed work boots
- Work clothing as prescribed by weather

6.2.2 Modified Level D

Modified Level D consists of the following:

- Safety glasses with side shields
- Hard hat
- Steel-toed work boots
- Tyvek coveralls (for spotter inside the excavation)
- Sample gloves
- Nitrile gloves
- Face shield and goggles (when projectiles or splashes pose a hazard)
- Rain gear if necessary

6.2.3 Level C

Level C consists of the following:

- Full-face, air-purifying respirator with appropriate cartridges
- Hooded Coveralls suited for the contamination involved
- Hard hat
- Steel-toed work boots
- Nitrile, neoprene, latex or PVC overboots
- Nitrile, neoprene, or PVC gloves over latex sample gloves
- Wrists and ankles must be taped

6.3 AIR PURIFYING RESPIRATORS

A NIOSH approved full-face respirator with appropriate air purifying cartridges will be used for level C work. The crew members working in Level C will wear respirators equipped with air-purifying cartridges approved for: organic vapors <1,000 ppm; chlorine gas 10 ppm; hydrogen chloride <50 ppm; sulfur dioxide <50 ppm; dusts, fumes and mists with a TWA <0.05 mg/m³; asbestos-containing dusts and mists and radionuclides. Cartridges will be thrown away at the end of 8 hours based on Survivair manufacturer recommendations.

7 DECONTAMINATION PROCEDURES

This section describes the procedures necessary to ensure that both personnel and equipment are free from contamination when they leave the work site.

7.1 PERSONNEL DECONTAMINATION

Decontamination procedures will ensure that material which workers may have contacted in the EZ does not result in personal exposure and is not spread to clean areas of the site. Personnel will dispose of sample gloves and clean face shield upon work completion.

7.1.1 Suspected Contamination

Any employee suspected of sustaining skin contact with chemical materials will first use the emergency shower. Following a thorough drenching, the worker will change clothing, don clean clothing, and immediately be taken to the first-aid station. Medical attention will be provided based on the degree of injury.

7.1.2 Personal Hygiene

Before any eating, smoking, or drinking, personnel will wash hands, arms, neck and face.

7.2 EQUIPMENT DECONTAMINATION

All contaminated equipment will be decontaminated before leaving the site. Decontamination procedures will vary depending upon the contaminant involved, but may include sweeping, wiping, scraping, hosing, or steaming the exterior of the equipment. Personnel performing this task will wear the proper PPE as prescribed by the SSO.

7.3 DISPOSAL

All decontamination liquids and disposable clothing will be treated as contaminated waste unless determined otherwise by accepted testing methods. Wastes will be disposed of according to state and federal regulations.

7.3.1 Suspected Contamination

Any employee suspected of sustaining skin contact with chemical materials will remove clothing, shower, don clean clothing, and immediately be taken to the first-aid station. Medical attention will be provided based on the degree of injury.

Before any eating, smoking, or drinking, personnel will wash hands, arms, neck and face.

8 AIR MONITORING

Air monitoring will be conducted in order to characterize personnel exposures and fugitive emissions from site contaminants. Principal contaminants of concern are listed in Section 4.0 of this HASP. The target compound selected for air monitoring purposes at Site 7012 is Fuel Oil #2.

8.1 WORK AREA AIR MONITORING

Work area air monitoring at Site 7012 will consist of direct reading methods. Air monitoring will be conducted during soil excavation activities.

8.1.1 Direct Reading Air Monitoring

During soil excavation activities, direct reading air monitoring will be performed in the EZ to determine exposure to workers. A PID meter will be used to monitor for vapors in the breathing zone. A summary of air monitoring information is provided in the table below.

Monitoring Device	Monitoring Location/ Personnel	Monitoring Frequency	Action Level	Action
PID	EZ (Breathing Zone)/Recovery Technicians	Periodically during excavation activities	<150 ppm* 150 – 750 ppm* >750 ppm	Level D+ Level C Stop work and evaluate

*Sustained levels above background for 5 minutes

8.2 INSTRUMENTATION

The following is a description of the air monitoring equipment to be used at this site.

8.2.1 Photoionization Detector (PID) Intrinsically Safe

8.2.1.1 TYPE AND OPERATIONAL ASPECTS

PID Model PI 101 or equivalent

- Principle of Operation

Ionization potential (IP) - The energy required to remove the outermost electron from a molecule; measured in electron volts (eV); characteristic property of a specific chemical.

Photoionization - Using ultraviolet (UV) light to remove the outermost electron from a molecule.

Energy of UV light (10.2, 9.5, 11.7 eV) must be equal to or greater than the IP to photoionize the molecule.

Fan or pump is used to draw air into the detector where the contaminants are exposed to a UV light source (lamp).

Ions are collected on a charged plate and produce a current directly proportional to the number of ionized molecules; current is amplified and displayed on the meter.

8.2.1.2 CALIBRATION METHOD/FREQUENCIES

The PID Model PI 101 is designed for trace gas analysis in ambient air and is calibrated at HNU with certified standards of benzene, vinyl chloride, and isobutylene. Other optional calibrations are available (e.g., ammonia, ethylene oxide, H₂S, etc.).

OHM/IT will use a PID with a 10.2 eV lamp. This lamp has been determined to be most responsive to the contaminants on site. Optional probes containing lamps of 9.5 and 11.7 eV are interchangeable in use within individual read-out assemblies for different applications.

The approximate span settings for the probe that would give different readings of the amounts of trace gas of a particular species in a sample are based upon the relative photoionization sensitivities of various gases twice daily (beginning and end of shift).

It is recommended that calibration be checked twice each day (beginning and end of shift). The SSO will record and log such calibration information into an air monitoring notebook.

8.2.1.3 PREVENTATIVE MAINTENANCE

Maintenance of the PID Model PI 101 consists of cleaning the lamp and ion chamber, and replacement of the lamp or other component parts or sub-assemblies.

8.3 AIR MONITORING LOG

The SSO will ensure that all air-monitoring data is logged into a monitoring notebook. Data will include instrument used, wind direction, work process, etc. The IT CIH and/or HSM may periodically review this data.

8.4 CALIBRATION REQUIREMENTS

The PID will be calibrated daily before and after use. A separate log will be kept detailing date, time, span gas, or other standard, and name of person performing the calibration.

8.5 AIR MONITORING RESULTS

Air monitoring results will be posted for personnel inspection, and will be discussed during morning safety meetings.

9 EMERGENCY RESPONSE

9.1 PRE-EMERGENCY PLANNING

Prior to engaging in construction/remediation activities at the site, OHM/IT will plan for possible emergency situations and have available adequate supplies and manpower to respond. In addition site personnel will receive training during the site orientation concerning proper emergency response procedures.

The following situations would warrant implementation of the Emergency Response and Contingency Plan (ERCP):

Fire/Explosion	<ul style="list-style-type: none">• The potential for human injury exists.• Toxic fumes or vapors are released.• The fire could spread on site or off site and possibly ignite other flammable materials or cause heat-induced explosions.• The use of water and/or chemical fire suppressants could result in contaminated run-off.• An imminent danger of explosion exists.
Spill or Release of Hazardous Materials	<ul style="list-style-type: none">• The spill could result in the release of flammable liquids or vapors, thus causing a fire or gas explosion hazard.• The spill could cause the release of toxic liquids or fumes in sufficient quantities or in a manner that is hazardous to or could endanger human health.
Natural Disaster	<ul style="list-style-type: none">• A rainstorm exceeds the flash flood level.• The facility is in a projected tornado path or a tornado has damaged facility property.• Severe wind gusts are forecasted or have occurred and have caused damage to the facility.
Medical Emergency	<ul style="list-style-type: none">• Overexposure to hazardous materials.• Trauma injuries (broken bones, severe lacerations/bleeding, burns).• Eye/skin contact with hazardous materials.• Loss of consciousness.• Heat stress (Heat stroke).• Heart attack.• Respiratory failure.• Allergic reaction.

The following measures will be taken to assure the availability of adequate equipment and manpower resources:

- Sufficient equipment and materials will be kept on site and dedicated for emergencies only. The inventory will be replenished after each use.
- On-site emergency responders will be current in regards to training and medical surveillance programs. Copies of all applicable certificates will be kept on file for on-site personnel required to respond.
- It will be the responsibility of the emergency coordinator to brief the on-site response team on anticipated hazards at the site. The emergency coordinator shall also be responsible for anticipating and requesting equipment that will be needed for response activities.
- Emergency response activities will be coordinated with the Local Emergency Management Agency (EMA) in compliance with SARA Title III requirements.

Communications will be established prior to commencement of any activities at the remediation site. Communication will be established so that all responders on site have availability to all pertinent information to allow them to conduct their activities in a safe and healthful manner. The primary communication device will be two-way radios. Air horns may be used to alert personnel of emergency conditions. A telephone will be located on site to summon assistance in an emergency.

9.2 EMERGENCY RECOGNITION AND PREVENTION

Because unrecognized hazards may result in emergency incidents, it will be the responsibility of the Site Manager and the Site Safety Officer, through daily site inspections and employee feedback (Safety Observation Program, daily safety meetings, and Activity Hazard Analyses) to recognize and identify all hazards that are found at the site. These may include:

Chemical Hazards	<ul style="list-style-type: none"> • Materials at the site • Materials brought to the site
Physical Hazards	<ul style="list-style-type: none"> • Fire/explosion • Slip/trip/fall • Excessive noise
Mechanical Hazards	<ul style="list-style-type: none"> • Pinch points • Vehicle traffic
Environmental Hazards	<ul style="list-style-type: none"> • Electrical Storms • High winds • Heavy Rain/Snow • Temperature Extremes (Heat/Cold Stress) • Poisonous Plants/Animals

Once a hazard has been recognized, the SS and the SSO will take immediate action to prevent the hazard from becoming an emergency. This may be accomplished by the following:

- Daily safety meeting
- Task-specific training prior to commencement of activity
- Personal Protective Equipment (PPE) selection/use
- Written and approved permits for hot work, confined space
- Following all OHM/IT standard operating procedures
- Practice drills for fire, medical emergency, and hazardous substances spills

**TABLE 9.1
EMERGENCY TELEPHONE NUMBERS**

<u>Local Agencies</u> – Sea Level Fire and Rescue Ambulance Fire Police	911 or (252) 225-7721 911 911 911
<u>Immediate Emergency Care:</u> Sea Level Fire and Rescue Sea Level, NC Directions: Leave the main gate, take a right and head West on US-70. <u>Hospital –Carteret General Hospital</u> 3500 Arendell Street Morehead City, NC Directions: Leave the main gate. Take a left onto 70 West. Continue on 70 West to Morehead City. Hospital is on the right.	(252) 225-7721 (252) 247-1616
<u>Regional Poison Control Center</u>	800-552-6337
<u>State Agencies</u> State Highway Patrol	(800) 441-6127
<u>Federal Agencies</u> Agency for Toxic Substances and Disease Registry National Response Center	(404) 639-0615 (24 hr.) 800-424-8802
ROICC- Karen Boyd	(252) 466-4731 (office)
<u>OHM/IT Personnel</u> Project Manager – Taylor Sword Site Supervisor – Robert Taylor Site Health and Safety Officer – TBD Health and Safety Coordinator – Alison Harwood Program Health & Safety Manger - Bob Brooks	(757) 363-7190 ext. 246 (office) (252) 444-8302 (office) () (770) 663-1428 (office) (678) 575-0385 (cellular) (732) 469-5599 (office)
OHM/IT Corporation (24 hour)	800-537-9540
Additional Phone #'s in Section 3 this HASP	

9.3 PERSONNEL ROLES, LINES OF AUTHORITY, AND COMMUNICATIONS

This section of the ERCP describes the various roles, responsibilities, and communication procedures that will be followed by personnel involved in emergency responses.

The primary emergency coordinator for this site is the Site Supervisor. In the event an emergency occurs and the emergency coordinator is not on site, the SS or the highest-ranking employee on site will serve as the emergency coordinator until he arrives. The emergency coordinator will determine the nature of the emergency and take appropriate action as defined by this ERCP.

The emergency coordinator will implement the ERCP immediately as required. The decision to implement the plan will depend upon whether the actual incident threatens human health or the environment. Immediately after being notified of an emergency incident, the emergency coordinator or his designee will evaluate the situation to determine the appropriate action.

9.3.1 Responsibilities and Duties

This section describes the responsibilities and duties assigned to the emergency coordinator.

It is recognized that the structure of the “Incident Command System” will change as additional response organizations are added. OHM/IT will follow procedures as directed by the fire department, LEPC, State and Federal Agencies as required. OHM/IT will defer to the local Fire Department chief to assume the role of Incident Commander upon arriving on site. Additional on-site personnel may be added to the Site Emergency Response Team as required to respond effectively.

9.3.2 On-Site Emergency Coordinator Duties

The on-site emergency coordinator is responsible for implementing and directing the emergency procedures. All emergency personnel and their communications will be coordinated through the emergency coordinator. Specific duties are as follows:

- Identify the source and character of the incident, type and quantity of any release. Assess possible hazards to human health or the environment that may result directly from the problem or its control.
- Discontinue operations in the vicinity of the incident if necessary to ensure that fires, explosions, or spills do not recur or spread to other parts of the site.
- Notify local Emergency Response Teams if their help is necessary to control the incident. Table 9.1 provides telephone numbers for emergency assistance.
- Direct on-site personnel to control the incident until, if necessary, outside help arrives.
- Ensure that the building or area where the incident occurred and the surrounding area are evacuated and shut off possible ignition sources, if appropriate. The Emergency Response Team is responsible for directing site personnel such that they avoid the area of the incident and leave emergency control procedures unobstructed.
- If fire or explosion is involved, notify facility Fire Department.
- Notify ROICC
- Notify OHM/IT Project Manager
- Have protected personnel, in appropriate PPE, on standby for rescue.

If the incident may threaten human health or the environment outside of the site, the emergency coordinator should immediately determine whether evacuation of area outside of the site may be necessary and, if so, notify the Police Department and the Office of Emergency Management.

When required, notify the National Response Center. The following information should be provided to the National Response Center:

- Name and telephone number
- Name and address of facility
- Time and type of incident
- Name and quantity of materials involved, if known
- Extent of injuries
- Possible hazards to human health or the environment outside of the facility.

The emergency telephone number for the National Response Center is 800-424-8802.

If hazardous waste has been released or produced through control of the incident, ensure that:

- Waste is collected and contained.
- Containers of waste are removed or isolated from the immediate site of the emergency.
- Treatment or storage of the recovered waste, contaminated soil or surface water, or any other material that results from the incident or its control is provided.
- Ensure that no waste that is incompatible with released material is treated or stored in the facility until cleanup procedures are completed.
- Ensure that all emergency equipment used is decontaminated, recharged, and fit for its intended use before operations are resumed.

9.4 SAFE DISTANCES AND PLACES OF REFUGE

The emergency coordinator for all activities will be the SS. No single recommendation can be made for evacuation or safe distances because of the wide variety of emergencies that could occur. Safe distances can only be determined at the time of an emergency based on a combination of site and incident-specific criteria. However, the following measures are established to serve as general guidelines.

In the event of minor hazardous materials releases (small spills of low toxicity), workers in the affected area will report initially to the contamination reduction zone. Small spills or leaks (generally less than 55 gallons) will require initial evacuation of at least 50 feet in all directions to allow for cleanup and to prevent exposure. After initial assessment of the extent of the release and potential hazards, the emergency coordinator or his designee will determine the specific boundaries for evacuation. Appropriate steps such as caution tape, rope, traffic cones, barricades, or personal monitors will be used to secure the boundaries.

If an incident may threaten the health or safety of the surrounding community, the public will be informed and, if necessary, evacuated from the area. The emergency coordinator, or his designee will inform the proper agencies in the event that this is necessary. Telephone numbers are listed

in Table 9.1.

Places of refuge will be established prior to the commencement of activities. These areas must be identified for the following incidents:

- Chemical release
- Fire/explosion
- Medical emergency
- Hazardous weather

In general, evacuation will be made to the main entrance to the IT/OHM site, unless the emergency coordinator determines otherwise. It is the responsibility of the emergency coordinator to determine when it is necessary to evacuate personnel to off-site locations.

In the event of an emergency evacuation, all the employees will gather at the entrance to the site until a head count establishes that all are present and accounted for. No one is to leave the site without notifying the emergency coordinator.

9.5 EVACUATION ROUTES AND PROCEDURES

All emergencies require prompt and deliberate action. In the event of an emergency, it will be necessary to follow an established set of procedures. Such established procedures will be followed as closely as possible. However, in specific emergency situations, the emergency coordinator may deviate from the procedures to provide a more effective plan for bringing the situation under control. The emergency coordinator is responsible for determining which situations require site evacuation.

9.5.1 Evacuation Signals and Routes

Two-way radio communication and an air horn will be used to notify employees of the necessity to evacuate an area or building involved in a release/spill of a hazardous material. The crew supervisor will have a two-way radio. Only the emergency coordinator will initiate total site evacuation, however, in his absence, decision to preserve the health and safety of employees will take precedence.

9.5.2 Evacuation Procedures

In the event evacuation is necessary, the following actions will be taken:

- The emergency signal will be activated.
- No further entry of visitors, contractors, or trucks will be permitted. Vehicle traffic within the site will cease in order to allow safe exit of personnel and movement of emergency equipment.
- Shut off all machinery if safe to do so.
- ALL on-site personnel, visitors, and contractors in the support zone will assemble at the entrance to the site for a head count and await further instruction from the emergency coordinator.
- ALL persons in the exclusion zone and contamination reduction zone will be accounted for

by their immediate crew leaders (e.g., foreman). Leaders will determine the safest exits for employees and will also choose an alternate exit if the first choice is inaccessible.

- During exit, the crew leader should try to keep the group together. Immediately upon exit, the crew leader will account for all employees in his crew.
- Upon completion of the head count, the crew leader will provide the information to the emergency coordinator.
- Contract personnel and visitors will also be accounted for.
- The names of emergency response team members involved will be reported to the emergency spill control coordinator.
- The emergency coordinator or designee will make a final tally of persons. No attempt to find persons not accounted for will involve endangering lives of OHM/IT or other employees by re-entry into emergency areas.

In all questions of accountability, immediate crew leaders will be held responsible for those persons reporting to them. Visitors will be the responsibility of those employees they are seeing. Contractors and truck drivers are the responsibility of the Site Manager. The security guard will aid in accounting for visitors, contractors, and truckers by reference to sign-in sheets available from the guard shack.

- Personnel will be assigned by the emergency coordinator to be available at the main gate to direct and brief emergency responders.
- Re-entry into the site will be made only after the emergency coordinator gives clearance. At his direction, a signal or other notification will be given for re-entry into the facility.
- Drills will be held periodically to practice all of these procedures and will be treated with the same seriousness as an actual emergency.

9.6 EMERGENCY SPILL RESPONSE PROCEDURES AND EQUIPMENT

In the event of an emergency involving a hazardous material spill or release, the following general procedures will be used for rapid and safe response and control of the situation. Emergency contacts found in Table 9.1 provide a quick reference guide to follow in the event of a major spill.

9.6.1 Notification Procedures

If an employee discovers a chemical spill or process upset resulting in a vapor or material release, he or she will immediately notify the on-site emergency coordinator.

On-site Emergency Coordinator will obtain information pertaining to the following:

- The material spilled or released.
- Location of the release or spillage of hazardous material.
- An estimate of quantity released and the rate at which it is being released.
- The direction in which the spill, vapor or smoke release is heading.
- Any injuries involved.

- Fire and/or explosion or possibility of these events.
- The area and materials involved and the intensity of the fire or explosion.

This information will help the on-site emergency coordinator to assess the magnitude and potential seriousness of the spill or release.

9.6.2 Procedure for Containing/Collecting Spills

The initial response to any spill or discharge will be to protect human health and safety, and then the environment. Identification, containment, treatment, and disposal assessment will be the secondary response.

If for some reason a chemical spill is not contained within a dike or sump area, an area of isolation will be established around the spill. The size of the area will generally depend on the size of the spill and the materials involved. If the spill is large (greater than 55 gallons) and involves a tank or a pipeline rupture, an initial isolation of at least 100 ft. in all directions will be used. Small spills (less than or equal to 55 gallons) or leaks from a tank or pipe will require evacuation of at least 50 ft. in all directions to allow cleanup and repair and to prevent exposure. When any spill occurs, only those persons involved in overseeing or performing emergency operations will be allowed within the designated hazard area. If possible the area will be roped or otherwise blocked off.

If an incident may threaten the health or safety of the surrounding community, the public will be informed and possibly evacuated from the area. The on-site emergency coordinator will inform the proper agencies in the event this is necessary. (Refer to Table 9.1)

As called for in regulations developed under the Comprehensive Environmental Response Compensation Liability Act of 1980 (Superfund), OHM/IT's practice is to report a spill of a pound or more of any hazardous material for which a reportable quantity has not been established and which is listed under the Solid Waste Disposal Act, Clean Air Act, Clean Water Act, or TSCA. OHM/IT also follows the same practice for any substances not listed in the Acts noted above but which can be classified as a hazardous waste under RCRA.

Clean up personnel will take the following measures:

- Make sure all unnecessary persons are removed from the hazard area.
- Put on protective clothing and equipment.
- If a flammable material is involved, remove all ignition sources, and use spark and explosion proof equipment for recovery of material.
- Remove all surrounding materials that could be especially reactive with materials in the waste. Determine the major components in the waste at the time of the spill.
- If wastes reach a storm sewer, try to dam the outfall by using sand, earth, sandbags, etc. If this is done, pump this material out into a temporary holding tank or drums as soon as possible.
- Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil into drums for incineration or removal to an approved disposal site.

- Spray the spill area with foam, if available, if volatile emissions may occur.
- Apply appropriate spill control media (e.g. clay, sand, lime, etc.) to absorb discharged liquids.
- For large spills, establish diking around leading edge of spill using booms, sand, clay or other appropriate material. If possible, use diaphragm pump to transfer discharged liquid to drums or holding tank.

9.6.3 Emergency Response Equipment

The following equipment will be staged in the support zone and throughout the site, as needed, to provide for safety and first aid during emergency responses.

- ABC-type fire extinguisher
- First-aid kit, industrial size
- Eyewash/safety shower (Shower is available at the Base Fire Department)
- Emergency signal horn

9.6.4 Emergency Spill Response Clean-Up Materials and Equipment

A sufficient supply of appropriate emergency response clean-up and personal protective equipment will be inventoried and inspected, visually, on a weekly basis.

The following equipment will be dedicated for spill cleanup:

- Plastic shovels for recovering corrosive and flammable materials.
- Sausage-shaped absorbent booms for diking liquid spills, drains, or sewers.
- Sorbent sheets (diapers) for absorbing liquid spills.
- 55-gallon open-top drums for containerization of waste materials.

*NOTE: All contaminated soils, absorbent materials, solvents and other materials resulting from the clean-up of spilled or discharged substances shall be properly stored, labeled, and disposed of off-site.

9.7 EMERGENCY CONTINGENCY PLAN

This section of the ERCP details the contingency measures OHM/IT will take to prepare for and respond to fires, explosions, spills and releases of hazardous materials, hazardous weather, and medical emergencies.

9.8 MEDICAL EMERGENCY CONTINGENCY MEASURES

The procedures listed below will be used to respond to medical emergencies. The SSO will contact the local hospital and inform them of the site hazards and potential emergency situations. A minimum of two First-Aid/CPR trained personnel will be maintained on site.

9.8.1 Response

The nearest workers will immediately assist a person who shows signs of medical distress or who is involved in an accident. The work crew supervisor will be summoned.

The work crew supervisor will immediately make radio contact with the on-site emergency coordinator to alert him of a medical emergency situation. The supervisor will advise the following information:

- Location of the victim at the work site
- Nature of the emergency
- Whether the victim is conscious
- Specific conditions contributing to the emergency, if known

The Emergency Coordinator will notify the Site Safety Officer. The following actions will then be taken depending on the severity of the incident:

Life-Threatening Incident

If an apparent life-threatening condition exists, the crew supervisor will inform the emergency coordinator by radio, and the local Emergency Response Services (EMS) will be immediately called. An on-site person will be appointed who will meet the EMS and have him/her quickly taken to the victim. Any injury within the EZ will be evacuated by OHM/IT personnel to a clean area for treatment by (EMS) personnel. No one will be able to enter the EZ without showing proof of training, medical surveillance and site orientation.

Non Life-Threatening Incident

If it is determined that no threat to life is present, the Site Manager will direct the injured person through decontamination procedures (see below) appropriate to the nature of the illness or accident. Appropriate first aid or medical attention will then be administered.

*NOTE: The area surrounding an accident site must not be disturbed until the scene has been cleared by the Site Manager.

Any personnel requiring emergency medical attention will be evacuated from exclusion and contamination reduction zones if doing so would not endanger the life of the injured person or otherwise aggravate the injury. Personnel will not enter the area to attempt a rescue if their own lives would be threatened. The decision whether or not to decontaminate a victim prior to evacuation is based on the type and severity of the illness or injury and the nature of the contaminant. For some emergency victims, immediate decontamination may be an essential part of life-saving first aid. For others, decontamination may aggravate the injury or delay life-saving first aid. Decontamination will be performed if it does not interfere with essential treatment.

If decontamination can be performed, observe the following procedures:

- Wash external clothing and cut it away.
- If decontamination cannot be performed, observe the following procedures.
- Wrap the victim in blankets or plastic to reduce contamination of other personnel.
- Alert emergency and off-site medical personnel to potential contamination, instruct them about specific decontamination procedures.
- Send site personnel familiar with the incident and chemical safety information, e.g. MSDS, with the affected person.

All injuries, no matter how small, will be reported to the SS and SSO. An accident/injury/illness report will be completely and properly filled out and submitted to the Health and Safety Director/Project CIH, in accordance with OHM/IT's reporting procedures.

A list of emergency telephone numbers is given in Table 9.1.

9.8.2 Notification

The following personnel/agencies will be notified in the event of a medical emergency:

- Local Fire Department or EMS
- On-site Emergency Coordinator
- Workers in the affected areas
- ROICC

9.9 FIRE CONTINGENCY MEASURES

OHM/IT personnel and subcontractors are not trained professional firefighters. Therefore, if there is any doubt that a fire can be quickly contained and extinguished, personnel will notify the emergency coordinator by radio and vacate the structure or area. The emergency coordinator will immediately notify the local Fire Department.

The following procedures will be used to prevent the possibility of fires and resulting injuries:

- Sources of ignition will be kept away from where flammable materials are handled or stored.
- "No smoking" signs will be conspicuously posted in areas where flammable materials are present.
- Fire extinguishers will be placed in all areas where a fire hazard may exist.
- Before workers begin operations in an area the foreman will give instruction on egress procedures and assembly points. Egress routes will be posted in work areas and exit points clearly marked.

9.9.1 Response

The following procedures will be used in the event of a fire:

- Anyone who sees a fire will notify his or her supervisor who will then contact the Emergency Coordinator by radio. The emergency coordinator will activate the emergency air horns and contact the local Fire Department.
- When the emergency siren sounds, workers will disconnect electrical equipment in use (if possible) and proceed to the nearest fire exit.
- Work crews will be comprised of pairs of workers (buddy system) who join each other immediately after hearing the fire alarm and remain together throughout the emergency. Workers will assemble at a predetermined rally point for a head count.
- When a worker has extinguished a small fire, the emergency coordinator will be notified.

9.10 HAZARDOUS WEATHER CONTINGENCY MEASURES

Operations will not be started or continued when the following hazardous weather conditions are present:

- Lightning
- Heavy Rains
- High Winds

9.10.1 Response

- All equipment will be shut down and secured to prevent damage.
- Personnel will be moved to safe refuge. The emergency coordinator will determine when it is necessary to evacuate personnel to off-site locations and will coordinate efforts with fire, police and other agencies.

9.10.2 Notification

The emergency coordinator will be responsible for assessing hazardous weather conditions and notifying personnel of specific contingency measures. Notifications will include:

- OHM/IT employees and subcontractors
- ROICC
- Local Emergency Management Agency

9.11 SPILL/RELEASE CONTINGENCY MEASURES

In the event of release or spill of a hazardous material the following measures will be taken:

9.11.1 Response

Any person observing a spill or release will act to remove and/or protect injured/contaminated persons from any life-threatening situation. First aid and/or decontamination procedures will be implemented as appropriate.

First aid will be administered to injured/contaminated personnel. Unsuspecting persons/vehicles will be warned of the hazard. All personnel will act to prevent any unsuspecting persons from coming in contact with spilled materials by alerting other nearby persons. Attempt to stop the spill at the source, if possible. Without taking unnecessary risks, personnel will attempt to stop the spill at the source. This may involve activities such as uprighting a drum, closing a valve or temporarily sealing a hole with a plug.

Utilizing radio communications, the emergency coordinator will be notified of the spill/release, including information on material spilled, quantity, personnel injuries and immediate life threatening hazards. Notification procedures will be followed to inform on-site personnel and off-site agencies. The emergency coordinator will make a rapid assessment of the spill/release and direct confinement, containment and control measures. Depending upon the nature of the spill, measures may include:

- Construction of a temporary containment berm utilizing on-site clay absorbent earth
- Digging a sump, installing a polyethylene liner and

- Diverting the spill material into the sump placing drums under the leak to collect the spilling material before it flows over the ground
- Transferring the material from its original container to another container

The emergency coordinator will notify the ROICC of the spill and steps taken to institute clean up. Emergency response personnel will clean up all spills following the spill clean-up plan developed by the emergency coordinator. Supplies necessary to clean up a spill will be immediately available on-site. Such items may include, but are not limited to:

- Shovel, rake
- Clay absorbent
- Personal safety equipment
- Steel drums
- Miscellaneous hand tools

The major supply of material and equipment will be located in the Support Zone. Smaller supplies will kept at active work locations. The emergency coordinator will inspect the spill site to determine that the spill has been cleaned up to the satisfaction of the ROICC. If necessary, soil, water or air samples may be taken and analyzed to demonstrate the effectiveness of the spill clean-up effort. The emergency coordinator will determine the cause of the spill and determine remedial steps to ensure that recurrence is prevented. The emergency coordinator will review the cause with the ROICC and obtain his concurrence with the remedial action plan.

10 TRAINING REQUIREMENTS

All personnel entering the exclusion zone will be trained in the provisions of this site safety plan and be required to sign the Site Safety Plan Acknowledgment in Appendix C.

Site-specific training for activities at Site 7012 site will include potential site contaminants, Hazard Communication as per 29 CFR 1926.59 site physical and environmental hazards, emergency response and evacuation procedures, and emergency telephone numbers will be held at the site location by the SS before any site work activities begin.

Outlines of the orientation for OHM/IT / sub-contract personnel and visitors are presented below:

OHM/IT/SUBCONTRACTORS	VISITOR ORIENTATION
<ul style="list-style-type: none"> • HASP sign off • Sign in/out procedures • Site background • Chain of command • Rules and regulations • Hours of work • Absences • Equipment • Emergency Information • Emergency signal • Gathering point • Responsibilities/roles • Emergency phone numbers • Work Zones • Contaminants and Material Safety Data Sheets (MSDS) [Hazard Communication Program] • Activity Hazard Analysis (AHAs) • Forms, site-specific • Incident Reporting 	<ul style="list-style-type: none"> • Sign in/out procedures • Review of Site map • Work Zones in progress • Hazard Communication • Emergency plan/signals • Training/medical requirements • Zones/areas open to visitors

11 MEDICAL SURVEILLANCE PROGRAM

All OHM/IT personnel participate in a medical and health monitoring program. This program is initiated when the employee starts work with a complete physical and medical history and is continued on a regular basis. A listing of OHM/IT's worker medical profile is shown below. This program was developed in conjunction with a consultant toxicologist and IT/OHM's occupational health physician. Other medical consultants are retained when additional expertise is required.

The medical surveillance program meets the requirements of the OSHA Standard 29 CFR 1910.120/1926.65(f).

The following information is provided in the event that medical attention is necessary.

The IT/OHM Medical Director is:

Dr. Elayne Theriault
Continuum Health Care
800-229-3674 (office)

Non-emergency work related injuries:

Newport Family Practice
338 Howard Boulevard
Newport, NC
(252) 223-5054

The IT/OHM Medical Director and the HSC and/or HSM will be immediately notified of any suspected exposures to hazardous materials/wastes.

APPENDIX A

MATERIAL SAFETY DATA SHEETS (MSDS's)

MSDS's for site contaminants are included in this section. A listing of chemicals that may be brought to the site are listed below. Copies of the MSDS' for those chemicals listed below will be maintained in the IT site dedicated vehicle.

Materials Brought to the Site:

Alconox

Diesel

Gasoline

Site Contaminant:

Fuel Oil #2

Please reduce your browser font size for better viewing and printing.

MSDS **Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response In Canada
CANUTEC: 613-998-6085

Outside U.S. and Canada
Chemtree: 202-483-7916

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

ALCONOX(tm)

MSDS Number: A2052 --- *Effective Date: 12/08/96*

1. Product Identification

Synonyms: Alkyl Aryl Sulfonates
CAS No.: Not applicable.
Molecular Weight: Not applicable.
Chemical Formula: Not applicable.
Product Codes: A461

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Alconox (tm)	N/A	90 - 100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! CAUSES IRRITATION.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 1 - Slight
Flammability Rating: 0 - None
Reactivity Rating: 1 - Slight
Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT
Storage Color Code: Orange (General Storage)

Potential Health Effects

Inhalation:
None identified.

Ingestion:
May be harmful.

Skin Contact:
Irritation.

Eye Contact:
Irritation.

Chronic Exposure:
No information found.

Aggravation of Pre-existing Conditions:
No information found.

4. First Aid Measures

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Prompt action is essential.

Ingestion:
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes.

Eye Contact:
In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

5. Fire Fighting Measures

Fire:
Not expected to be a fire hazard.

Explosion:
None identified.

Fire Extinguishing Media:
Use extinguishing media appropriate for surrounding fire.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Wear self-contained breathing apparatus and full protective clothing. With clean shovel, carefully place material into clean, dry container and cover; remove from area. Flush spill area with water.

7. Handling and Storage

Keep container tightly closed. Suitable for any general chemical storage area. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to the substance is apparent, consult an industrial hygienist. For emergencies, or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White Powder.

Odor:

No information found.

Solubility:

Appreciable (>10%)

Specific Gravity:

0.00

pH:

No information found.

% Volatiles by volume @ 21C (70F):

N/A

Boiling Point:

No information found.

Melting Point:

No information found.

Vapor Density (Air=1):

Not applicable.

Vapor Pressure (mm Hg):

Not applicable.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

No information found.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

No information found.

Conditions to Avoid:

No information found.

11. Toxicological Information

-----\Cancer Lists\-----

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Alconox (tm)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Alconox (tm)	Yes	No	No	No

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	---Canada--- DSL	NDSL	Phil.
Alconox (tm)	No	No	Yes	No

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302- RQ TPQ		-SARA 313- List	Chemical Catg.
Alconox (tm)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8 (d)
Alconox (tm)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
 Reactivity: No (Pure / Solid)

Australian Hazchem Code: No information found.

Poison Schedule: No information found.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

Label Hazard Warning:

WARNING! CAUSES IRRITATION.

Label Precautions:

Keep in tightly closed container. Wash thoroughly after handling.

Label First Aid:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse.

Product Use:

Laboratory Reagent. Research and Development Use Only.

Revision Information:

Pure. New 16 section MSDS format, all sections have been revised.

Disclaimer:

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Prepared by: Strategic Services Division
Phone Number: (314) 539-1600 (U.S.A.)



Genium Publishing Corporation

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Material Safety Data Sheets Collection:

Sheet No. 470
Diesel Fuel Oil No. 2-D

Issued: 10/81 Revision: A, 11/90

Section 1. Material Identification

33

Diesel Fuel Oil No. 2-D Description: Diesel fuel is obtained from the middle distillate in petroleum separation; a distillate oil of low sulfur content. It is composed chiefly of unbranched paraffins. Diesel fuel is available in various grades, one of which is synonymous with fuel oil No. 2-D. This diesel fuel oil requires a minimum Cetane No. (efficiency rating for diesel fuel comparable to octane number ratings for gasoline) of 40 (ASTM D613). Used as a fuel for trucks, ships, and other automotive engines; as mosquito control (coating on breeding waters); and for drilling muds.

Other Designations: CAS No. 68334-30-5, diesel fuel.

Manufacturer: Contact your supplier or distributor. Consult the latest *Chemicalweek Buyers' Guide*^(TM) for a suppliers list.

Cautions: Diesel fuel oil No. 2-D is a skin irritant and central nervous depressant with high mist concentrations. It is an environmental hazard and moderate fire risk.

R	1
I	-
S	2
K	2

NFPA



HMIS

H 0

F 2

R 0

PPG*

* Sec. 8

Section 2. Ingredients and Occupational Exposure Limits

Diesel fuel oil No. 2-D*

1989 OSHA PEL	1990-91 ACGIH TLV	1988 NIOSH REL	1985-86 Toxicity Data†
None established	Mineral Oil Mist TWA: 5 mg/m ³ † STEL: 10 mg/m ³	None established	Rat, oral, LD ₅₀ : 9 g/kg produces gastrointestinal (hypermotility, diarrhea) effects

* Diesel fuel No. 2-D tends to be low in aromatics and high in paraffinics. This fuel oil is complex mixture of: 1) >95% paraffinic, olefinic, naphthenic, and aromatic hydrocarbons, 2) sulfur (<0.5%), and 3) benzene (<100 ppm). [A low benzene level reduces carcinogenic risk. Fuel oils can be exempted under the benzene standard (29 CFR 1910.1028)]. Although low in the fuel itself, benzene concentrations are likely to be much higher in processing areas.

† As sampled by nonvapor-collecting method.

‡ Monitor NIOSH, RTECS (HZ1800000), for future toxicity data.

Section 3. Physical Data

Boiling Point Range: 340 to 675 °F (171 to 358 °C)	Specific Gravity: <0.86
Viscosity: 1.9 to 4.1 centistoke at 104 °F (40 °C)	Water Solubility: Insoluble

Appearance and Odor: Brown, slightly viscous liquid.

Section 4. Fire and Explosion Data

Flash Point: 125 °F (52 °C) min.	Autoignition Temperature: >500 °F (932 °C)	LEL: 0.6% v/v	UEL: 7.5% v/v
---	---	----------------------	----------------------

Extinguishing Media: Use dry chemical, carbon dioxide, or foam to fight fire. Use a water spray to cool fire exposed containers. Do not use a forced water spray directly on burning oil since this will scatter the fire. Use a smothering technique for extinguishing fire.

Unusual Fire or Explosion Hazards: Diesel fuel oil No. 2-D is a OSHA Class II combustible liquid. Its volatility is similar to that of gas oil. Vapors may travel to a source of ignition and flash back.

Special Fire-fighting Procedures: Isolate hazard area and deny entry. Since fire may produce toxic fumes, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode and full protective clothing. If feasible, remove containers from fire. Be aware of runoff from fire control methods. Do not release to sewers or waterways due to pollution and fire or explosion hazard.

Section 5. Reactivity Data

Stability/Polymerization: Diesel fuel oil No. 2-D is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur.

Chemical Incompatibilities: It is incompatible with strong oxidizing agents; heating greatly increases the fire hazard.

Conditions to Avoid: Avoid heat and ignition sources.

Hazardous Products of Decomposition: Thermal oxidative decomposition of diesel fuel oil No. 2-D can produce various hydrocarbons and hydrocarbon derivatives, and other partial oxidation products such as carbon dioxide, carbon monoxide, and sulfur dioxide.

Section 6. Health Hazard Data

Genotoxicity: Although the IARC has not assigned an overall evaluation to diesel fuels as a group, it has evaluated occupational exposures in Europe as being as an IARC probable human carcinogen (Group 2A). It has evaluated distillate (light) diesel oils as not classifiable as human carcinogen (Group 3).

Acute Risks: Although diesel fuel's toxicologic effects should resemble kerosine's, they are somewhat more pronounced due to additives as sulfurized esters. Excessive inhalation of aerosol or mist can cause respiratory tract irritation, headache, dizziness, nausea, vomiting, and loss of coordination, depending on concentration and exposure time. When removed from exposure area, affected persons usually recover completely. If vomiting occurs after ingestion and if oil is aspirated into the lungs, hemorrhaging and pulmonary edema, progressing to renal injury and chemical pneumonitis, may result. A comparative ratio of oral to aspirated lethal doses may be 1 pt vs. 5 ml. Aspiration may also result in transient CNS depression or excitement. Secondary effects may include hypoxia (insufficient oxygen in body cells), infection, pneumatoxemia, and chronic lung dysfunction. Inhalation may result in euphoria, cardiac dysrhythmias, respiratory arrest, and CNS toxicity. Prolonged or repeated skin contact may irritate hair follicles and block sebaceous glands, producing a rash of acne pimples and spots, usually on the face and neck.

Chronic Conditions Aggravated by Long-Term Exposure: None reported.

Target Organs: Central nervous system, skin, and mucous membranes.

Primary Entry Routes: Inhalation, ingestion.

Acute Effects: Systemic effects from ingestion include gastrointestinal irritation, vomiting, diarrhea, and in severe cases central nervous system depression, progressing to coma or death. Inhalation of aerosols or mists may result in increased rate of respiration, tachycardia (excessively rapid heartbeat), and cyanosis (dark purplish discoloration of the skin and mucous membranes caused by deficient blood oxygenation).

Chronic Effects: Repeated contact with the skin causes dermatitis.

First Aid

Eye: Gently lift the eyelids and flush immediately and continuously with flooding amounts of water until transported to an emergency medical facility. Consult a physician immediately.

Skin: Quickly remove contaminated clothing. Rinse with flooding amounts of water for at least 15 min. If large areas of the body have been exposed or if irritation persists, get medical help immediately. Wash affected area with soap and water.

Respiration: Remove exposed person to fresh air and support breathing as needed.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. If ingested, *do not induce vomiting* due to aspiration hazard.

Aspiration: Transport to a physician immediately. Position to avoid aspiration.

First Aid: Get appropriate in-plant, paramedic, or community medical support.

Physicians: Gastric lavage is contraindicated due to aspiration hazard. Preferred antidotes are charcoal and milk. In cases of severe aspiration pneumonitis, consider monitoring arterial blood gases to ensure adequate ventilation. Observe the patient for 6 hr. If vital signs become abnormal or symptoms develop, obtain a chest x-ray.

Section 7. Spill, Leak, and Disposal Procedures

Leak: Notify safety personnel, evacuate area for large spills, remove all heat and ignition sources, and provide maximum explosion-proof ventilation. Cleanup personnel should protect against vapor inhalation and liquid contact. Clean up spills promptly to reduce fire or vapor hazards. Use noncombustible absorbent material to pick up small spills or residues. For large spills, dike far ahead to contain. Pick up liquid for reclamation or disposal. Do not release to sewers or waterways due to health and fire and/or explosion hazard. Follow applicable OSHA regulations (29 CFR 1910.120). Diesel fuel oil No. 2-D spills may be environmental hazards. Report large spills.

Spill: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

Designations

Hazardous Waste (40 CFR 261.21): Ignitable waste

LA Hazardous Substance (40 CFR 302.4): Not listed

Extremely Hazardous Substance (40 CFR 355): Not listed

Toxic Chemical (40 CFR 372.65): Not listed

Designations

Contaminant (29 CFR 1910.1000, Subpart Z): Not listed

Section 8. Special Protection Data

Eye Protection: Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133).

Respirator: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, use a NIOSH-approved respirator with a mist filter and organic vapor cartridge. For emergency or nonroutine operations (cleaning spills, maintenance, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.*

Hand Protection: Wear impervious gloves, boots, aprons, and gauntlets to prevent skin contact.

Ventilation: Provide general and local explosion-proof ventilation systems to maintain airborne concentrations that promote worker safety and productivity. Local exhaust ventilation is preferred since it prevents contaminant dispersion into the work area by controlling it at its source.⁽¹⁰⁾

Stations: Make available in the work area emergency eyewash stations, safety/quick-drench showers, and washing facilities.

Contaminated Equipment: Never wear contact lenses in the work area: soft lenses may absorb, and all lenses concentrate, irritants. Remove this material from your shoes and equipment. Launder contaminated clothing before wearing.

Hygiene: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, or using the toilet, or applying cosmetics.

Section 9. Special Precautions and Comments

Storage Requirements: Use and storage conditions should be suitable for a OSHA Class II combustible liquid. Store in closed containers in a well-ventilated area away from heat and ignition sources and strong oxidizing agents. Protect containers from physical damage. To prevent static electricity, electrically ground and bond all containers and equipment used in shipping, receiving, or transferring operations. Use nonsparking tools and explosion-proof electrical equipment. No smoking in storage or use areas.

Working Controls: Avoid vapor or mist inhalation and prolonged skin contact. Wear protective rubber gloves and chemical safety glasses when contact with liquid or high mist concentration may occur. Additional suitable protective clothing may be required depending on working conditions.

Hygiene: Institute a respiratory protection program that includes regular training, maintenance, inspection, and evaluation. Practice good personal hygiene and housekeeping procedures. Do not wear oil contaminated clothing. At least weekly laundering of work clothes is recommended. Do not put oily rags in pockets. When working with this material, wear gloves or use barrier cream.

Transportation Data (49 CFR 172.101)

UN Name: Fuel oil

UN Class: Combustible liquid

UN ID: NA1993

Label: None

Shipping Exceptions: 173.118a

Shipping Requirements: None

Collection References: 1, 6, 7, 12, 73, 84, 101, 103, 126, 127, 132, 133, 136, 143, 146

Prepared by: MJ Allison, BS; **Industrial Hygiene Review:** DJ Wilson, CIH; **Medical Review:** AC Darlington, MD; **Edited by:** JR Stuart, MS

KOCH REFINING -- 0900 UNLEADED GASOLINE, 87 OCTANE - GASOLINE,AUTOMOTIVE
MATERIAL SAFETY DATA SHEET
NSN: 9130001487103
Manufacturer's CAGE: 3V260
Part No. Indicator: B
Part Number/Trade Name: 0900 UNLEADED GASOLINE, 87 OCTANE

=====
General Information
=====

Item Name: GASOLINE,AUTOMOTIVE
Company's Name: KOCH REFINING CO INC
Company's Street: SUNTIDE RD
Company's P. O. Box: 2608
Company's City: CORPUS CHRISTI
Company's State: TX
Company's Country: US
Company's Zip Code: 78403
Company's Emerg Ph #: 800-424-9300 (CHEMTREC)/512-241-4811
Company's Info Ph #: 512-241-4811 / 316-832-8488
Record No. For Safety Entry: 073
Tot Safety Entries This Stk#: 120
Status: FE
Date MSDS Prepared: 14APR94
Safety Data Review Date: 26MAR96
Supply Item Manager: KY
Preparer's Company: ENVRIO,HEALTH & SAFETY
Preparer's St Or P. O. Box: KOCH INDUSTRIES, INC
MSDS Serial Number: BYHHF
Specification Number: VV-G-001690A
Spec Type, Grade, Class: CLASS A,B,C,D,E,REG
Hazard Characteristic Code: F2

=====
Ingredients/Identity Information
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=====
Physical/Chemical Characteristics
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Appearance And Odor: CLEAR, COLORLESS LIQUID W/SHARP, PENETRATING,
AROMATIC ODOR.
Boiling Point: 90.0F,32.2C
Melting Point: -130F,-90C
Vapor Pressure (MM Hg/70 F): 348-698
Vapor Density (Air=1): 3-4
Specific Gravity: 0.73
Evaporation Rate And Ref: MODERATELY FAST, WATER=1
Solubility In Water: NEGLIGIBLE.
Percent Volatiles By Volume: 100
pH: NEUTRA

=====
Fire and Explosion Hazard Data
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Flash Point: -40F,-40C
Lower Explosive Limit: 1.4
Upper Explosive Limit: 7.6
Extinguishing Media: NONE SPECIFIED BY MANUFACTURER.
Special Fire Fighting Proc: NONE SPECIFIED BY MANUFACTURER.
Unusual Fire And Expl Hazrds: DANGER!EXTREMENLY FLAMM.VAP MAY CAUSE FLASH
FIRE.

=====
Reactivity Data
=====

Stability: YES
Cond To Avoid (Stability): ALL SOURCES OF IGNITION.

Materials To Avoid: INCOMPATIBLE W/OXIDIZING AGENTS.
Hazardous Decomp Products: COMBUSTION MAY PRODUCE CO, NOX, SOX & REACTIVE HDYROCARBONS.
Conditions To Avoid (Poly): NONE SPECIFIED BY MANUFACTURER.

=====
Health Hazard Data
=====

LD50-LC50 Mixture: UNKNOWN
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: WARNING!MAY CAUSE CARDIAC SENSITIZATION. ASPIRATION HAZ IF SWALLOWED-CAN ENTER LUNGS & CAUSE DMG.OVEREXPO MAY CAUSE CNS DEPRESS.MAY BE IRRIT TO SKIN/EYES/RESP TRACT.POTENTIAL CANCER HAZ. CONTAINS BENZENE--KNOWN HUMAN CARCINOGEN.INGEST:SLIGHTLY TOXIC.IRRIT OF MOUTH/THROAT/GI TRACT.SKIN:SLIGHTLY IRRIT.DEFAT AGENT.(SUPPLEM)
Carcinogenicity - NTP: YES
Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: YES
Explanation Carcinogenicity: CONTAINS Benzene [71-43-2] WHICH IS LISTED BY NTP AND IARC AND REGULATED BY OSHA AS A CARCINOGEN.
Signs/Symptoms Of Overexp: INGEST:SALV, PAIN, NAU, VOMIT, DIARR.ASPIRATION INTO LUNGS MAY CAUSE CHEM PNEU/LUNG DMG.OVEREXPO MAY CAUSE SYSTEMIC DMG INCLUDING TARGET ORGAN EFFECTS KIDNEY, LIVER, CNS.SKIN: DRYING, REDDENING, ITCH, PAIN, INFLAMM, CRACK, 2ND INFECTION W/TISSUE DMG.INHAL: CARDIAC SENS, ARRHYTHMIAS, DEATH FRM CARDIAC ARREST.
Med Cond Aggravated By Exp: PRE-EXISTING MED CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE INCLUDE DISORDERS OF SKIN, KIDNEY, LIVER & RESP TRACT.
Emergency/First Aid Proc: INGEST:DO NOT INDUCE VOMIT-ASPIRATION HAZ.IF SPONT KEEP HEAD BELOW HIPS.MONITOR BREATH.KEEP WARM/@REST.GASTRIC LAVAGE. SKIN:IMMED WASH W/PLENTY OF SOAP/WATER WHILE REMOVE CONTMAIN CLOTH/SHOE. EYE:FLUSH IMMED W/LG AMTS OF WATER @LEAST 15MINS,OPN EYELIDS.INHAL:REMOVE TO FRESH AIR.NOT BREATH GIVE CPR.BREATH DIFFI CLEAR AIRWAY/GIVE OXY.KEEP WARM/@REST.IN ALL CASES IRRIT PERSIST/DEVELOPS GET IMMED MED AT

=====
Precautions for Safe Handling and Use
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Steps If Matl Released/Spill: REMOVE ALL IGN SOURCES.ISOLATE HAZ AREA/DENY ENTRY.TAKE IMMED STEPS TO STOP/CONTAIN SPILL.EXERCISE CAUTION REGARDING PERSONNEL SAFT/EXPO.NOTIFY PROPER AUTHORITIES;RQ=333LBS.ABSORB W/INERT MATL.PLACE IN CHEM WASTE CNTNR.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: AS SUPPLIED HAZ WASTE DUE TO BENZENE & IGNIT. DISPOSE IAW 40CFR IN PROPERLY PERMITTED FACIL.CHECK STATE/LOC REGS.CHEM ADDN/PROCESSING/ALTERING MATL MAKE WASTE MANAGEMENT INFO PRESENT INCOMPLETE/INACCU/INAPPROP.DISPOSE OF IAW ALL FED/STATE/LOC REGS.
Precautions-Handling/Storing: STORE TIGHTLY CLSD CNTNR @COOL DRY ISOLATED WELL VENTI AREA AWAY FRM HEAT/IGN SOURCES/INCOMP.AVOID STRG OXIDIZERS CONTACT.DON'T EAT/SMOK/DRK NEAR MATL
Other Precautions: GROUND LINES/EQPMT WHEN TRANSFER PROD.USE OF ANY HYDROCARBON FUEL IN AREA W/O ADEQUA VENTI MAY RESULT IN HAZ COMBUST PROD/ INADEQUA OXY LEVELS.GASOLINE ONE OF SOLVTS USED BY CHEM SUBST ABUSERS; PRESENT ACUTE/CHRONIC CNS SIGNS/SYMP/ARRHYTHMIAS

=====
Control Measures
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Respiratory Protection: NIOSH/MSHA APPROVED AIR PURIFYING RESP (LIMITED PROT)W/ORG VAP CARTRIDGE/CANISTER MAY BE PERMISSIBLE UNDER CERTAIN CIRCUMSTANCES WHERE AIRBORNE CONCEN EXPECTED TO EXCEED EXPO LIMITS.USE +PRESS AIR SUPPLIED RESP FOR UNK CONCEN/ADEQU PROTECT
Ventilation: VENTILATION & OTHER FORMS OF ENGINEERING CONTROLS ARE PREFERRED MEANS FOR CONTROLLING EXPOSURES.
Protective Gloves: APPROPRIATE CHEM PROT GLOVES.

Eye Protection: CHEM SAFTY GOGG, FACE SHILED.

Other Protective Equipment: EYEWASH FACILITY.USE GOOD PERSONAL HYGIENE.USE NON-SPARKS TOOL.

Work Hygienic Practices: LAUNDER/DISCARD CONTAMIN CLOTH;MEANWHILE KEEP IN CLSD CNTNR.INFORM CLEANERS OF CONTMAIN.DISCARD CONTAMIN LEATHER GOODS.

Suppl. Safety & Health Data: HEALTH HAZ:REPEAT/PROLONG CONTACT W/LG AMTS SLIGHT TRANSIENT IRRIT,LACRIMATION,BURNING SENSATION.IRRIT/CONJUCNTIVITIS.

INHAL:NON TO SLIGHTLY TOXIC.IRRIT NOSE/THROAT/LUNGS.CNS DEPRESS. EMPTY CNTNRS CONTAIN PROD RESIDUE-TAKE NECESSARY PRECAUTIONS.

=====
Transportation Data
=====

=====
Disposal Data
=====

=====
Label Data
=====

Label Required: YES

Label Status: G

Common Name: 0900 UNLEADED GASOLINE, 87 OCTANE

Special Hazard Precautions: WARNING!MAY CAUSE CARDIAC SENSITIZATION.

ASPIRATION HAZ IF SWALLOWED-CAN ENTER LUNGS & CAUSE DMG.OVEREXPO MAY CAUSE CNS DEPRESS.MAY BE IRRIT TO SKIN/EYES/RESP TRACT.POTENTIAL CANCER HAZ.

CONTAINS BENZENE--KNOWN HUMAN CARCINOGEN.INGEST:SLIGHTLY TOXIC.IRRIT OF MOUTH/THROAT/GI TRACT.SKIN:SLIGHTLY IRRIT.DEFAT AGENT.(SUPPLEM)INGEST:SALV, PAIN,NAU,VOMIT,DIARR.ASPIRATION INTO LUNGS MAY CAUSE CHEM PNEU/LUNG DMG. OVEREXPO MAY CAUSE SYSTEMIC DMG INCLUDING TARGET ORGAN EFFECTS KIDNEY, LIVER,CNS.SKIN:DRYING,REDDENING,ITCH,PAIN,INFLAMM,CRACK,2ND INFECTION W/ TISSUE DMG.INHAL:CARDIAC SENS,ARRHYTHMIAS,DEATH FRM CARDIAC ARREST.

Label Name: KOCH REFINING CO INC

Label Street: SUNTIDE RD

Label P.O. Box: 2608

Label City: CORPUS CHRISTI

Label State: TX

Label Zip Code: 78403

Label Country: US

Label Emergency Number: 800-424-9300(CHEMTREC)/512-241-4811

TEXACO -- 00435 DIESEL FUEL 2 (BURNER OIL #2) - DIESEL FUEL
 MATERIAL SAFETY DATA SHEET
 NSN: 9140002865294
 Manufacturer's CAGE: 7B131
 Part No. Indicator: A
 Part Number/Trade Name: 00435 DIESEL FUEL 2 (BURNER OIL #2)

=====
 General Information
 =====

Item Name: DIESEL FUEL
 Company's Name: TEXACO INC
 Company's P. O. Box: 509
 Company's City: BEACON
 Company's State: NY
 Company's Country: US
 Company's Zip Code: 12508-0509
 Company's Emerg Ph #: 914-831-3400 EXT 204
 Company's Info Ph #: 914-831-3400 EXT 204
 Distributor/Vendor # 1: STAR ENTERPRISE (914-831-3400)
 Distributor/Vendor # 1 Cage: STARE
 Distributor/Vendor # 2: COOL FUEL INCORPORATED (310-630-6000)
 Distributor/Vendor # 2 Cage: COOL1
 Record No. For Safety Entry: 094
 Tot Safety Entries This Stk#: 112
 Status: SE
 Date MSDS Prepared: 12MAR91
 Safety Data Review Date: 23DEC92
 Supply Item Manager: KY
 MSDS Preparer's Name: R.T. RICHARDS
 MSDS Serial Number: BGXCS
 Specification Number: VVF800GRADEDF2RE
 Spec Type, Grade, Class: GRADE DF-2
 Hazard Characteristic Code: F8
 Unit Of Issue: GL
 Unit Of Issue Container Qty: BULK
 Type Of Container: UNKNOWN
 Net Unit Weight: UNKNOWN

=====
 Ingredients/Identity Information
 =====

Proprietary: NO
 Ingredient: DIESEL FUEL, ALIPHATIC-NITRO FRACTION: NO CAS NO.
 Ingredient Sequence Number: 01
 Percent: 100
 NIOSH (RTECS) Number: HZ1765000
 OSHA PEL: UNKNOWN
 ACGIH TLV: UNKNOWN
 Other Recommended Limit: NONE SPECIFIED

=====
 Physical/Chemical Characteristics
 =====

Appearance And Odor: CLEAR, BRIGHT LIQUID
 Boiling Point: 650F,343C
 Melting Point: UNKNOWN
 Vapor Pressure (MM Hg/70 F): UNKNOWN
 Vapor Density (Air=1): UNKNOWN
 Specific Gravity: 0.8521
 Decomposition Temperature: UNKNOWN
 Evaporation Rate And Ref: UNKNOWN
 Solubility In Water: NEGLIGIBLE
 Viscosity: 3.0CST @ 100F
 Corrosion Rate (IPY): UNKNOWN
 Autoignition Temperature: 500F

=====
Fire and Explosion Hazard Data
=====

Flash Point: 160F,71C
Flash Point Method: PMCC
Lower Explosive Limit: 0.52 %
Upper Explosive Limit: 4.1 %
Extinguishing Media: WATER SPRAY, DRY CHEMICAL, FOAM, OR CARBON DIOXIDE.
Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE GEAR. USE WATER FOG TO COOL FIRE EXPOSED CONTAINERS AND TO DIPERSE VAPORS.
Unusual Fire And Expl Hazrds: NONE SPECIFIED BY MANUFACTURER.

=====
Reactivity Data
=====

Stability: YES
Cond To Avoid (Stability): HEAT, FLAME AND OTHER SOURCES OF IGNITION.
Materials To Avoid: NONE SPECIFIED BY MANUFACTURER.
Hazardous Decomp Products: OXIDES OF CARBON
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NONE. WILL NOT OCCUR.

=====
Health Hazard Data
=====

LD50-LC50 Mixture: ORAL LD50 (RAT) IS 9.0 ML/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: ACUTE: INHALATION- NARCOSIS OR DROWSINESS. EYES- IRRITATION. SKIN- SEVERE IRRITATION. BURNS AND BLISTERING. INGESTION- MANUFACTURER STATES POSSIBLE CANCER OR KIDNEY DAMAGE.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: MANUFACTURER STATES POSSIBLE CARCINOGEN FROM "MIDDLE DISTILLATES".
BURNING SENSATION, REDNESS. SKIN: BURNS, RASH, BLISTERS. INGESTION: BURNING OF MOUTH AND ESOPHAGUS. NAUSEA, VOMITING, STOMACH PAIN.
Med Cond Aggravated By Exp: PRE-EXISTING SKIN DISORDERS MAY BE AGGAVATED BY EXPOSURE.
Emergency/First Aid Proc: INHALATION: REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. EYES: FLUSH WITH PLENTY OF WATER FOR 15 MINUTES. SEE DOCTOR. SKIN: WASH WITH SOAP AND WATER. INGESTION: DO NOT INDUCE VOMITING! SEE DOCTOR. SEE DOCTOR IF ANY SYMPTOMS PERSIST.

=====
Precautions for Safe Handling and Use
=====

Steps If Matl Released/Spill: CONTAIN SPILL. ABSORB ON SUITABLE MATERIAL, SCOOP UP AND PLACE IN CONTAINER FOR DISPOSAL. VENTILATE AREA. AVOID BREATHING VAPORS. AVOID ALL PERSONAL CONTACT. USE SELF-CONTAINED BREATHING APPARATUS IN CONFINED AREA.
Neutralizing Agent: NONE
Waste Disposal Method: IF DISCARDED IN ORIGINAL FORM, DISPOSE OF AS AN IGNITABLE MATERIAL (D001) UNDER RCRA. OTHERWISE CONTACT LOCAL ENVIRONMENTAL MANAGER AND DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
Precautions-Handling/Storing: STORE AWAY FROM HEAT AND IGNITION SOURCES. HANDLE AND STORE IN ACCORDANCE4 WITH OSHA REG. 1910.106.
Other Precautions: USE ONLY AS A FUEL.

=====
Control Measures
=====

Respiratory Protection: USE SELF-CONTAINED BREATHING APPARATUS IF PEL/TLV EXCEEDED AS IN A LARGE SPILL OR CONFINED AREA.

Ventilation: USE ADEQUATE MECHANICAL VENTILATION.
 Protective Gloves: NITRILE, PVA
 Eye Protection: SAFETY GLASSES/CHEMICAL SPLASH GOGGLES
 Other Protective Equipment: NONE SPECIFIED BY MANUFACTURER.
 Work Hygienic Practices: USE GOOD PERSONAL HYGENE. LAUNDRER CONTAMINATED CLOTHING BEFORE REUSE.
 Suppl. Safety & Health Data: AVOID PROLONGED OR REPEATED EXPOSURE. DO NOT ASPIRATION OF THIS PRODUCT DURING INDUCED EMESIS CAN RESULT IN LUNG INJURY. IF EVACUATION OF STOMACH CONTENTS IS CONSIDERED NECESSARY, USE METHOD LEAST LIKELY TO CAUSE ASPIRATION.

=====
 Transportation Data
 =====

Trans Data Review Date: 95339
 DOT PSN Code: ZZZ
 DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
 IMO PSN Code: ZZZ
 IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
 IATA PSN Code: ZZZ
 IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
 AFI PSN Code: ZZZ
 AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
 Additional Trans Data: FILM OR SHEEN UPON THE WATER SURFACE OR DISCOLORATION OF THE WATER OR ADJOINING SHORELINE IS REPORTABLE TO THE ANTIONAL RESPONSE CENTER AT 1-800-424-8802.

=====
 Disposal Data
 =====

=====
 Label Data
 =====

Label Required: YES
 Technical Review Date: 26AUG91
 Label Status: G
 Common Name: 00460 DIESEL FUEL 2
 Chronic Hazard: YES
 Signal Word: DANGER!
 Acute Health Hazard-Severe: X
 Contact Hazard-Moderate: X
 Fire Hazard-Slight: X
 Reactivity Hazard-Moderate: X
 Special Hazard Precautions: MAY BE POISONOUS IF INHALED OR ABSORBED THROUGH SKIN. VAPORS MAY CAUSE DIZZINESS OR SUFFOCATION. CONTACT MAY IRRITATE OR BURN SKIN AND EYES. FIRE MAY PRODUCE IRRITATING OR POISONOUS GASES. RUNOFF FROM FIRE CONTROL OR DILUTION WATER MAY CAUSE POLLUTION. MAY CAUSE IRRITATION TO THE EYES. PROLONGED OR WIDESPREAD SKIN CONTACT MAY RESULT IN ABSORPTION OF POTENTIALLY HARMFUL AMOUNTS OF MATERIAL. VAPORS OR MIST MAY CAUSE IRRITATION OF THE NOSE AND THROAT. ASPIRATION MAY OCCUR DURING SWALLOWING OR VOMITING RESULTING IN LUNG DAMAGE. STORE IN A COOL, DRY, WELL VENTILATED AREA. KEEP CONTAINERS TIGHTLY CLOSED WHEN NOT IN USE.
 Protect Eye: Y
 Protect Skin: Y
 Protect Respiratory: Y
 Label Name: TEXACO, INC.
 Label P.O. Box: 509
 Label City: BEACON
 Label State: NY
 Label Zip Code: 12508-0509
 Label Country: US
 Label Emergency Number: 914-831-3400 EXT. 204

APPENDIX B SPECIFIC HEALTH AND SAFETY PROCEDURES

NOTE: IT health and safety procedures that will be utilized during the project are listed below.

HS020	Accident Prevention Program: Reporting Investigation and Review
HS021	Accident Prevention Program: Management Safety Reviews
HS051	Tailgate Safety Meeting
HS060	Hazard Communication Program
HS106	First Aid Kits
HS060	Hazard Communication Program
HS300	Confined Spaces
HS303	Pressurized Water Cleaning and Cutting Equipment
HS307	Excavation and Trenching
HS400	Working in Hot Environments
HS402	Hearing Conservation Program
HS600	Personal Protection Program
HS601	Respiratory Protection Program
HS800	Motor Vehicle Operation: General Requirements



PROCEDURE

**Subject: ACCIDENT PREVENTION PROGRAM:
REPORTING, INVESTIGATION, AND REVIEW**

1.0 PURPOSE AND SUMMARY

The purpose of this procedure is to establish the requirements for incident reporting, investigation, and review. This procedure is an integral part of the company's overall accident prevention program and aids in the determination of causal factors and corrective actions necessary to prevent incident re-occurrence. Key elements of this procedure include:

- **All occupational injuries/illnesses, vehicle accidents, and near miss incidents must be promptly reported and investigated.**
- All Occupational Safety and Health Administration (OSHA) recordable injuries/illnesses and chargeable vehicle accidents must be reviewed by an Accident Review Board. The Accident Review Board report is submitted/approved up through management to the appropriate business line Vice President.
- All incidents involving a fatality, major injury/illness, or resulting in significant property damage will be immediately reported to the business line Health and Safety Manager; Vice President, Health and Safety; business line Vice President; Vice President, Legal Department; and President.
- All business lines are required to submit a Monthly Loss Report summarizing all incidents that took place during the previous reporting period.

2.0 TABLE OF CONTENTS

1.0	Purpose and Summary
2.0	Table of Contents
3.0	Responsibility Matrix
3.1	Procedure Responsibility
3.2	Action/Approval Responsibilities
4.0	Definitions
5.0	Text
5.1	Incident Reporting Process
5.2	Supervisor's Employee Injury Report
5.3	Vehicle Accident Report
5.4	General Liability, Property Damage, and Loss Report
5.5	Incident Investigation Report
5.6	Accident Review Board



- 5.7 Insurance Notification
- 5.5 Monthly Loss Report
- 6.0 Exception Provisions
- 7.0 Cross References
- 8.0 Attachments

3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

Company - All wholly-owned subsidiaries of The IT Group, Inc.

OSHA Recordable Case - All work-related deaths and illnesses, and those work-related injuries which result in loss of consciousness, restriction of work or motion, transfer to another job, or require medical treatment beyond first aid (see Attachment 7).

Lost Workday Case - Cases which involve days away from work or days of restricted work activity or both. Days away from work are the number of workdays (consecutive or not), excluding the date of injury, the employee **would have worked**, but could not because of occupational injury or illness; and/or the number of workdays (consecutive or not), excluding the date of injury, on which, because of injury or illness:

- The employee was assigned to another job on a temporary basis, or
- The employee worked at a permanent job less than full time, or
- The employee worked at a permanently-assigned job, but could not perform all duties normally connected with it.

Near Miss Incident - Any incident where no injury occurred, but where the potential for injury existed.



Chargeable Vehicle Accident - Any **at-fault** vehicle accident meeting any **one** of the following criteria:

- An individual other than an employee of the company is a party in the accident
- Property owned by a person or entity other than the company is damaged
- When only company employees, company owned or leased (**not** rented) vehicles, and company property is involved and damage exceeds \$1,000.00.

Vehicle - Any passenger vehicle, including trucks, used upon the highway or in private facilities for transporting passengers and/or property. For the purpose of this procedure, off-road vehicles such as earthmoving equipment, forklifts, non-highway use trucks, etc., are not considered vehicles.

5.0 TEXT

5.1 Incident Reporting Process

Employees are required to immediately report to their direct supervisor all occupational injuries, illnesses, accidents, and near miss incidents having the potential for injury. Any supervisor (but preferably the supervisor directly responsible for the involved employees) with first-hand knowledge of an incident is required to:

- Immediately arrange for appropriate medical attention and notify the responsible health and safety representative.
- Inform Continuum Healthcare of all incidents requiring medical attention by calling 1-800-229-3674, Extension 303, and providing the following information:
 - Employee name
 - Name of treating medical facility and phone number
 - Brief description of incident.

Continuum Healthcare's role is to interface with the treating physician to ensure that appropriate care is provided to the injured employee.

- Complete Continuum Healthcare's *Authorization for Treatment, Release of Medical Information, and Return to Work* (Attachment 8) for all cases requiring medical attention. The employee or his/her supervisor is to ensure that these completed forms are faxed to Continuum Healthcare at (770) 454-1280 prior to leaving the medical facility or as soon as reasonably possible.



- Prior to an injured employee returning to his/her job duties, a follow-up call to Continuum Healthcare must be made. The purpose of this call is to ensure work restrictions are clarified and planned work activities are consistent with medical recommendations.
- The supervisor is to initiate/complete the appropriate company documentation in accordance with the following incident classifications:
 - OSHA Recordable Cases
 - a. Supervisor's Employee Injury Report (Attachment 2)
 - b. Incident Investigation Report (Attachment 5)
 - c. Accident Review Board (Attachment 6)
 - First Aid Cases
 - a. Supervisor's Employee Injury Report (Attachment 2)
 - b. Incident Investigation Report (Attachment 5)
 - Chargeable Vehicle Accidents
 - a. Vehicle Accident Report (Attachment 3)
 - b. Incident Investigation Report (Attachment 5)
 - c. Accident Review Board (Attachment 6)
 - d. Driving Record Certification (Procedure HS800)
 - Non-Chargeable Vehicle Accidents
 - a. Vehicle Accident Report (Attachment 3)
 - b. Incident Investigation Report (Attachment 5)
 - Near Miss
 - a. Incident Investigation Report (Attachment 5)
 - Property Damage/General Liability
 - a. General Liability, Property Damage, and Loss Report (Attachment 4).

All forms, with the exception of the Accident Review Board and Incident Investigation Report, must be completed and forwarded to the appropriate health and safety representative within **one** business day of the incident.

All incidents involving a fatality, major injury/illness, or resulting in significant property damage are to be reported to the appropriate business line Vice President; Vice President, Health and Safety; Vice President, Legal Department; and President as soon as possible, but not later than the close of business on the day of the incident.



5.2 Supervisor's Employee Injury Report

The Supervisor's Employee Injury Report (Attachment 2) is to be completed for all incidents that result in an employee occupational injury or illness. It is to be initiated by the supervisor of the injured employee and forwarded to the project/location manager for comments. The appropriate health and safety representative must receive a copy of the report within one business day of the incident.

5.3 Vehicle Accident Report

The Vehicle Accident Report (Attachment 3) must be completed for any vehicle accident in which a company vehicle is involved. This includes company-owned or leased vehicles, rental vehicles, and personal vehicles being used for company business. This report is to be initiated by the employee involved in the accident or his/her direct supervisor, then forwarded to the appropriate health and safety representative.

5.4 General Liability, Property Damage, and Loss Report

The General Liability, Property Damage, and Loss Report is to be used for all losses or damage to company property in excess of \$1,000.00. This form must be completed for all third party property, regardless of value, damaged as a result of company activities. The employee most familiar with the events that contributed to the loss or damage will complete the form, then forward it to the project/location manager. The Corporate Risk Management Department must receive a copy of the report within one business day of the incident.

5.5 Incident Investigation Report

All injuries, illnesses, accidents, and near miss incidents will be investigated. Once arrangements for immediate medical care have been made, the employee's direct supervisor, with assistance from the health and safety representative and/or business line Health and Safety Manager, will:

- Reconstruct the conditions which led to the incident (collect the facts);
- Describe and document (include sketch, photos, etc.) how the incident occurred;
- List witnesses and collect written statements when possible;
- Identify and discuss the causative factors;
- Identify the unsafe act or unsafe condition that contributed to the incident;
- Identify possible systematic/management deficiencies; and
- List the corrective actions which are to be taken to prevent re-occurrence of the incident, the person responsible for the corrective action, and the date by which action is to be completed.



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The investigation will be started as soon as possible after the incident and a written report (Attachment 5) submitted to the appropriate health and safety representative within 72 hours. In addition to the previous information, reports from external sources (police, insurance carriers, testing laboratories, etc.) are to be obtained as soon as they become available and forwarded to the recipients of the investigation report.

5.6 Accident Review Board

Each manager whose project/location experiences an OSHA recordable or a chargeable vehicle accident is required to convene an Accident Review Board within 10 days of the accident. The purpose of the Accident Review Board is to review the information gathered for each incident and take appropriate action to prevent its recurrence. The Accident Review Board shall be composed of the project/location manager, the employee's direct supervisor, a health and safety representative, and the employee(s) involved in the incident. When appropriate, a representative of other internal sources of expertise should be involved.

It is generally not acceptable to discipline an employee for having an accident. However, if the Accident Review Board determines that the accident resulted from an unsafe act or violation of company procedure on the employee's part, the employee should be subject to disciplinary action in accordance with the company's progressive disciplinary action system (see Human Resources Procedure HR207).

5.7 Insurance Notification

The business line Health and Safety Manager or his/her designee is to report all employee injuries/illnesses requiring outside medical treatment to Constitution State Service Company (CSSC), a subsidiary of Travelers Insurance, within 24 hours of injury/illness occurrence. This may be accomplished by calling CSSC at 1-800-243-2490.

Some states (i.e., Ohio, Nevada, Washington, and West Virginia) have specific reporting requirements that differ from those previously discussed. Assistance for the reporting of incidents that occur in these states can be obtained through the Corporate Risk Management Department office at (412)-380-4097.

All vehicle accidents involving third party individuals or property, with the exception of company-rented Hertz automobiles, will be reported to CSSC by calling 1-800-243-2490 within 24 hours of the accident.

5.8 Monthly Loss Report

Each business line Health and Safety Manager is responsible to submit a Monthly Loss Report summarizing incidents that took place within their business line during the previous month. The business line Health and Safety Manager is responsible for submitting a consolidated package for the entire business line to the corporate health and safety office for receipt no later than the 5th working day of the following month.



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6.0 EXCEPTION PROVISIONS

Variations and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variations.

7.0 CROSS REFERENCES

HR207 Disciplinary Action
HS013 Health and Safety Procedure Variations
HS800 Motor Vehicle Operations - General Requirements
HS810 Commercial Motor Vehicles

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Supervisor's Employee Injury Report
3. Vehicle Accident Report
4. General Liability, Property Damage, and Loss Report
5. Incident Investigation Report
6. Accident Review Board Report
7. Injury/Illness Classification Guidelines
8. Continuum Healthcare Forms



ATTACHMENT 1

ACCIDENT PREVENTION PROGRAM: REPORTING, INVESTIGATION, AND REVIEW
RESPONSIBILITY MATRIX

Action	Procedure Section	Responsible Party					
		Employee	Supervisor	Project/ Location Manager	Health and Safety Representative	Business Line Health and Safety Manager	Vice President, Health and Safety
Issue, Revise, and Maintain Procedure	3.1						X
Report All Incidents to Supervisor	5.1	X					
Notify Health and Safety Representative	5.1		X				
Arrange Medical Care	5.1		X		X		
Notify Continuum Healthcare of Incident	5.1		X		X		
Complete Continuum Healthcare Forms	5.1	X	X				
Initiate/Complete Company Forms	5.1		X				
Contact Continuum Healthcare Prior to Employee Returning to Job Duties	5.1		X		X		
Complete Investigation of Incident	5.5		X	X	X		
Conduct Accident Review Board	5.6		X	X	X		
Report Injury/Accident to CSSC	5.7				X	X	
Complete Monthly Loss Report	5.8					X	



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ATTACHMENT 2

SUPERVISOR'S EMPLOYEE INJURY REPORT

This report is to be initiated by the employee's supervisor. Please answer all questions completely. This report must be forwarded to the appropriate health and safety representative within 24 HOURS of the injury/illness.

EMPLOYEE

Injured's Name _____ Sex _____ S.S. No. _____ Birth Date _____
 Home Address _____
 City _____ State _____ Zip _____ Phone (____) _____
 Job Title _____ Hire Date _____ Hourly Wage _____

SUPERVISOR

Date of Incident _____ Time _____ Time Reported _____ To Whom? _____
 Project/Location Name _____ Address _____
 Project No. _____ Time Shift Began _____ Did the Employee Leave Work? No Yes When _____
 Has employee returned to work? No Yes When _____ Did employee miss a regularly scheduled shift? No Yes
 Doctor/Hospital Name _____ Address _____
 Witness Name(s) _____ Statement Attached? No Yes
 Nature of Injury _____ Exact Body Part _____
 Medical Attention: None First Aid On Site Doctor's Office Hospital ER Hospitalized
 Job Assignment at Time of Incident _____
 Describe Incident _____

 What Unsafe Condition and/or Act Contributed to the Incident? _____

 What Corrective Action Has Been Taken to Prevent Recurrence? _____

Supervisor _____ (Print) _____ Signature _____ Date _____

MANAGER

Comments on Incident and Corrective Action _____

 Project/Location Mgr. _____ (Print) _____ Signature _____ Date _____

HEALTH AND SAFETY

Concur With Action Taken? No Yes Remarks _____

 OSHA Classification:
 First Aid Recordable, No Lost/Restricted Workdays Recordable, Lost Workdays Recordable, Restricted Activity Fatality
 Days Away From Work _____ Days Restricted Work _____
 All injuries/illnesses requiring outside medical treatment must be reported to CSSC by calling 1-800-243-2490 within 24 hours of the incident. Contact Corporate Risk Management at (412) 380-4097 for cases occurring in Ohio, Nevada, Washington, or West Virginia
 Workers' Compensation Claim Number (if applicable) _____
 Health and Safety Representative:
 _____ (Print) _____ Signature _____ Date _____

These standard policies and procedures are applicable to all members of The IT Group, Inc., except where superseded or modified by the member Company.



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ATTACHMENT 3

VEHICLE ACCIDENT REPORT

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This report is to be initiated by the employee involved in the accident or his/her direct supervisor. Please answer all questions completely. This report must be forwarded to the appropriate health and safety representative within 24 HOURS of the accident.

ACCIDENT DESCRIPTION

ACCIDENT DATE _____ TIME _____ A.M. or P.M.
 LOCATION OF ACCIDENT (CITY, STATE) _____
 DESCRIPTION OF ACCIDENT _____

 WITNESS _____ PHONE NO. (____) _____
 ADDRESS _____ CITY _____ STATE _____ ZIP _____
 POLICE OFFICER'S NAME _____ DEPARTMENT _____

COMPANY VEHICLE

DRIVER _____ DRIVERS LICENSE _____ STATE _____
 ADDRESS _____ CITY _____ STATE _____ ZIP _____
 WORK PHONE NO. (____) _____ S.S. NO. _____ PROJECT NAME/NO. _____
 VEHICLE NO. _____ YEAR _____ MAKE _____ MODEL _____ LICENSE PLATE NO. _____
 STATE _____ VEHICLE OWNER: COMPANY LEASED/RENTED PRIVATE VEHICLE
 VEHICLE TYPE: COMMERCIAL MOTOR VEHICLE NON-COMMERCIAL
 IF NOT COMPANY-OWNED: OWNER _____ PHONE NO. (____) _____
 ADDRESS _____ CITY _____ STATE _____ ZIP _____
 VEHICLE DAMAGE _____
 NO. OF VEHICLES TOWED FROM SCENE _____ NUMBER OF INJURIES _____ NUMBER OF FATALITIES _____
 WERE HAZARDOUS MATERIALS RELEASED? YES NO IF YES, DESCRIBE MATERIALS _____

OTHER VEHICLE

DRIVER _____ DRIVERS LICENSE _____ STATE _____
 ADDRESS _____ CITY _____ STATE _____ ZIP _____
 PHONE NO. (____) _____ S.S. NO. _____
 OWNERS NAME (CHECK IF SAME AS DRIVER) _____
 ADDRESS _____ CITY _____ STATE _____ ZIP _____
 INSURANCE COMPANY _____ POLICY NO. _____
 AGENT'S NAME _____ PHONE NO. (____) _____
 ADDRESS _____ CITY _____ STATE _____ ZIP _____
 VEHICLE: YEAR _____ MAKE _____ MODEL _____ PLATE NO. _____ STATE _____
 VEHICLE I.D. NO. _____
 VEHICLE DAMAGE _____
 PASSENGERS: YES NO INJURIES: YES (List names and telephone numbers below) NO



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VEHICLE ACCIDENT REPORT

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WEATHER: Clear Cloudy Fog Rain Sleet Snow Other _____
 PAVEMENT: Asphalt Steel Concrete Wood Gravel/Dirt
 Brick/Stone Other _____
 CONDITION: Dry Wet Icy Pot Holes Other _____
 TRAFFIC CONTROL: Traffic Light Stop Sign Railroad No Intersection No Control
 ROADWAY: Number of Lanes Each Direction: _____ Residential Divided Highway Undivided Highway

Draw and name roadways showing each vehicle, direction of travel, and point of impact. Indicate travel before the accident with a solid line and post-accident movement with a broken line.

SYMBOLS:

- Your Vehicle ①
- Other Vehicle(s) ②
- ③
- Pedestrian ♀
- Stop Sign ⬆
- Yield ▼
- Railroad ⚓

ADDITIONAL INFORMATION: _____

All vehicle accidents involving third party individuals or property, with the exception of accidents involving only company-rented Hertz automobiles, must be reported to CSSC by calling 1-800-243-2490 within 24 hours of the accident.

WAS VEHICLE ACCIDENT REPORTED TO CSSC? YES NO CLAIM NUMBER _____

EMPLOYEE _____ (Print) _____ (Signature) _____ (Date)
 SUPERVISOR _____ (Print) _____ (Signature) _____ (Date)
 HEALTH & SAFETY REP. _____ (Print) _____ (Signature) _____ (Date)

REPORT MUST BE CALLED IN OR FAXED TO:
 CORPORATE HEALTH AND SAFETY (PHONE: 412-372-7701, FAX: 412-858-3976)
 AND CORPORATE RISK MANAGEMENT (PHONE: 412-380-4097, FAX: 412-380-6218)
 WITHIN 24 HOURS, OR NOT LATER THAN NEXT BUSINESS DAY

These standard policies and procedures are applicable to all members of The IT Group, Inc., except where superseded or modified by the member Company.



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ATTACHMENT 4

GENERAL LIABILITY, PROPERTY DAMAGE, AND LOSS REPORT

This report is to be completed for all losses or damage to company property in excess of \$1,000.00 and all third party damage, regardless of value, resulting from company activities.

PROJECT/LOCATION _____ PROJECT NO. _____ DATE _____

ADDRESS _____

HOW DID DAMAGE OR LOSS OCCUR: _____

DESCRIPTION AND VALUE (\$) OF DAMAGED/LOST/STOLEN PROPERTY: _____

LOCATION OF DAMAGED/LOST/STOLEN PROPERTY (Before Loss): _____

DATE AND TIME OF DAMAGE, LOSS, OR THEFT: Date: _____ Time: _____ a.m./p.m.

OWNER OF DAMAGED/LOST/STOLEN PROPERTY:

Name _____ Phone No. () _____

Address _____ City _____

Employer and Address _____

INJURED PARTIES (Also complete a Supervisor's Employee Injury Report if a Company Employee):

Name _____ Phone No. () _____

Address _____ City _____

Employer and Address _____

Description of Injury _____

WITNESSES:

1. Name _____ Phone No. () _____

Address _____ City _____

Employer and Address _____

2. Name _____ Phone No. () _____

Address _____ City _____

Employer and Address _____

WERE PICTURES TAKEN? YES NO

WERE POLICE NOTIFIED? YES NO DEPT. _____ REPORT NO. _____

COMPLETED BY:

(Print Name)

(Signature)

(Date)

PROJECT/LOCATION MANAGER:

(Print Name)

(Signature)

(Date)

REPORT MUST BE CALLED IN OR FAXED TO:
 CORPORATE RISK MANAGEMENT (PHONE: 412-380-4097, FAX: 412-380-6218)
 WITHIN 24 HOURS, OR NOT LATER THAN NEXT BUSINESS DAY

These standard policies and procedures are applicable to all members of The IT Group, Inc., except where superseded or modified by the member Company.



ATTACHMENT 6

ACCIDENT REVIEW BOARD

DATE:	LOCATION:
BOARD MEMBERS:	
ACCIDENT DATE:	EMPLOYEE(S) INVOLVED IN INCIDENT:
INVESTIGATION COMPLETE: YES <input type="checkbox"/> NO <input type="checkbox"/>	ACCIDENT CLASSIFICATION:
THE FOLLOWING INFORMATION <u>MUST</u> BE PROVIDED BY THE REVIEW BOARD FOR THIS INCIDENT (PRINT):	
SUPERVISOR: _____ PROJECT/LOCATION MGR.: _____	
CAUSE OF ACCIDENT:	
ACTION BY BOARD*:	
<small>* ALL ACTIONS BY THE ACCIDENT REVIEW BOARD ARE SUBJECT TO FINAL REVIEW BY THE HUMAN RESOURCES AND LEGAL DEPARTMENTS.</small>	
ACCEPTED:	
_____ EMPLOYEE SIGNATURE	_____ SUPERVISOR SIGNATURE
APPROVED:	REJECTED FOR:
_____ PROJECT/LOCATION MANAGER	_____
APPROVED:	REJECTED FOR:
_____ BUSINESS LINE HEALTH AND SAFETY MANAGER OR DESIGNEE	_____
APPROVED:	REJECTED FOR:
_____ BUSINESS LINE VICE PRESIDENT	_____



ATTACHMENT 7

INJURY/ILLNESS CLASSIFICATION GUIDELINES

Medical Treatment - The following are generally considered medical treatment. Work-related injuries for which this type of treatment was provided or should have been provided are almost always recordable.

- Treatment of **INFECTION**;
- Application of **ANTISEPTICS** during second or subsequent visit to medical facility;
- Treatment of **SECOND OR THIRD DEGREE BURN(S)**;
- Application of **SUTURES** (stitches);
- Application of **BUTTERFLY ADHESIVE DRESSING(S)** or **STERI STRIP(S)** in lieu of sutures;
- Removal of **FOREIGN BODIES EMBEDDED IN EYE**;
- Removal of **FOREIGN BODIES FROM WOUND**; if procedure is **COMPLICATED** because of depth of embedment, size, or location;
- Use of **PRESCRIPTION MEDICATIONS** (except a single dose administered on first visit for minor injury or discomfort);
- Use of hot or cold **SOAKING THERAPY** during second or subsequent visit to medical facility;
- Application of hot or cold **COMPRESS(ES)** during second or subsequent visit to medical facility;
- **CUTTING AWAY DEAD SKIN** (surgical debridement);
- Use of **WHIRLPOOL BATH THERAPY** during second or subsequent visit to medical facility;
- **POSITIVE X-RAY DIAGNOSIS** (fractures, broken bones, etc.); and
- **ADMISSION TO A HOSPITAL** or equivalent medical facility **FOR TREATMENT**.

First Aid Treatment - The following are generally considered first aid treatment (i.e., one-time treatment and subsequent observation of minor injuries) and should not be recorded if the work-related injury does not involve loss of consciousness, restriction of work or motion, or transfer to another job:

- Application of **ANTISEPTICS** during first visit to medical facility;
- Treatment of **FIRST DEGREE BURN(S)**;
- Application of **BANDAGE(S)** during any visit to medical facility;
- Use of **ELASTIC BANDAGE(S)** during first visit to medical facility;
- Removal of **FOREIGN BODIES NOT EMBEDDED IN EYE** if only irrigation is required;
- Removal of **FOREIGN BODIES FROM WOUND**; if procedure is **UNCOMPLICATED**, and is, for example, removed by tweezers or other simple technique;
- Use of **NON-PRESCRIPTION MEDICATIONS AND** administration of single doses of **PRESCRIPTION MEDICATION** on first visit for minor injury or discomfort;



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- **SOAKING THERAPY** on initial visit to medical facility or removal of bandages by **SOAKING**;
- Application of hot or cold **COMPRESS(ES)** during **first visit** to medical facility;
- Application of **OINTMENTS** to abrasions to prevent drying or cracking;
- Use of **WHIRLPOOL BATH THERAPY** during **first visit** to medical facility;
- **NEGATIVE X-RAY DIAGNOSIS**; and
- **OBSERVATION** of injury during visit to medical facility.

The following procedure, by itself, is not considered medical treatment:

- Administration of **TETANUS SHOT(S)** or **BOOSTER(S)**. However, these shots are often given in conjunction with more serious injuries; consequently, injury requiring these shots may be recordable for other reasons.

Loss of Consciousness - If an employee loses consciousness as the result of a work-related injury/illness, the case must be recorded no matter what type of treatment was provided. The rationale behind this recording requirement is that loss of consciousness is generally associated with the more serious injuries.

Restriction of Work or Motion - Restricted work activity occurs when the employee, because of the impact of a job-related injury, is physically or mentally unable to perform all or any part of his or her normal assignment during all or any part of the workday or shift. The emphasis is on the employee's ability to perform normal job duties. Restriction of work or motion may result in either a lost worktime injury or a non-lost worktime injury, depending upon whether the restriction extended beyond the day of injury.

Transfer to Another Job - Injuries requiring transfer of the employee to another job are also considered serious enough to be recordable regardless of the type of treatment provided. Transfers are seldom the sole criterion for recordability because injury cases are almost always recordable on other grounds, primarily medical treatment or restriction of work or motion.



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ATTACHMENT 8

CONTINUUM HEALTHCARE FORMS

CASE Trac CASE MANAGEMENT SERVICES AUTHORIZATION
 FOR TREATMENT OF OCCUPATIONAL INJURY/ILLNESS



Employee Name: _____
 Social Security #: _____
 Job Title: _____
 Project/Location: _____
 Telephone #: _____
 H&S Representative: _____
 Body Part(s) Injured: _____
 Describe in detail how incident occurred: _____

Injury: Illness:
 Incident Date: _____
 Location of Accident/Exposure: _____

TO TREATING PHYSICIAN:

In the case of occupational injury/illness, please examine the employee and render necessary conservative treatment directly related to the occupational injury/illness.

Light Duty Work:

It is the policy of our company to provide work assignments, whenever possible, for employees with physical activity restrictions resulting from an occupational injury/illness. If the employee will be subject to a restriction, please contact **CASE Trac Case Management** before releasing the employee, so that a light duty assignment may be arranged.

Medically Unfit to Return to Work:

It is the policy of our company to assist employees unable to return to work, due to an injury/illness, in obtaining needed medical care and other available benefits. Medical findings are also used to help evaluate unsafe conditions that may have led to the incident. Please help us assist our employees by contacting **CASE Trac Case Management** with your findings as soon as possible, preferably before the employee leaves your office, but not later than the close of business on the day of initial treatment.

CASE Trac Case Management: Telephone: 1-800-229-3674, Ext. 303 Fax: 1-770-454-1280

Please Send Reports To: **CASE Trac Case Management Services**
 4360 Chamblee Dunwoody Road, Suite 202
 Atlanta, Georgia 30341

Please Send Bills To: Workers' Compensation Claims Administrator
 Constitution State Service Company (Travelers)

DOCTOR, Please provide:

Medical Diagnosis: _____
 Treatment Provided: _____

Recommended Work Limitation/Restriction: _____
 Return Visit Needed: No Yes if yes, date _____ First Aid Only
 Physician Name: _____ Physician Telephone: _____
 Physician Signature: _____

YOU MUST CALL CASE Trac CASE MANAGEMENT FOR ALL OCCUPATIONAL INJURIES/ILLNESSES
 REQUIRING OUTSIDE MEDICAL TREATMENT: 1-800-229-3674, EXTENSION 303.
 FAX COMPLETED FORM TO CASE Trac (770) 454-1280.



ATTACHMENT 8

CONTINUUM HEALTHCARE FORMS

**CASETrac CASE MANAGEMENT SERVICES AUTHORIZATION FOR
 RELEASE OF MEDICAL INFORMATION**



I, _____, grant authorization to _____
 (Print Full Name) (Treating Physician's Name)
 for the release of any information concerning my occupational injury/illness to:

CASETrac CASE MANAGEMENT SERVICES
 4360 Chamblee Dunwoody road, Suite 202
 Atlanta, Georgia 30341
 Phone: (800) 229-3674, Extension 303
 Fax: (770) 454-1280

for the purpose of disability follow-up and return to work authorization.

Please provide the following information:

EMPLOYEE INFORMATION:

Full Name: _____
 Date of Birth: _____
 Social Security #: _____
 Home Address: _____

 Home Phone: _____
 Work Phone: _____

MEDICAL INFORMATION:

Treating Physician's Name: _____
 Physician's Address: _____

 Phone Number: _____
 Fax Number: _____

Employee Signature: _____ Date: ___ / ___ / ___



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 Last Review Date 5/13/99
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ATTACHMENT 8

CONTINUUM HEALTHCARE FORMS

CASE Trac CASE MANAGEMENT SERVICES RETURN-TO-WORK EXAMINATION FORM



Exam Date: ____/____/____ Employee Name: _____
 Birth Date: ____/____/____ Social Security #: _____ - _____ - _____
 Job Title: _____ Sex: Male Female

Examining Provider: Please complete this form and fax to CASE Trac CASE MANAGEMENT SERVICES at (770) 454-1280. Please contact CASE Trac CASE MANAGEMENT SERVICES at (800) 229-3674 to report status of employee post-treatment.

DIAGNOSIS: _____
 TREATMENT PLAN: _____
 MEDICATIONS: _____
 PHYSICAL THERAPY: _____
 OTHER: _____
 May return to full duty work effective ____/____/____
 May return to limited duty from ____/____/____ to ____/____/____
 Unable to return to work from ____/____/____ to ____/____/____

WORK LIMITATIONS:
 Restricted lifting/pushing/pulling: maximum weight in lbs: _____ (company limits all lifting <= 60 lbs).
 Work only with right/left hand. Restricted repetitive motion right/left hand.
 Sitting job only. Restricted operation of moving equipment.
 Other: _____

FOLLOW-UP PLAN:
 Release from care.
 Schedule for follow-up appointment on ____/____/____.
 Time _____ AM/PM
 Referral to _____
 Appointment date ____/____/____ Time _____ AM/PM

Comments: _____

 Examiner's Name (*print*) Examiner's Signature Date

PROCEDURE

**Subject: ACCIDENT PREVENTION PROGRAM:
MANAGEMENT SAFETY INSPECTIONS**

1.0 PURPOSE AND SUMMARY

This procedure establishes the requirement for management safety inspections of project and office locations. These inspections are an integral part of the overall accident prevention program and help to demonstrate management's commitment to safety. Key requirements of this procedure include:

- Project managers are required to conduct one inspection per month and ensure that at least one other inspection is conducted during the month;
- Office managers are required to conduct an office safety inspection once every six months; and
- Completed inspection reports are given to the project/office health and safety representative for review. A copy of the completed report will then be forwarded to the respective business line health and safety manager.

2.0 TABLE OF CONTENTS

1.0	Purpose and Summary
2.0	Table of Contents
3.0	Responsibility Matrix
3.1	Procedure Responsibility
3.2	Action/Approval Responsibilities
4.0	Text
4.1	Safety Inspections and Documentation
4.1.1	Management Site Visits
4.1.2	Project Managers
4.1.3	Office Managers
4.1.4	Project Supervisors
4.1.5	Health and Safety Representative
4.2	Workshops
5.0	Exception Provisions
6.0	Cross References
7.0	Attachments



3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President of Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 TEXT

Inspections of project and office locations by managers, supervisors, and the health and safety staff are critical factors in a comprehensive accident prevention program. Management safety inspections help demonstrate management's commitment to safety and verify that proper work practices are in use. These inspections are also used to verify the existence of safe work conditions and regulatory compliance. All employees are afforded the opportunity to participate in the inspection process via the safety interview process.

4.1 Safety Inspections and Documentation

Safety inspections are required by various tiers of the management structure. The objective is for operation managers to visibly demonstrate their concern for safety in the workplace by direct contact with employees while in the workplace. Each inspection is to be documented on the appropriate Safety Inspection Report (Attachment 2 or 3).

The primary responsibilities of the inspector include:

- Interviewing employees with regard to health and safety issues and how they might be corrected;
- Observing and correcting unsafe conditions and acts; and
- Verifying that corrective actions have been assigned to a responsible employee and implemented.

Positive safety observations and safety issues not specifically addressed in the Safety Inspection Report can be documented on the last page of the report. A list of all corrective action items will be maintained showing the corrective action, responsible person, and the date action is to be completed. Completed reports are to be given to the project/office health and safety representative, then forwarded to the respective business line health and safety manager.

4.1.1 Management Site Visits

Each senior manager is encouraged to make an informal safety inspection and review previously conducted inspection reports, during each site visit, to demonstrate their commitment to safety and reinforce the responsibilities of



project management. Findings during this informal inspection are to be brought to the attention of the project manager so that corrective action can be initiated.

4.1.2 Project Managers

All project managers are required to complete at least one safety inspection per month and ensure that at least one other safety inspection per month is conducted. In the event that the project manager is not present at the project site during the month, this responsibility may be delegated to the project supervisor.

4.1.3 Office Managers

Office managers are required to conduct an office safety inspection once every six months. Managers are encouraged to conduct more frequent inspections if the office location is being remodeled or if new space is being occupied that was not previously inspected.

4.1.4 Project Supervisors

Project supervisors are expected to inspect their projects monthly and ensure that corrective actions are implemented. Dependent upon project manager participation, project supervisors may also be required to conduct an additional monthly inspection. The requirement to conduct these inspections cannot be delegated.

4.1.5 Health and Safety Representative

Health and safety representatives must continually observe activities and correct unsafe acts/conditions as soon as reasonably possible. They are also required to review each Safety Inspection Report completed at their location to ensure that corrective actions are implemented. Once this review is complete, they will forward the reports to the appropriate business line health and safety manager.

4.2 Workshops

Health and safety representatives will present workshops and/or conduct joint inspections to help managers and supervisors develop their inspection skills.

5.0 EXCEPTION PROVISIONS

Variations and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variations.

6.0 CROSS REFERENCES

HS013 Health and Safety Procedure Variations

7.0 ATTACHMENTS

1. Responsibility Matrix
2. Project Safety Inspection Report
3. Office Safety Inspection Report



ATTACHMENT 1

**ACCIDENT PREVENTION PROGRAM : MANAGEMENT SAFETY INSPECTIONS
RESPONSIBILITY MATRIX**

Action	Procedure Section	Responsible Party				
		Senior Managers	Project/Office Manager	Project Supervisors	Health and Safety Representative	Vice President, Health and Safety
Issue, Revise, and Maintain Procedure	3.1					X
Conduct Informal Safety Inspections and Review Previously Completed Reports	4.1.1	X				
Conduct Safety Inspections	4.1.2 4.1.3 4.1.4		X	X		
Give Completed Reports to Health and Safety Representative	4.1.2 4.1.3 4.1.4		X	X		
Review Reports and Forward to Health and Safety Manager	4.1.5				X	
Conduct Inspection Workshops	4.2				X	



ATTACHMENT 2

PROJECT SAFETY INSPECTION REPORT

PROJECT _____ DATE _____

BUSINESS LINE: _____ PROJECT NAME/NUMBER: _____
PROGRAM MANAGER: _____ PROJECT MANAGER: _____
GENERAL PROJECT DESCRIPTION: _____
SITE ACTIVITIES AT TIME OF INSPECTION: _____

INTERVIEWED EMPLOYEE: _____
SAFETY ISSUE: _____
CORRECTIVE ACTION: _____

ASSIGNED TO: _____ FOLLOW-UP DATE: _____
CORRECTION VERIFIED BY: _____ DATE: _____

INTERVIEWED EMPLOYEE: _____
SAFETY ISSUE: _____
CORRECTIVE ACTION: _____

ASSIGNED TO: _____ FOLLOW-UP DATE: _____
CORRECTION VERIFIED BY: _____ DATE: _____

INSPECTION COMPLETED BY: _____ DATE: _____

HEALTH AND SAFETY REVIEW BY: _____ DATE: _____



PROJECT SAFETY INSPECTION REPORT

PROJECT _____ DATE _____

	YES	NO	N/A
--	-----	----	-----

FIRST AID

- | | | | |
|---|-------|-------|-------|
| 1. Are first aid kit locations identified and accessible? | _____ | _____ | _____ |
| 2. Are emergency eye wash/safety showers available and inspected monthly? | _____ | _____ | _____ |
| 3. Are first aid kits inspected weekly? | _____ | _____ | _____ |
| 4. Is a qualified first aid/CPR provider on site? | _____ | _____ | _____ |

PERSONAL PROTECTIVE EQUIPMENT

- | | | | |
|--|-------|-------|-------|
| 1. Have levels of personnel protection been established? | _____ | _____ | _____ |
| 2. Are respirators decontaminated, inspected, and stored according to standard procedures? | _____ | _____ | _____ |
| 3. Have employees been fit-tested? | _____ | _____ | _____ |
| 4. Is defective personal protective equipment tagged and taken out of service? | _____ | _____ | _____ |
| 5. Does compressed breathing air meet CGA Grade "D" minimum? | _____ | _____ | _____ |
| 6. Are there sufficient sizes and quantities of protective equipment? | _____ | _____ | _____ |
| 7. At a minimum, are employees utilizing safety glasses, hard hats, and steel toe boots? | _____ | _____ | _____ |

FIRE PREVENTION

- | | | | |
|---|-------|-------|-------|
| 1. Are employees smoking only in designated outdoor areas? | _____ | _____ | _____ |
| 2. Are fire lanes established and maintained? | _____ | _____ | _____ |
| 3. Are flammable liquid dispensing systems bonded? | _____ | _____ | _____ |
| 4. Are approved safety cans available for storage of flammable liquids? | _____ | _____ | _____ |
| 5. Has the local fire department been contacted? | _____ | _____ | _____ |
| 6. Are fire extinguishers available and inspected monthly? | _____ | _____ | _____ |
| 7. Are flammables and combustibles properly stored? | _____ | _____ | _____ |
| 8. Are flammable storage cabinets available and used when needed? | _____ | _____ | _____ |

AIR MONITORING

- | | | | |
|--|-------|-------|-------|
| 1. Is required air monitoring being conducted? | _____ | _____ | _____ |
| 2. Are air monitoring instruments calibrated daily? | _____ | _____ | _____ |
| 3. Are air monitoring logs up to date? | _____ | _____ | _____ |
| 4. Are instrument user manuals available? | _____ | _____ | _____ |
| 5. Are instruments being maintained? | _____ | _____ | _____ |
| 6. Are employees notified of personal sampling results within 5 days of receipt? | _____ | _____ | _____ |

WELDING AND CUTTING

- | | | | |
|--|-------|-------|-------|
| 1. Are fire extinguishers present at welding and cutting operations? | _____ | _____ | _____ |
| 2. Are confined spaces evaluated prior to and during cutting and welding operations? | _____ | _____ | _____ |
| 3. Have Hot Work Permits been completed? | _____ | _____ | _____ |
| 4. Are proper helmets, goggles, aprons, and gloves available for welding and cutting operations? | _____ | _____ | _____ |
| 5. Are welding machines properly grounded? | _____ | _____ | _____ |
| 6. Are oxygen and fuel gas cylinders stored a minimum of 20 feet apart? | _____ | _____ | _____ |
| 7. Are only trained personnel permitted to operate welding and cutting equipment? | _____ | _____ | _____ |
| 8. Are gas cylinders transported in a secured vertical position with caps in place? | _____ | _____ | _____ |



PROJECT SAFETY INSPECTION REPORT

PROJECT _____ **DATE** _____

HAND AND POWER TOOLS

	YES	NO	N/A
1. Are defective hand and power tools tagged and taken out of service?	_____	_____	_____
2. Is eye protection available and used when operating power tools?	_____	_____	_____
3. Are guards and safety devices in place on power tools?	_____	_____	_____
4. Are power tools inspected before each use?	_____	_____	_____
5. Are nonsparking tools available when necessary?	_____	_____	_____
6. Is the correct tool being used for the job?	_____	_____	_____

MOTOR VEHICLES

1. Are vehicles regularly inspected?	_____	_____	_____
2. Are personnel licensed for the vehicles they operate?	_____	_____	_____
3. Are unsafe vehicles tagged and reported to supervision?	_____	_____	_____
4. Is vehicle's safety equipment operating properly?	_____	_____	_____
5. Are loads secure?	_____	_____	_____
6. Are vehicle occupants using safety belts?	_____	_____	_____
7. Are current insurance cards and blank accident report forms located in vehicles?	_____	_____	_____

EMERGENCY PLANS

1. Are emergency telephone numbers posted?	_____	_____	_____
2. Have emergency escape routes been designated?	_____	_____	_____
3. Are employees familiar with the emergency signal?	_____	_____	_____
4. Has the emergency route to the hospital been established and posted?	_____	_____	_____
5. Is a vehicle on site that can transport injured employees to the hospital?	_____	_____	_____

MATERIALS HANDLING

1. Are materials stacked and stored to prevent sliding or collapsing?	_____	_____	_____
2. Are tripping hazards identified?	_____	_____	_____
3. Are semi-trailers chocked?	_____	_____	_____
4. Are fixed jacks used under semi-trailers?	_____	_____	_____
5. Are riders prohibited on materials handling equipment?	_____	_____	_____
6. Are approved manlifts provided for the lifting of personnel?	_____	_____	_____
7. Are personnel in manlifts wearing approved fall protection devices?	_____	_____	_____

FIRE PROTECTION

1. Has a fire alarm system been established?	_____	_____	_____
2. Do employees know the location and use of all fire extinguishers?	_____	_____	_____
3. Are fire extinguisher locations posted?	_____	_____	_____
4. Are combustible materials segregated from open flames?	_____	_____	_____
5. Have fire extinguishers been professionally inspected during the last year?	_____	_____	_____
6. Are fire extinguishers visually inspected monthly?	_____	_____	_____

ELECTRICAL

1. Is electrical equipment and wiring properly guarded and maintained in good condition?	_____	_____	_____
2. Are extension cords kept out of wet areas?	_____	_____	_____
3. Is damaged electrical equipment tagged and taken out of service?	_____	_____	_____
4. Have underground electrical lines been identified by proper authorities?	_____	_____	_____
5. Has a lockout/tagout system been established?	_____	_____	_____
6. Are GFCIs being used on all temporary electrical systems and as needed?	_____	_____	_____



PROJECT SAFETY INSPECTION REPORT

PROJECT _____ DATE _____

	YES	NO	N/A
<u>ELECTRICAL (continued)</u>			
7. Are extension cords being inspected daily (i.e., group pin in place, no unapproved splices)?	_____	_____	_____
8. Are warning signs exhibited on high voltage equipment (250V or greater)?	_____	_____	_____
9. Is adequate distance maintained from overhead electrical lines?	_____	_____	_____
10. Are switches, circuit breakers, and switchboards installed in wet locations enclosed in weatherproof enclosures?	_____	_____	_____

<u>CRANES AND RIGGING</u>			
1. Are cranes inspected daily prior to use?	_____	_____	_____
2. Are crane swing areas barricaded or demarked?	_____	_____	_____
3. Is all rigging equipment tagged with an identification number and rated capacity?	_____	_____	_____
4. Is rigging equipment inspection documented?	_____	_____	_____
5. Are slings, chains, and rigging inspected before each use?	_____	_____	_____
6. Are damaged slings, chains, and rigging tagged and taken out of service?	_____	_____	_____
7. Are slings padded or protected from sharp corners?	_____	_____	_____
8. Do employees keep clear of suspended loads?	_____	_____	_____
9. Are rated load capacities and special hazard warnings posted on crane?	_____	_____	_____
10. Are the records of annual crane inspection available?	_____	_____	_____
11. Has accessible areas within the swing radius of the rear of the crane been barricaded?	_____	_____	_____
12. Do crane operators have required training/certification?	_____	_____	_____

<u>COMPRESSED GAS CYLINDERS</u>			
1. Are breathing air cylinders charged only to prescribed pressures?	_____	_____	_____
2. Are like cylinders segregated and stored in well ventilated areas?	_____	_____	_____
3. Is smoking prohibited in cylinder storage areas?	_____	_____	_____
4. Are cylinders stored secure and upright?	_____	_____	_____
5. Are cylinders protected from snow, rain, etc.?	_____	_____	_____
6. Are cylinder caps in place before cylinders are moved?	_____	_____	_____
7. Are fuel gas and oxygen cylinders stored a minimum of 20 feet apart?	_____	_____	_____
8. Are propane cylinders stored and used only outside of buildings?	_____	_____	_____

<u>SCAFFOLDING</u>			
1. Is scaffolding placed on a flat, firm surface?	_____	_____	_____
2. Are scaffold planks free of mud, ice, grease, etc.?	_____	_____	_____
3. Is scaffolding inspected before each use?	_____	_____	_____
4. Are defective scaffold parts taken out of service?	_____	_____	_____
5. Have employees completed scaffold user training?	_____	_____	_____
6. On scaffolds where platforms are overlapped, is planking overlapped a minimum of 12 inches?	_____	_____	_____
7. Does scaffold planking extend over end supports between 6 to 18 inches (dependent upon platform length)?	_____	_____	_____
8. Are employees restricted from working on scaffolds during storms and high winds?	_____	_____	_____
9. Are all pins in place and wheels locked?	_____	_____	_____
10. Is required perimeter guarding (top rail, mid rail, and toe board) present?	_____	_____	_____
11. Has a competent person been designated to oversee scaffold construction?	_____	_____	_____
12. Are employees prohibited from moving mobile scaffold horizontally while employees are on them?	_____	_____	_____
13. Are all scaffold components manufactured by the same company?	_____	_____	_____



PROJECT SAFETY INSPECTION REPORT

PROJECT _____ **DATE** _____

	YES	NO	N/A
<u>WALKING AND WORKING SURFACES</u>			
1. Are ladders regularly inspected?	_____	_____	_____
2. Are accessways, stairways, ramps, and ladders clean of ice, mud, snow, or debris?	_____	_____	_____
3. Are ladders being used in a safe manner?	_____	_____	_____
4. Are ladders kept out of passageways, doors, or driveways?	_____	_____	_____
5. Are broken or damaged ladders tagged and taken out of service?	_____	_____	_____
6. Are metal ladders prohibited in electrical service?	_____	_____	_____
7. Are stairways and floor openings guarded?	_____	_____	_____
8. Are safety feet installed on straight and extension ladders?	_____	_____	_____
9. Is general housekeeping being maintained?	_____	_____	_____
10. Are ladders tied off?	_____	_____	_____
11. Are handrails and siderails installed along the unprotected sides of stairways having 4 or more risers or rising more than 30 inches?	_____	_____	_____

<u>SITE SAFETY PLAN</u>			
1. Is a site safety plan available on site or accessible to all employees?	_____	_____	_____
2. Does the safety plan accurately reflect site conditions and tasks?	_____	_____	_____
3. Have potential hazards been described to employees on site?	_____	_____	_____
4. Is there a designated safety official on site?	_____	_____	_____
5. Have all employees signed the safety plan acknowledgment form?	_____	_____	_____

<u>SITE POSTERS</u>			
1. Are the following posters displayed in a prominent and accessible area?			
A. Minimum Wage	_____	_____	_____
B. OSHA Job Protection	_____	_____	_____
C. Equal Employment Opportunity	_____	_____	_____
2. Are all required state-specific posters displayed?	_____	_____	_____

<u>SITE CONTROL</u>			
1. Are work zones clearly marked?	_____	_____	_____
2. Are support trailers located to minimize exposure from a potential release?	_____	_____	_____
3. Are support trailers accessible for approach by emergency vehicles?	_____	_____	_____
4. Is the site properly secured during and after work hours?	_____	_____	_____
5. Is an exclusion zone sign-in/sign-out log maintained?	_____	_____	_____
6. Are only employees with current training and physicals permitted in exclusion zone?	_____	_____	_____

<u>HEAVY EQUIPMENT</u>			
1. Is heavy equipment inspected as prescribed by the manufacturer?	_____	_____	_____
2. Is defective heavy equipment tagged and taken out of service?	_____	_____	_____
3. Are project roads and structures inspected for load capacities and proper clearances?	_____	_____	_____
4. Is heavy equipment shut down for fueling and maintenance?	_____	_____	_____
5. Are backup alarms installed and working on mobile equipment?	_____	_____	_____
6. Have qualified equipment operators been designated?	_____	_____	_____
7. Are riders prohibited on heavy equipment?	_____	_____	_____
8. Are guards and safety appliances in place and used?	_____	_____	_____
9. Are operators using the "three point" system when mounting/dismounting equipment?	_____	_____	_____



PROJECT SAFETY INSPECTION REPORT

PROJECT _____ DATE _____

	YES	NO	N/A
<u>EXCAVATION</u>			
1. Has a "competent person" been designated to oversee excavation activities?	_____	_____	_____
2. Prior to opening excavations, are utilities located and marked?	_____	_____	_____
3. Has a professional engineer evaluated all excavations greater than 20 feet deep?	_____	_____	_____
4. Is there rescue equipment on site and accessible to the excavation area?	_____	_____	_____
5. Is excavated material placed a minimum of 24 inches from the excavation?	_____	_____	_____
6. Are the sides of excavations sloped or shored to prevent cave ins?	_____	_____	_____
7. Have excavations greater than 4 feet deep been monitored for hazardous atmospheres (i.e., LEL/O ₂ deficiency)?	_____	_____	_____
8. Are ladders or ramps used in excavations over 4 feet deep?	_____	_____	_____
9. Are means of egress available so as to require no more than 25 feet of lateral travel?	_____	_____	_____
10. Are barriers, i.e., guardrails or fences, placed around excavations near pedestrian or vehicle thoroughfares?	_____	_____	_____
11. Is excavation inspected <u>daily</u> by competent persons and documented?	_____	_____	_____
<u>CONFINED SPACES</u>			
1. Have employees been trained in the hazards of confined spaces?	_____	_____	_____
2. Are confined space permits posted at entrance to confined space?	_____	_____	_____
3. Is a copy of the confined space entry procedure available?	_____	_____	_____
4. Has a rescue plan been established?	_____	_____	_____
5. Is an entry supervisor present at each permit-required entry?	_____	_____	_____
6. Are required extraction/fall protection devices being used?	_____	_____	_____
<u>DECONTAMINATION</u>			
1. Are decontamination stations set up on site?	_____	_____	_____
2. Is decontamination water properly contained and disposed of?	_____	_____	_____
3. Are all pieces of equipment inspected for proper decontamination before leaving the site?	_____	_____	_____
4. Are shin/metatarsal guards being used during power washing activities?	_____	_____	_____
<u>HAZARD COMMUNICATION</u>			
1. Is there a copy of the HAZCOM procedure on site?	_____	_____	_____
2. Are there MSDSs for required materials/chemicals present on site?	_____	_____	_____
3. Are all containers properly labeled, as to content, hazard?	_____	_____	_____
4. Have employees been trained in accordance with the HAZCOM procedure?	_____	_____	_____
5. Do employees (including subcontractors) know and understand the effects of exposure from the chemicals on site?	_____	_____	_____
6. Have all personnel signed the HAZCOM acknowledgment form?	_____	_____	_____
7. Is there an updated list of chemicals maintained on site?	_____	_____	_____
<u>TRAINING</u>			
1. Are tailgate safety meetings being conducted daily?	_____	_____	_____
2. Are current training/medical records maintained on site?	_____	_____	_____
<u>DOCUMENTATION</u>			
1. Is an OSHA 200 Log maintained on site and posted during the month of February?	_____	_____	_____
2. Are accident report forms available?	_____	_____	_____
3. Is a copy of health and safety policy and procedures available on site?	_____	_____	_____



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PROJECT SAFETY INSPECTION REPORT

PROJECT _____ DATE _____

ALL NEGATIVE RESPONSES	CORRECTIVE ACTION	ASSIGNED TO	DATE ASSIGNED	DATE COMPLETED	VERIFIED BY

DESCRIBE POSITIVE SAFETY OBSERVATIONS



ATTACHMENT 3

OFFICE SAFETY INSPECTION REPORT

OFFICE _____ DATE _____

DATE: _____ OFFICE NAME: _____
OFFICE MANAGER: _____
AREA(S) OF OFFICE INSPECTED: _____

INTERVIEWED EMPLOYEE: _____
SAFETY ISSUE: _____
CORRECTIVE ACTION: _____

ASSIGNED TO: _____ FOLLOW-UP DATE: _____
CORRECTION VERIFIED BY: _____ DATE: _____

INTERVIEWED EMPLOYEE: _____
SAFETY ISSUE: _____
CORRECTIVE ACTION: _____

ASSIGNED TO: _____ FOLLOW-UP DATE: _____
CORRECTION VERIFIED BY: _____ DATE: _____

INSPECTION COMPLETED BY: _____ DATE: _____

HEALTH AND SAFETY REVIEW BY: _____ DATE: _____



OFFICE SAFETY INSPECTION REPORT

OFFICE _____ DATE _____

	YES	NO	N/A
<u>FIRST AID</u>			
1. Are first aid kits accessible and identified?	_____	_____	_____
2. Are emergency eye wash/safety showers available where needed and inspected?	_____	_____	_____
3. Are first aid kits inspected weekly?	_____	_____	_____
<u>FIRE PREVENTION</u>			
1. Are employees smoking only in designated outdoor areas?	_____	_____	_____
2. Are fire lanes/evacuation routes established and maintained?	_____	_____	_____
3. Are approved safety cans/cabinets available for storage of flammable liquids?	_____	_____	_____
4. Are fire exits clearly identified and unobstructed?	_____	_____	_____
<u>FURNITURE AND EQUIPMENT</u>			
1. Are desks, file cabinets, etc. arranged so that drawers do not open into aisles or walkways?	_____	_____	_____
2. Are desk and file drawers closed after use?	_____	_____	_____
3. Is weight distributed in file cabinets so that upper drawer contents does not create a top-heavy condition?	_____	_____	_____
4. Are cabinets, bookcases, and shelves secured to prevent their falling over?	_____	_____	_____
5. Are faulty desks, chairs, or other office equipment repaired or taken out of service?	_____	_____	_____
6. Is adequate and sufficient lighting provided in all work areas?	_____	_____	_____
7. Are paper cutter blades in fully down and locked position when not in use?	_____	_____	_____
8. Are work stations arranged to be comfortable without unnecessary strains on backs, arms, necks, etc.?	_____	_____	_____
9. Do machines with exposed moving parts have appropriate guards?	_____	_____	_____
<u>AISLES AND FLOORS</u>			
1. Is aisle clearance adequate for two-way traffic and for unobstructed access to all parts of the office and building?	_____	_____	_____
2. Does office arrangement allow easy egress under emergency conditions?	_____	_____	_____
3. Are wastebaskets, briefcases, or other objects placed where they are not a tripping hazard?	_____	_____	_____
4. Are floors clear of pencils, bottles, and other loose objects?	_____	_____	_____
5. Are tripping hazards from electrical cords, phone outlets, or other protrusions on the floor prevented by arrangement of furniture or other means?	_____	_____	_____
6. Are floors free of loose tiles and projections that can create a tripping hazard?	_____	_____	_____
7. Is carpeting in good condition and not badly worn or torn?	_____	_____	_____
<u>HAND AND POWER TOOLS</u>			
1. Are defective hand and power tools tagged and taken out of service?	_____	_____	_____
2. Is eye protection available and used when operating power tools?	_____	_____	_____
3. Are guards and safety devices in place on power tools?	_____	_____	_____
4. Are power tools inspected before each use?	_____	_____	_____
5. Is the correct tool being used for the job?	_____	_____	_____
6. Do knife blades have guards when not in use?	_____	_____	_____



OFFICE SAFETY INSPECTION REPORT

OFFICE _____ DATE _____

	YES	NO	N/A
<u>MOTOR VEHICLES</u>			
1. Are vehicles regularly inspected?	_____	_____	_____
2. Are personnel licensed for the vehicles they operate?	_____	_____	_____
3. Are unsafe vehicles reported to supervision?	_____	_____	_____
4. Is safety equipment on vehicles?	_____	_____	_____
5. Are loads secure on vehicles?	_____	_____	_____
6. Are vehicle occupants using safety belts?	_____	_____	_____
7. Are current insurance cards and blank accident report forms located in vehicles?	_____	_____	_____
<u>EMERGENCY PLANS</u>			
1. Are emergency telephone numbers posted?	_____	_____	_____
2. Have emergency escape routes been designated?	_____	_____	_____
3. Are employees familiar with the emergency signal?	_____	_____	_____
4. Has an emergency route to the hospital been established and posted?	_____	_____	_____
<u>MATERIALS HANDLING</u>			
1. Are materials stacked and stored to prevent sliding or collapsing?	_____	_____	_____
2. Are flammables and combustibles stored in approved containers?	_____	_____	_____
3. Are tripping hazards identified?	_____	_____	_____
4. Are riders prohibited on material handling equipment?	_____	_____	_____
<u>FIRE PROTECTION</u>			
1. Has a fire alarm system been established?	_____	_____	_____
2. Do employees know the location and use of all fire extinguishers?	_____	_____	_____
3. Are fire extinguisher locations marked?	_____	_____	_____
4. Have fire extinguishers been professionally inspected during the last year?	_____	_____	_____
5. Are fire extinguishers visually inspected monthly?	_____	_____	_____
6. Is there an operating fire detection system?	_____	_____	_____
<u>ELECTRICAL</u>			
1. Are extension cords kept out of wet areas?	_____	_____	_____
2. Are certified electricians used for electrical work?	_____	_____	_____
3. Are GFCIs being used as needed?	_____	_____	_____
4. Are extension cords not being used in lieu of permanent wiring?	_____	_____	_____
5. Are warning signs exhibited on high voltage equipment (250V or greater)?	_____	_____	_____
6. Are switches, circuit breakers, and switchboards installed in wet locations enclosed in weatherproof enclosures?	_____	_____	_____
7. Are electric fans protected with guards of not over one-half inch mesh, which prevents fingers getting inside guard?	_____	_____	_____
8. Are cords, panels, receptacles, and plugs in good condition?	_____	_____	_____
9. Are multi-outlet strips not plugged into other multi-outlet strips?	_____	_____	_____
10. Are extension cords not plugged into other extension cords?	_____	_____	_____
11. Are circuit breakers or fuse panels properly labeled, kept closed, and accessible?	_____	_____	_____
12. Are extension cords arranged so that they are not placed over radiators, steam pipes, through doorways, or under carpets?	_____	_____	_____
13. Do space heaters have automatic shut-offs that will actuate if the heater tips over?	_____	_____	_____
14. Are space heaters UL listed and plugged directly into a wall receptacle?	_____	_____	_____
15. Are space heaters located at least 3 feet from combustible material?	_____	_____	_____



OFFICE SAFETY INSPECTION REPORT

OFFICE _____ DATE _____

	YES	NO	N/A
<u>WALKING AND WORKING SURFACES</u>			
1. Are cords, cables, and other items not placed in walkways?	_____	_____	_____
2. Are ladders regularly inspected?	_____	_____	_____
3. Are accessways, stairways, ramps, and ladders clean of ice, mud, snow, or debris?	_____	_____	_____
4. Are ladders being used in a safe manner?	_____	_____	_____
5. Are ladders kept out of passageways, doors, or driveways?	_____	_____	_____
6. Are broken or damaged ladders tagged and taken out of service?	_____	_____	_____
7. Are metal ladders prohibited in electrical service?	_____	_____	_____
8. Are stairways and floor openings guarded?	_____	_____	_____
9. Are safety feet installed on straight and extension ladders?	_____	_____	_____
10. Are employees walking instead of running?	_____	_____	_____
11. Are handrails and siderails installed along the unprotected sides of stairways having 4 or more risers or rising more than 30 inches?	_____	_____	_____
12. Are there torn, loose, or curled carpets?	_____	_____	_____
<u>HOUSEKEEPING</u>			
1. Is good housekeeping maintained?	_____	_____	_____
2. Are paper and materials stored properly?	_____	_____	_____
3. Are cleaning fluids used only in small quantities and stored in closed containers that are kept in well-ventilated areas?	_____	_____	_____
4. If cleaning fluids are flammable, are they not used near a flame or an open heating element?	_____	_____	_____
5. Are wastebaskets emptied on a daily basis?	_____	_____	_____
<u>SITE POSTERS</u>			
1. Are the following posters displayed in a prominent and accessible area?			
A. Minimum Wage	_____	_____	_____
B. OSHA Job Protection	_____	_____	_____
C. Equal Employment Opportunity	_____	_____	_____
2. Are all required state-specific posters displayed?	_____	_____	_____
<u>HAZARD COMMUNICATION</u>			
1. Is the written HAZCOM program available?	_____	_____	_____
2. Is there a MSDS <u>FOR EACH HAZARDOUS CHEMICAL</u> present in the office?	_____	_____	_____
3. Are all containers properly labeled, as to content, hazard?	_____	_____	_____
4. Have employees been trained on chemical hazards?	_____	_____	_____
5. Have all employees signed the HAZCOM acknowledgment form?	_____	_____	_____
6. Is there a list of chemicals maintained on site?	_____	_____	_____
<u>DOCUMENTATION</u>			
1. Is an OSHA 200 Log maintained and posted during the month of February?	_____	_____	_____
2. Are accident report forms available?	_____	_____	_____
3. Is a copy of health and safety policy and procedures available?	_____	_____	_____



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OFFICE SAFETY INSPECTION REPORT

OFFICE _____ DATE _____

ALL NEGATIVE RESPONSES	CORRECTIVE ACTION	ASSIGNED TO	DATE ASSIGNED	DATE COMPLETED	VERIFIED BY

DESCRIBE POSITIVE SAFETY OBSERVATIONS



PROCEDURE

Subject: TAILGATE SAFETY MEETINGS

1.0 PURPOSE AND SUMMARY

This procedure establishes the requirement for the conductance of tailgate safety meetings. These meetings are to be conducted at each company project site, on a daily basis, prior to the start of any work activities.

2.0 TABLE OF CONTENTS

- 1.0 Purpose and Summary
- 2.0 Table of Contents
- 3.0 Responsibility Matrix
 - 3.1 Procedure Responsibility
 - 3.2 Action/Approval Responsibilities
- 4.0 Definitions
- 5.0 Text
- 6.0 Exception Provisions
- 7.0 Cross References
- 8.0 Attachments

3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

Company - All wholly-owned subsidiaries of The IT Group, Inc.

Tailgate Safety Meeting - A short training or informative session that provides safety guidelines for the planned work activities for the day or shift.



5.0 TEXT

The project supervisor or his/her designee conducts a tailgate safety meeting at the beginning of each shift or whenever new employees arrive at the work site. The topics discussed at the tailgate safety meeting should cover the work assignments for the day, the expected hazard(s) presented by the work, and an explanation on how employees will protect themselves from those hazards.

The meetings are to be documented by the completion of a Tailgate Safety Meeting Form. The project supervisor will assure that the form is properly completed and signed by all attendees. Completed forms will be maintained in the project files.

The following sections provide guidance for the completion of the form:

- A. **Project Name/Number** - Specific project name and number assigned to the project.
- B. **Date** - Date of meeting.
- C. **Time** - Time at which meeting is held.
- D. **Client** - Identification, name, etc. of entity for whom work is to be performed.
- E. **Work Activities** - Detailed description of the work activities to be performed that day.
- F. **Hospital Name/Address** - Hospital name and address designated to be used for the project.
- G. **Phone Number** - Designated hospital non-emergency phone number.
- H. **Ambulance** - Phone number for medical emergency transportation.
- I. **Safety Topics Presented:**
 - 1. **Chemical Hazards** - Specific chemical name and adverse properties of all chemicals to be encountered on the job that day. A Material Safety Data Sheet (MSDS) for each should be available and discussed in accordance with Procedure HS060.
 - 2. **Physical Hazards** - Address physical hazards associated with the work site, such as slipping/tripping/falling hazards, pinch points, overhead hazards, and nearby operations that could pose a hazard.
 - 3. **Personal Protective Equipment** - Specify levels of protective clothing and protective devices to be used by employees for each of the day's activities.



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4. **New Equipment** - Indicate proper work techniques and any hazards associated with new or unfamiliar equipment.
5. **Other Safety Topic(s)** - List any remaining safety topics pertinent to the potential hazards of the job for that day. This is an area where different, unique subjects can be introduced to make the tailgate safety meeting more interesting.
- J. **Attendees** - Printed name and signature of all persons in attendance. (Also, list affiliation if not employed by the company.)
- K. **Meeting Conducted By** - Printed name and signature of individual conducting the tailgate safety meeting.

6.0 EXCEPTION PROVISIONS

Variances and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variances

7.0 CROSS REFERENCES

HS013 Health and Safety Procedure Variances
HS060 Hazard Communication Program

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Tailgate Safety Meeting Form



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ATTACHMENT 1
TAILGATE SAFETY MEETINGS

Responsibility Matrix

Action	Procedure Section	Responsible Party	
		Vice President of Health and Safety	Project Supervisor
Issuance, Revision, and Maintenance of Procedure	3.1	X	
Conduct Meeting	5.0		X



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ATTACHMENT 2

TAILGATE SAFETY MEETING FORM

Project Name/Number: _____ Date: _____ Time: _____
 Client: _____
 Work Activities: _____
 Hospital Name/Address: _____
 Hospital Phone No.: _____ Ambulance Phone No.: _____

Safety Topics Presented

Chemical Hazards: _____

Physical Hazards: _____

Personal Protective Equipment:

Activity: _____ PPE Level: _____

New Equipment: _____

Other Safety Topic(s): _____

Attendees

NAME PRINTED

SIGNATURE

Meeting conducted by:



PROCEDURE

Subject: HAZARD COMMUNICATION PROGRAM

1.0 PURPOSE AND SUMMARY

This procedure has been developed to ensure that all affected company employees are provided with current information on the hazardous chemicals that they may encounter during their work. The basic principle of Hazard Communication (HAZCOM) is that anyone that works with hazardous chemicals has both a need and a right to know the identities and the hazards of any chemical to which they may be occupationally exposed. This principle has been propagated by the Occupational Safety and Health Administration (OSHA) in 29 Code of Federal Regulations (CFR) 1910.1200 *Hazard Communication*.

Some company activities are likely to occur in states or localities that either have or will have requirements that differ from those contained within the federal standard. In such circumstances, the local health and safety representative will be responsible for ensuring that these requirements are included in either a site health and safety plan or a similar document and conveyed to all affected employees. If federal, state, or local regulations vary or conflict, the more protective requirements and practices will be followed.

2.0 TABLE OF CONTENTS

1.0	Purpose and Summary
2.0	Table of Contents
3.0	Responsibility Matrix
3.1	Procedure Responsibility
3.2	Action/Approval Responsibilities
4.0	Definitions
5.0	Text
5.1	Hazardous Chemical Inventories
5.2	Procurement of Hazardous Chemicals
5.3	Container Labeling
5.4	Material Safety Data Sheets (MSDS)
5.5	Training
5.6	Trade Secrets
5.7	Contractors
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3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

Article - A manufactured item other than a fluid or particle which is formed to a specific shape or design during manufacture, has end use function dependent in whole or in part upon its shape or design during end use, which under normal conditions of use does not release more than trace amounts of a hazardous substance and does not pose a physical hazard or health risk to employees.

Affected Employee - Any company employee who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies.

Company - All wholly-owned subsidiaries of The IT Group, Inc.

Hazardous Chemical - Any chemical which poses a physical or health hazard.

Health Hazard - A chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. Health hazards include chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.

Immediate Use - When hazardous chemicals will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

Label - Any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

Local Health and Safety Representative - The person who is responsible for the management and/or oversight of health and safety activities at a particular workplace. He/she may be assigned as a site health and safety officer or act as a home office health and safety manager who is responsible for multiple workplaces. This person does not necessarily need to be physically located at a workplace in which they are responsible for ensuring that the requirements of this



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procedure are fulfilled. The local health and safety representative may designate another qualified individual to assume some or all of the responsibilities delineated in this procedure.

Physical Hazard - A chemical for which there is scientifically valid evidence that it is a combustible liquid, compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable, or reactive.

Responsible Party - The entity responsible for preparation or distribution of Material Safety Data Sheets (MSDS) that can provide additional information on the hazardous chemical and appropriate emergency procedures.

Trade Secret - Any confidential formula, pattern, process, device, information, or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not currently know or use it.

Workplace - An establishment, job site, laboratory, office, or project at one geographic location containing one or more work areas.

5.0 TEXT

In accordance with the requirements established in 29 CFR 1910.1200, employers are required to develop, implement, and maintain at each workplace a HAZCOM program. The program contained herein is intended to ensure that the hazards of all chemicals used by employees are evaluated and that information concerning the hazards of each chemical are conveyed to affected employees. The company program generally consists of five provisions, including hazardous chemical inventories, procurement of hazardous chemicals, container labeling, MSDSs, and the development and implementation of employee training programs. Since the company does not typically produce, distribute, or import hazardous chemicals, the focus of this procedure is on establishing an effective consumer/handler type HAZCOM program and the communication of information to our affected employees.

There are some types of chemicals that are specifically exempt from this procedure. These materials include:

- Any hazardous waste as defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1967, as amended (42 U.S.C. 6901 *et seq.*), when subject to regulations issued under that Act by the U.S. Environmental Protection Agency.
- Any hazardous chemical as defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) when the hazardous chemical is the focus of remedial or removal actions being conducted under CERCLA in accordance with U.S. Environmental Protection Agency regulations.
- Tobacco or tobacco products.



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- Wood or wood products, including lumber which will not be processed, where the manufacturer or importer can establish that the only hazard they pose to employees is the potential for flammability or combustibility. Wood or wood products which have been treated with a hazardous chemical are covered by this procedure, and wood which may be subsequently sawed or cut, generating dust.
- Articles.
- Food or alcoholic beverages which are sold, used, or prepared in a retail establishment, or foods intended for personal consumption by employees while in the workplace.
- Any drug, as defined by the Federal Food, Drug, and Cosmetic Act, when it is in solid, final form for direct administration to patient; drugs which are packaged by the manufacturer for sale to consumers in a retail establishment; and drugs intended for personal consumption by employees while in the workplace.
- Cosmetics which are packaged for sale to consumers in a retail establishment, and cosmetics intended for personal consumption by employees while in the workplace.
- Any consumer product or hazardous chemical, as defined by Consumer Product Safety Act and Federal Hazardous Chemicals Act, where the employer can show that it is used in the workplace for the purpose intended by the manufacturer or importer of the product, and the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended.
- Nuisance particulates where the manufacturer, distributor, or importer can establish that they do not pose any physical or health hazard covered under this procedure.
- Ionizing and nonionizing radiation.
- Biological hazards.

5.1 Hazardous Chemical Inventories

A complete list of all hazardous chemicals known to be present in the workplace which may expose an employee to a physical or health hazard will be maintained. This list will be placed in the front section of the MSDS binder discussed in Section 5.4. The local health and safety representative will be responsible for updating and revising the inventory list as new chemicals are procured or when chemicals are no longer used and have been removed from the workplace. The identity of the hazardous chemical maintained on the list will be consistent with that which appears on the MSDS. All affected employees will be made aware of the location of the MSDS binder.



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5.2 Procurement of Hazardous Chemicals

Since the company does not typically manufacture, distribute, or import hazardous chemicals, procurement is the primary method of obtaining hazardous chemicals. The person initiating the procurement of a hazardous chemical will be responsible for requesting a MSDS from the manufacturer or distributor. This MSDS is to be provided either prior to or at the time of receipt of the chemical. Hazardous chemicals are strictly forbidden to be accepted without an accompanying MSDS. Upon receipt of a hazardous chemical, the person receiving the shipment will notify the local health and safety representative so that a review of the MSDS can be conducted. Also, note that the supplier is only required to submit a MSDS with the initial shipment of a hazardous chemical to a specific location.

In the unlikely event that a hazardous chemical is either manufactured, imported, or distributed by the company, the Vice President, Health and Safety will be notified so that required actions, as dictated by OSHA, can be implemented.

5.3 Container Labeling

Labeling on hazardous chemical containers is meant to provide immediate information to affected employees about the hazards of chemicals they will be expected to handle during the course of their job duties. It is the responsibility of the manufacturer, importer, or distributor of the chemical to ensure that each hazardous chemical leaving their place of business is labeled, tagged, or marked with the following information:

- Identity of the hazardous chemical (must be common to the label, the MSDS, and the chemical inventory list);
- Appropriate warnings of the hazardous effects of a chemical (words, pictures, symbols, or any combination that appears on the label and convey the specific physical or health hazards including target organ effects); and
- Name and address of the chemical manufacturer, importer, or other responsible party.

The person receiving the shipment is responsible to ensure that each container of hazardous chemical(s) has been provided with this labeling information. Hazardous chemicals that do not contain adequate labeling will not be accepted by the receiving person. In the event that hazardous chemicals that do not contain adequate labeling are inadvertently received, they are not to be handled until the identity of the material and appropriate hazard warnings are provided. If the hazardous chemical is regulated by a chemical-specific health standard, then it must be labeled in accordance with the requirements of that standard.



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As long as the hazardous chemicals are maintained in their original, properly labeled container and their composition is not altered, there is no need for additional labeling. In the event that the chemical is transferred from a labeled container to an unlabeled portable container, the user must label this secondary container unless the container is intended for immediate use of the employee who performs the transfer.

In locations where employees are present who only communicate in languages other than English, all labeling information must be presented in their language as well as in English.

5.4 Material Safety Data Sheets (MSDS)

MSDSs are written documents that convey specific, detailed information about the hazards associated with a specific chemical. It is the responsibility of the manufacturer, importer, or distributor to either provide MSDSs prior to shipment or with the shipped materials. The employee receiving the shipment of materials is responsible to ensure that a MSDS has been supplied. As described in Section 5.2, the employee initiating the procurement is responsible for requesting a MSDS from the manufacturer or distributor. In the event that a MSDS has not been provided, it is the responsibility of the receiving person to obtain one from the manufacturer or distributor as soon as possible. The material will not be handled prior to the receipt of a MSDS.

Each MSDS will be forwarded to the local health and safety representative or a designee who will then place a copy into the MSDS binder. This binder will be maintained in the workplace and updated as new materials arrive. The local health and safety representative will ensure that this binder is reviewed with all affected employees and is readily accessible during each work shift. A designated area for the storage of the binder will be established and all employees are to be informed of its location. Employees can request a personal copy of a MSDS by completing the Employee Request for MSDS form provided in Attachment 2. Where employees travel between workplaces during a work shift, the MSDSs may be kept at the primary workplace. Affected employees must be able to immediately obtain information from the MSDSs in the event of an emergency.

MSDSs will be in English and other languages, as necessary, for the particular employees in which the MSDSs will be used. MSDSs are to include the following information:

- Name, address, and telephone number of the responsible party;
- Identity of the chemical as it appears on the label;
- Hazardous ingredients;
- Physical and chemical characteristics;
- Physical and health hazards;
- Primary route(s) of entry;
- OSHA permissible exposure limit (PEL) or other applicable exposure limits;
- Carcinogen information;
- Safe handling and use information;



- Control measures;
- Emergency and first aid procedures; and
- Date of preparation and latest revision date.

5.5 Training

All affected employees will be provided with information and training on the hazardous chemicals in their work area at the time of their initial assignment, when new information about the hazards of a chemical is discovered, and whenever a new physical or health hazard that the employees have not previously been informed of is introduced into the workplace. The HAZCOM training record has been provided as Attachment 3.

Training on this HAZCOM program may be satisfied by the use of two different types of training sessions. These sessions include:

- **Tailgate Safety Meetings** - These meetings will be used to convey the methods and observations that may be used to detect the presence or release of a hazardous chemical in the workplace, the physical and health hazards of the chemicals in the workplace, and the measures that can be taken to protect affected employees from these hazards. The guidelines for this meeting are described in Procedure HS051, Tailgate Safety Meetings.
- **Workplace-Specific or Annual Refresher Training** - Either of these training sessions can be used to convey the details of this HAZCOM program. These details include an explanation of labeling systems, the use of MSDSs, and how employees can obtain and use the appropriate hazard information. These training sessions are discussed further in Procedure HS050, Training Requirements.

Workplace-specific and tailgate safety meetings will be facilitated by the local health and safety representative or another individual who is knowledgeable on the requirements of the HAZCOM program and the specific chemicals that are being discussed. Annual refresher training can only be conducted by personnel previously approved by the company Training Department.

5.6 Trade Secrets

Some hazardous chemical manufacturers, importers, and distributors may withhold proprietary information required to be present on a MSDS. In such instances, the name and telephone number of the manufacturer, importer, or distributor will be forwarded to the Vice President of Health and Safety for further action. It will be the responsibility of the Vice President of Health and Safety to either obtain the necessary information or to decide to reject the chemical for use in company workplaces.



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5.7 Contractors

During the execution of our work, there will be situations when the company will be at locations where employees of other entities may be exposed to chemicals being used by the company. It will be the responsibility of the local health and safety representative or designee to provide the other entities' site representative(s) with copies of all MSDSs in which their employees may be exposed, as well as the labeling system in place, the protective measures to be taken, safe handling procedures to be used, and the location and availability of the MSDS binder.

Periodically, company work areas will be located on or adjacent to a facility operated by another entity. In these situations, the local health and safety representative or designee will contact the other entity to obtain applicable MSDS(s) for hazardous chemicals that company employees may be exposed to.

6.0 EXCEPTION PROVISIONS

Variances and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variances.

7.0 CROSS REFERENCES

HS013 Health and Safety Procedure Variances
HS050 Training Requirements
HS051 Tailgate Safety Meetings
HS500 OSHA Regulated Toxic and Hazardous Chemicals
OSHA 29 CFR 1910.1200

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Employee Request for MSDS
3. HAZCOM and Right-to-Know Standards Employee Training Record



ATTACHMENT 1
HAZARD COMMUNICATION PROGRAM

Responsibility Matrix

Action	Procedure Section	Responsible Party				
		Purchaser	Receiver	Affected Employee	Local Health and Safety Representative	Vice President, Health and Safety
Understand and Comply With State and/or Local Regulations	1.0				X	
Issuance, Revision, and Maintenance of Procedure	3.1					X
Review and Understand This Procedure	5.0	X	X	X	X	
Establish, Update, and Revise MSDS Binder	5.1				X	
Request MSDSs for Procured Chemicals	5.2	X				
Initial Review of MSDSs	5.2				X	
Implement Requirements For Company Manufactured, Imported, or Distributed Chemicals	5.2					X
Review Incoming Shipments for Hazard Labeling/MSDS	5.3		X			
Request Missing MSDSs From Manufacturer or Distributor	5.4		X			
Provide HAZCOM Training	5.5				X	
Receive HAZCOM Training	5.5			X		
Obtain Information on Proprietary Chemicals	5.6					X
Transmit MSDSs to Contractors	5.7				X	
Obtain MSDSs From Other Entities	5.7				X	

These standard policies and procedures are applicable to all members of The IT Group, Inc., except where superseded or modified by the member Company.



ATTACHMENT 2

EMPLOYEE REQUEST FOR MATERIAL SAFETY DATA SHEET (MSDS)

Employee Name: (Please print) _____

Employee Number: _____

Job Title/Location: _____

Department/Work Area: _____

I am requesting a copy of the MSDS(s) for the following chemical(s):

(Chemical name, Common name, Trade name)

1. _____

2. _____

3. _____

Signature

Date

I have received a copy of the above MSDS(s) I requested.

Signature

Date

cc: Local Health and Safety Representative



ATTACHMENT 3

HAZARD COMMUNICATION AND RIGHT-TO-KNOW STANDARDS
EMPLOYEE TRAINING RECORD

INITIAL:

1. I have been informed about the Hazard Communication Program, Material Safety Data Sheets (MSDS), their use and location, and the procedures to obtain copies.
2. I have been informed that some of my work may involve exposure to toxic substances, the hazards of which will be reviewed with me in tailgate safety meetings or site-specific training.
3. I have been informed about the right of employees to have access to relevant exposure and medical records, and the procedures for requesting access.
4. I understand that the company must act upon a request in a reasonable amount of time so as to avoid interruption of normal work operations.
5. I have been provided access to the applicable regulations governing hazard communication, and access to employee exposure and medical records.

PRINT NAME: _____

SIGNATURE: _____

EMPLOYEE NUMBER: _____

DATE: _____

PROCEDURE

Subject: FIRST AID KITS

1.0 PURPOSE AND SUMMARY

This procedure specifies the contents, use, restocking, inspection, and personnel qualification requirements for first aid kits in IT Corporation.

2.0 TABLE OF CONTENTS

- 1.0 Purpose and Summary
- 2.0 Table of Contents
- 3.0 Responsibility Matrix
 - 3.1 Procedure Responsibility
 - 3.2 Table of Definitions
- 4.0 Definitions
- 5.0 Text
 - 5.1 Kit Selection
 - 5.1.1 Type I Kit
 - 5.1.2 Type II Kits
 - 5.2 Issuance/Placement of Kits
 - 5.3 Usage
 - 5.4 Restocking
 - 5.5 Personnel Qualifications
- 6.0 Exception Provisions
- 7.0 Cross References
- 8.0 Attachments

3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Corporate Director, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1 in Section 8.0.

4.0 DEFINITIONS

(None.)



5.0 TEXT

Special fill first aid kits in weather proof containers, approved by the IT Corporation Medical Director and meeting regulatory requirements, shall be present in all locations when IT Corporation employees will be working. Items not specifically authorized by the Medical Director, especially over-the-counter medications taken internally, are prohibited.

5.1 Kit Selection

5.1.1 Type I Kit

All fixed facilities, field offices, shops, storerooms, field jobs, etc., shall provide a minimum of one (1) Type I First Aid Kit (Attachment 2). Additional kits shall be provided based on the number of personnel at the location.

5.1.2 Type II Kit

All owned or leased vehicles shall be equipped with a Type II First Aid Kit (Attachment 3).

5.2 Issuance/Placement of Kits

Kits must be located in a visible location readily accessible in the event of an injury or emergency. Kits located in fixed facilities or field offices shall be securely mounted on a wall or other appropriate surface.

5.3 Usage

Use of any item from a first aid kit requires the completion of a Supervisor's Employee Injury Report (Attachment 4), which must be submitted to the HS department within 24 hours. This includes "first aid only" or "non-occupational" incidents, which should be so noted on the SEIR.

5.4 Restocking

All Type I kits located in a permanent or semi-permanent facilities shall be inspected weekly. They may either be set-up for monthly restocking by an outside vendor or restocked weekly from on-hand supplies. Note that any kit set-up for monthly restocking, but that is found seriously depleted when inspected, must be restocked immediately.

All Type II kits, and those Type I kits used for field job support shall be restocked after every use. Field kits should be inspected daily, and vehicle kits should be checked by the driver as part of his pre-trip checkout. Deficiencies are to be corrected immediately.

5.5 Personnel Qualifications

Other than for self-administration to the user, all first aid kit users shall possess a valid first aid card.



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6.0 EXCEPTION PROVISIONS

All exceptions to established policy shall follow the provisions of ITC Procedure HS013: Health and Safety Procedure Variances.

7.0 CROSS REFERENCES

HS020: Accident Prevention Program: Investigation and Review.

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Type I First Aid Kit Inventory
3. Type II First Aid Kit Inventory
4. Supervisor's Employee Injury Report



ATTACHMENT 1

FIRST AID KITS

Responsibility Matrix

Action	Procedure Section	Responsible Party		
		IT Medical Director	Location Manager	Supervisor
Specify approved kit inventory	5.0	X		
Provide approved kits for facilities, projects, vehicles	5.1		X	
Properly/visibly place kits	5.2		X	
Complete SEIR when kit used, and submit to HS	5.3			X
Establish inspection and restocking procedures	5.4		X	
Train personnel in FA/CPR to meet kit use criteria	5.5		X	



ATTACHMENT 2

FIRST AID KIT INVENTORY LIST: TYPE I

<u>Contents</u>	<u>Quantity</u>
Telfa Bandage Compress, 4" x 4"	23
Adhesive Bandages, 1" x 3-3/8"	40
Ammonia Inhalants	5
Triangular Bandage	3
Eye Dressing Packet	1
Eye Flush, 1 oz.	2
Kwik-Kold Ice Pak	1
Adhesive Tape, 1"	1 roll
Scissors and Forceps Kit	1
Emergency Blanket	1
Disposable Gloves	4 pairs
Flashlight	2
Cottontip Applicators	25
Disposable Mouth-to-Mouth Resuscitators	1
Multi-Trauma Dressings 8" x 10"	1
2" Gauze Bandage Roll	1
Supervisor's Employee Injury Report	6
Inventory Kit	1

Peter P. Greaney, M.D.
Occupational Medicine Consultant

Signature

Date



ATTACHMENT 3

FIRST AID KIT INVENTORY LIST: TYPE II

<u>Contents</u>	<u>Quantity</u>
Telfa Bandage Compress, 4" x 4"	4
Adhesive Bandages, 1" x 3-3/8"	10
Ammonia Inhalants	5
Triangular Bandage	1
Eye Dressing Packet	1
Eye Flush, 1 oz.	1
Kwik-Kold Ice Pak	1
Adhesive Tape, 1"	1 roll
Scissors and Forceps Kit	1
Disposable Gloves	2 pairs
Flashlight	1
Cottontip Applicators	10
Disposable Mouth-to-Mouth Resuscitators	1
Multi-Trauma Dressings 8" x 10"	1
2" Gauze Bandage Roll	1
Supervisor's Employee Injury Report	2
Inventory Kit	1

Peter P. Greaney, M.D.
Occupational Medicine Consultant

Signature

Date



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ATTACHMENT 4

SUPERVISOR'S EMPLOYEE INJURY REPORT

This report is to be initiated by the employee's supervisor. Please answer all questions completely. This report must be forwarded to the appropriate health and safety representative within 24 HOURS of the injury/illness.

EMPLOYEE
 Injured's Name _____ Sex _____ S.S. No. _____ Birth Date _____
 Home Address _____
 City _____ State _____ Zip _____ Phone (____) _____
 Job Title _____ Hire Date _____ Hourly Wage _____

Date of Incident _____ Time _____ Time Reported _____ To Whom? _____
 Project/Location Name _____ Address _____
 Project No. _____ Time Shift Began _____ Did the Employee Leave Work? No Yes When _____
 Has employee returned to work? No Yes When _____ Did employee miss a regularly scheduled shift? No Yes
 Doctor/Hospital Name _____ Address _____
 Witness Name(s) _____ Statement Attached? No Yes

SUPERVISOR
 Nature of Injury _____ Exact Body Part _____
 Medical Attention: None First Aid On Site Doctor's Office Hospital ER Hospitalized
 Job Assignment at Time of Incident _____
 Describe Incident _____

What Unsafe Condition and/or Act Contributed to the Incident? _____

What Corrective Action Has Been Taken to Prevent Recurrence? _____

Supervisor _____ (Print) _____ Signature _____ Date _____

MANAGER
 Comments on Incident and Corrective Action _____

 Project/Location Mgr. _____ (Print) _____ Signature _____ Date _____

HEALTH AND SAFETY
 Concur With Action Taken? No Yes Remarks _____

OSHA Classification:
 First Aid Recordable, No Lost/Restricted Workdays Recordable, Lost Workdays Recordable, Restricted Activity Fatality

Days Away From Work _____ Days Restricted Work _____

All injuries/illnesses requiring outside medical treatment must be reported to CSSC by calling 1-800-243-2490 within 24 hours of the incident. Contact Corporate Risk Management at (412) 380-4097 for cases occurring in Ohio, Nevada, Washington, or West Virginia.

Workers' Compensation Claim Number (if applicable) _____

Health and Safety Representative:
 _____ (Print) _____ Signature _____ Date _____

These standard policies and procedures are applicable to all members of The IT Group, Inc., except where superseded or modified by the member Company.



PROCEDURE

Subject: CONFINED SPACES

1.0 PURPOSE AND SUMMARY

This procedure describes the requirements for identifying and working within confined spaces. It has been developed to ensure compliance with the Occupational Safety and Health Administration (OSHA) permit-required confined spaces regulation. Key provisions of this procedure include:

- Scope and Applicability
- Workplace Evaluation
- Permit-Required Confined Spaces (PRCS)
 - Duties of PRCS Participants
 - Permit System
 - Training
- Non-Permit-Required Confined Spaces
- Rescue and Emergency Services
- Employee Access to Documentation
- Retention of Inspection and Test Logs
- Program Review.

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5.1	Scope and Applicability
5.2	Workplace Evaluation
5.3	Permit-Required Confined Spaces
5.3.1	Duties of PRCS Participants
5.3.1.1	Authorized Entrant(s)
5.3.1.2	Attendant(s)
5.3.1.3	Entry Supervisor(s)
5.3.2	Permit System
5.3.3	Training
5.4	Non-Permit-Required Confined Spaces
5.5	Rescue and Emergency Services



- 5.5.1 Outside Rescue Services
- 5.5.2 Company Rescue Services
- 5.6 Employee Access to Documentation
- 5.7 Retention of Inspection and Test Logs
- 5.8 Program Review
- 6.0 Exception Provisions
- 7.0 Cross References
- 8.0 Attachments

3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President of Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

Acceptable Entry Conditions - The conditions that must exist in a permit space to allow entry so that employees involved with a permit-required confined space entry can safely enter into and work within the space.

Attendant - An individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties described in this procedure.

Authorized Entrant - An employee who is authorized to enter a permit-required confined space.

Blanking or Blinding - The absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Company - All wholly-owned subsidiaries of The IT Group, Inc.

Confined Space - A space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work;
- Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, pits, and excavations are spaces that may have limited means of entry); and
- Is not designed for continuous employee occupancy.



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Double Block and Bleed - The closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

Emergency - Any occurrence (including any failure of hazard control or monitoring equipment) or event, internal or external, to the permit-required confined space that could endanger entrants.

Engulfment - The surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

Entry - The action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Entry Permit - The written or printed document that is provided by the company to allow and control entry into a permit space.

Entry Supervisor - The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section. An entry supervisor may also serve as an attendant or as an authorized entrant, as long as that person is trained and equipped for each role he/she fills.

Hazardous Atmosphere - An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL).
- Airborne combustible dust at a concentration that meets or exceeds its LEL.
NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less.
- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.
- Atmospheric concentration of any substance for which a dose or a published exposure guideline is available and which could result in employee exposure in excess of its dose or permissible exposure limit.
- Any other atmospheric condition that is immediately dangerous to life or health.

Hot Work Permit - Written authorization to perform hot operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition. Refer to Procedure HS314.



Immediately Dangerous to Life or Health (IDLH) - Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a confined space.

Inerting - The displacement of the atmosphere in a confined space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

Isolation - The process by which a confined space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy, including hydraulic or electric; blocking or disconnecting all mechanical linkages; or physically restraining moving parts.

Line Breaking - The intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material; an inert gas; or any fluid at a volume, pressure, or temperature capable of causing injury.

Non-Permit-Required Confined Space - A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Oxygen-Deficient Atmosphere - An atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen-Enriched Atmosphere - An atmosphere containing more than 23.5 percent oxygen by volume.

Permit-Required Confined Space (PRCS) - A confined space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere.
- Contains a material that has the potential for engulfing an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section.
- Contains any other recognized serious safety or health hazard.

Prohibited Condition - Any condition in a PRCS that is not allowed by the permit during the period when entry is authorized.

Rescue Service - The personnel designated to rescue employees from PRCSs.

Retrieval System - The equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from PRCSs.



Testing - The process by which the hazards that may confront entrants of a confined space are identified and evaluated. Testing includes specifying the tests that are to be performed in the confined space.

5.0 TEXT

5.1 Scope and Applicability

This procedure contains the requirements for performing work in confined spaces and is applicable to all company activities, including construction.

5.2 Workplace Evaluation

All company facilities or project locations will be evaluated by a health and safety representative or an entry supervisor to identify the presence of permit-required confined spaces (PRCS). All such spaces will be posted with a sign bearing the following or similar warning: "DANGER — PERMIT-REQUIRED CONFINED SPACE. DO NOT ENTER." This workplace evaluation will be documented using Attachment 2.

Entry into confined spaces determined during the workplace evaluation not to be permit-required need not comply with the requirements of this procedure. However, these confined spaces must be re-evaluated whenever the use or configuration of the space changes in any way that might change its classification.

5.3 Permit-Required Confined Spaces

Prior to beginning any PRCS entry operation, a PRCS entry permit will be completed by the entry supervisor. All such entries will be considered permit-required until/unless the space meets the requirements specified in Section 5.4. The following guidelines are to be followed for each PRCS entry:

- Combustible vapors will not exceed 10.0 percent of the LEL and oxygen levels must be between 19.5 and 23.5 percent by volume for entry to be allowed. Appropriate toxic gas/vapor action levels will also be established and documented on the permit. Entries requiring Level A protection or where IDLH conditions exist require Vice President of Health and Safety approval.
- Lockout, tagout, tryout, and return to service procedures for potential sources of hazardous energy must be completed (see Procedure HS315, Control of Hazardous Energy Sources).
- As necessary, purging, inerting, flushing, or ventilating the space may be used to control hazardous atmospheres. Continuous mechanical ventilation will be used whenever entrants are in PRCSs that have or that can be expected to have a hazardous atmosphere.



- Inspecting, monitoring, and testing the PRCS to verify that acceptable conditions exist prior to and throughout the entry operation must be conducted. This includes:
 - Conducting specific atmospheric tests as described on the entry permit. PRCSs will be tested as often as necessary to verify entrant safety, whenever operations or conditions change (e.g., temperature change or product agitation, etc.), and no less often than hourly.
 - For confined spaces that cannot be completely isolated (e.g., sewers, etc.), continuous testing with real-time direct reading instruments is required.
 - Testing for oxygen will occur first, followed by combustible gases, then toxic gases and vapors.

- Personal protective equipment will be used as specified on the entry permit and will include:
 - Type of protective suits, boots, and gloves.
 - Type of face, head, and foot protection.
 - Specify type of harness (chest or full-body) with approved lifelines at least one-half inch in diameter, 2,000 pounds test and meeting ANSI A10.14 requirements. The lifeline is to be attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which presents a profile small enough for the successful removal of the entrant. (NOTE: Wristlets may be used only when a health and safety representative finds that a harness presents a greater hazard to the employee and wristlets are the safest, most effective alternative.) All lifelines will be secured to a mechanical extraction device or fixed point outside the PRCS. Mechanical extraction devices will be used for all vertical entries greater than five (5) feet deep.
 - Type of respiratory protection will be specified, per the requirements of Procedure HS601.

- Material Safety Data Sheets (MSDS) will be readily available and provided to the medical facility when treating injured/exposed entrants.

- Lighting equipment required to safely illuminate the work will be utilized. NOTE: All lighting and electrical equipment used inside a PRCS will be of the appropriate National Electrical Code (NEC) rating. Rating should be Class I, Division I unless the space specifically meets other rating class requirements.

- Protective barriers will be used to protect entrants from external pedestrian, vehicle, or equipment hazards.

- Ingress and egress equipment such as ladders or mechanical extraction devices will be used as necessary.
- Rescue and emergency services, procedures, and equipment will be determined prior to entry. The permit must specify whether the company or another source will provide these services and equipment, and how to summon them. The company will provide rescue services unless a qualified outside rescue service is available (see Section 5.5).
- Communication methods will be used that will provide continuous communication between entrants and attendants. This can be done using the standard system of lifeline "tugs" below, so long as the attendants continuously hold the lifelines in their hands:

Lifeline "Tug" Signals
1 Tug = Are you OK?
2 Tugs = Yes, I am OK.
3 Tugs = Exit the confined space immediately.

An alternative communication system would be to provide all entrants and attendants with an air-powered horn. Substituting horn blasts for tugs, equivalent signals to the lifeline "tug" signals, would be used. Any other or uncertain signals would require immediate exit.

If these methods are not practical or possible, appropriately rated powered communication equipment will be provided.

- The number of attendants and other outside support personnel will be determined prior to entry. Each PRCS being entered will have a minimum of one (1) dedicated attendant and one other support person (who may have other duties) within sight or call.

5.3.1 Duties of PRCS Participants

5.3.1.1 Authorized Entrant(s). Authorized Entrants will:

- Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of potential exposures.
- Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space.



- Alert the attendant whenever the entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or if the entrant detects a prohibited condition.
- Exit from the permit space as quickly as possible whenever:
 1. An order to evacuate is given by the attendant or the entry supervisor;
 2. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation;
 3. The entrant detects a prohibited condition; or
 4. An evacuation alarm is activated.

5.3.1.2 Attendant(s). Attendants will:

- Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of potential exposures.
- Be cognizant of possible behavioral effects of hazard exposure in authorized entrants.
- Continuously maintain an accurate count of authorized entrants in the PRCS so that the means used to identify authorized entrants accurately identifies who is in the permit space.
- Remain outside the PRCS during entry operations until relieved by another attendant.
- Communicate with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space.
- Monitor activities inside and outside the space to determine if it is safe for entrants to remain in the space, and orders the authorized entrants to evacuate the PRCS immediately under any of the following conditions:
 1. If the attendant detects a prohibited condition;
 2. If the attendant detects the behavioral effects of hazard exposure in an authorized entrant;



3. If the attendant detects a situation outside the space that could endanger the authorized entrants; or
 4. If the attendant cannot effectively and safely perform all prescribed duties.
- Summon rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from the PRCS.
 - Take the following actions when unauthorized persons approach or enter a PRCS while entry is underway:
 1. Warn the unauthorized persons that they must stay away from the PRCS.
 2. Advise the unauthorized persons that they must exit immediately if they have entered the PRCS.
 3. Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the PRCS.
 - Perform non-entry rescues.
 - Perform no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

5.3.1.3 Entry Supervisor(s). Entry Supervisors will:

- Remain immediately available on site throughout entry operations.
- Know the hazards that may be faced during entry, including information on the mode, signs and symptoms, and consequences of potential exposures.
- Verify, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
- Terminate the entry and cancel the permit as required.



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- Verify that qualified rescue services are available and that the means for summoning them are operable. Evaluate capabilities of service prior to entry (see Section 5.5).
- Arrange for the removal of unauthorized individuals who enter or who attempt to enter the permit space during entry operations.
- Determine, when responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.
- Document on the entry permit any incidents or circumstances requiring review of the confined space entry program. Such incidents may include:
 1. Unauthorized entry.
 2. The detection of a condition/hazard not authorized by the permit.
 3. The occurrence of an injury or near-miss during entry.
 4. A change in use or configuration of the space.
 5. Employee complaints about the program.
- Dictate procedures for coordination of entry when personnel from multiple employers will work simultaneously within a PRCS.

5.3.2 Permit System. Before entry can be authorized, the entry supervisor must complete and sign an entry permit (Attachment 3) to document that all pre-entry requirements have been met and that acceptable entry conditions exist. The completed permit will be posted at the primary entrance to the PRCS, and made available to each employee entering the space or to that employee's authorized representative.

All entry permits are valid for a maximum of one (1) work shift, and will be canceled by the entry supervisor when the shift ends, PRCS operations are complete, or whenever a prohibited condition arises in or near the space. All PRCSs will be securely closed or barricaded whenever the entry permit is canceled.



Supplemental information regarding the location of each entrant will be provided as described below:

- The current entry status of all entrants will be logged, with new entries made whenever the entry status of an entrant changes.
- Each entrant will securely affix a tag bearing their name to the outside lifeline fitting which is attached to a secure point.

5.3.3 Training. Prior to assignment to PRCS entry work, all affected employees will receive training in the hazards of confined spaces, work practices to control these hazards, and duties to be performed. Training will consist of a detailed review of this procedure as well as the hazards inherent with the particular PRCS that will be entered.

There are two types of training modules that have been developed for PRCS participants. The first is designed for either entrants or attendants and can be conducted by a qualified entry supervisor or a health and safety representative. The second is for entry supervisors and must be conducted by a health and safety representative. Copies of these training modules can be obtained from the company Training Department.

The company Training Department will also maintain training records to include employee name and signature, date of training, and signature of the trainer.

5.4 Non-Permit-Required Confined Spaces

All confined spaces initially considered PRCSs can be reclassified as non-permit-required confined spaces by the entry supervisor only under the following conditions:

- All contaminants have been isolated or removed.
- All actual or potential atmospheric hazards have been eliminated, with testing verification.
- Ventilation is not required to maintain control of atmospheric hazards.
- All recognized hazards, including engulfment, within the space have been eliminated.
- The space will be re-evaluated (and reclassified to permit-required, if needed) whenever the use or configuration of the space changes in any way that might increase the hazards to the entrants. All entrants will exit the space immediately when hazards are noted.



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- The entry supervisor will make the certification that all hazards have been removed on the entry permit.
- The entry permit will be posted at the entrance to the confined space.

5.5 Rescue and Emergency Services

The company recommends the use of non-company rescue services whenever possible. In certain instances, such as inavailability of a qualified outside provider, company employees can participate in rescues if they have been provided the required equipment and training.

5.5.1 Outside Rescue Services. Prior to designating a non-company rescue service, an evaluation of their capabilities must be conducted. This documented evaluation can be conducted by an entry supervisor or a health and safety representative. Attachment 4 can be used to document this evaluation. The rescue service must be certified by the evaluator as capable of performing rescues prior to being identified as the rescue service provider.

Each selected rescue service will be informed of the hazards they may encounter at the location. They will also be provided access to all PRCSSs from which a rescue may be necessary.

5.5.2 Company Rescue Services

Company personnel assigned to provide emergency entry and rescue services will be trained annually in the proper use of personal protective and rescue equipment. Such training will include a simulated rescue exercise. Company rescue services will be evaluated using Attachment 4 and must be certified by the evaluator as capable of performing rescues prior to being identified as the rescue service provider.

5.6 Employee Access to Documentation

Each employee participating in a PRCSS entry, or that employee's authorized representative, will be provided an opportunity to observe all testing and be provided a copy of the testing results. Each employee, or that employee's authorized representative, may also request the company to re-evaluate the PRCSS because the employee or representative has reason to believe that the evaluation of the space may not have been adequate.

5.7 Retention of Inspection and Test Logs

A copy of all entry permits and other documents related directly to the PRCSS entry (e.g., hot work permits, etc.) will be maintained in project files. If requested, these documents will also be made available to all employees participating in a PRCSS entry or their authorized representatives.



5.8 Program Review

Annually in January, the health and safety representative responsible for each location performing PRCS operations will review all entry permits for incidents or problems occurring during entry. Incidents or problems may include injuries, accidents, unauthorized entries, or any other event which indicates that improvements can be made in the PRCS program. After review with appropriate operations personnel, recommendations for program revision will be forwarded to the Vice President, Health and Safety for review.

6.0 EXCEPTION PROVISIONS

Variations and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variances.

7.0 CROSS REFERENCES

HS013	Health and Safety Procedure Variances
HS052	Health and Safety Plans
HS314	Hot Work in Hazardous Locations
HS315	Control of Hazardous Energy Sources
HS601	Respiratory Protection Program

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Workplace Evaluation
3. Entry Permit, Permit-Required Confined Space
4. Rescue Service Evaluation



**ATTACHMENT 1
 CONFINED SPACES**

Responsibility Matrix

Action	Procedure Section	Responsible Party			
		Health and Safety Representative	Vice President, Health and Safety	Training Department	Entry Supervisor
Issue, Revise, and Maintain This Procedure	3.1		X		
Conduct Workplace Evaluation and Post All PRCSs	5.2	X			X
Complete PRCS Entry Permit	5.3				X
Approve IDLH or Level A Entries	5.3		X		
Cancel Entry Permits	5.3.2				X
Provide PRCS Training	5.3.3	X		X	X
Retain Training Records	5.3.3			X	
Reclassify PRCS as Non-Permit-Required	5.4				X
Evaluate Rescue Service Capabilities	5.5.1	X			X
Conduct Annual Program Review	5.8	X	X		



ATTACHMENT 2

WORKPLACE EVALUATION

This evaluation is to be conducted at all company locations known to have confined spaces. Confined spaces are those spaces large enough and so configured that an employee can bodily enter and perform assigned work; and has limited or restricted means for entry or exit; and is not designed for continuous employee occupancy.

Project/Location _____

Project No. _____

Identity of Confined Space	Location of Confined Space	Permit Required (Y or N)	Re-evaluation Necessary (Y or N)	Evaluator Signature	Date of Evaluation



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ATTACHMENT 3
ENTRY PERMIT for
PERMIT-REQUIRED CONFINED SPACE (PRCS)

Project/Location _____ Project No. _____

Location of PRCS _____ Identity of PRCS _____

Describe Hazards of PRCS (Chemical and Physical) _____

Purpose This Permit Authorized _____

✓ CHECKLIST	YES	DOES NOT APPLY	PERSONAL PROTECTIVE EQUIPMENT (Circle)		
			EYE/FACE	EXTREMITIES	BODY
All lines leading to and from the space have been blinded or disconnected.			Chemical Goggles	Face Shield	Safety Glasses
Electrical service disconnected or locked out.			Hard Hat	Hoods	Boot Covers
All grounding and bonding cables in place.			Gloves (Material _____)		
All lighting, fittings, power equipment, and extension cords are rated for anticipated atmosphere.			Boots (Material _____)		
Ground Fault Circuit Interrupter (GFCI) checked and functioning.			Suit (Level _____, Material _____)		
All ignition sources have been isolated.			SCBA	Supplied Air	Egress System
All respiratory equipment and alarms checked and functional.			Air Purifying (Cartridge _____)		
All safety harnesses and lifelines checked.			Powered Air Purifying (Cartridge _____)		
All required PPE checked and in use.			Hearing Protection	Harness & Lifeline	Chest or Parachute
Have all entrants, attendants, and entry supervisors received appropriate training?			Mechanical Extraction Device		
Attendant(s) trained in non-entry rescue procedures.			First Aid Kit	SCBA	
Rescue service has been identified and will be available for entry rescue.			Other (Specify) _____		
Has rescue service passed evaluation?					
Appropriate rescue equipment available and checked.					
Mechanical ventilation system in use and effective.					
All tests have been completed and indicate that entrance requirements have been met.					
Appropriate warning signs have been posted and unauthorized personnel have been excluded from the PRCS.					
IF ANSWER TO ANY OF THE ABOVE QUESTIONS IS NO, ENTRY IS NOT PERMITTED.			COMMUNICATION METHOD		
OTHER PERMITS ISSUED FOR WORK IN PRCS: _____			Lifeline "Tug" Signals		
_____			Air Powered Horn Signals		
OTHER HAZARD CONTROL PROCEDURES OR INSTRUCTIONS: _____			Other _____		
_____			_____		
RESCUE PROCEDURES: _____			_____		
_____			_____		
_____			_____		



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TEST DATA
Oxygen, Flammability, and Toxic Contaminant(s)

Time	Percent Oxygen	Percent LEL	(Other)	(Other)	(Other)	(Other)	(Other)	Tester's Initials	Comments

TESTER'S SIGNATURE: _____

AUTHORIZED ENTRANTS	AUTHORIZED ATTENDANT(S)
_____	_____
_____	_____
_____	RESCUE PERSONNEL
_____	_____
_____	_____

Diagram the confined space (Indicate location of manways and ventilators. Indicate location(s) where tests conducted.

) (Manway
∞	Ventilator
X	Test Location

ACCEPTABLE ENTRY CONDITIONS

1. Entry Permit completely filled out 2. Oxygen between 19.5 and 23.5% 3. Combustible gases below 10% LEL
 4. Permissible Levels of toxic gases (list): 5. Other _____

_____	_____	_____
_____	_____	_____
_____	_____	_____

PRCS SAFE FOR ENTRY

Date/Time _____ / _____
 Name of Entry Supervisor _____ Signature _____
 Current Entry Supervisor (if different) _____
 Entry Permit Expires (no longer than 1 shift): Date/Time _____ / _____

ENTRY PERMIT CANCELED

Date/Time _____ / _____ Signature _____
 Reason (✓) Work Complete Authorized Conditions Not Met Incident

PROBLEMS DURING ENTRY AND RESOLUTION. Please Describe: _____

RECLASSIFICATION TO NON-PERMIT-REQUIRED CONFINED SPACE

Describe hazard removal methods, without use of ventilation. _____

TESTING VERIFICATION SHOWN AT TIME _____ ON TEST DATA CHART ABOVE.

DATE/TIME _____ / _____ ENTRY SUPERVISOR SIGNATURE _____

REVIEWED BY: _____

 Health and Safety Representative Signature Date

These standard policies and procedures are applicable to all members of The IT Group, Inc., except where superseded or modified by the member Company.

PROCEDURE

Subject: PRESSURIZED WATER CLEANING AND CUTTING EQUIPMENT

1.0 PURPOSE AND SUMMARY

This procedure covers the personnel requirements, operator training, operating procedures, and recommended equipment performance/design for the proper operation of all types of pressure water jet cleaning and cutting equipment as normally used by industries concerned with construction, maintenance, repair, cleaning, cutting, and demolition work.

The term "high-pressure water jetting" covers all water jetting operations, including the use of additives or abrasives at pressures above 1000 psig.

Any person required to operate or maintain pressure water jetting equipment shall have been trained and have demonstrated the ability and knowledge to do so in accordance with the original equipment manufacturer's instructions, specifications, and training programs.

2.0 TABLE OF CONTENTS

- 1.0 Purpose and Summary
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 - 5.1 Qualified Operators
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 - 5.4 Pre-operating Procedures
 - 5.5 Operational Procedures
 - 5.6 Single Person Operation
 - 5.7 Shotgunning
 - 5.8 Moleing or Flex Lancing
 - 5.9 Ridge Lancing
 - 5.10 Additives
 - 5.11 Proper Operation
 - 5.12 Use of Lances and Nozzles
 - 5.13 Health and Safety Plan
- 6.0 Exception Provisions
- 7.0 Cross References
- 8.0 Attachments



3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The National Director, Health & Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

Dump System

The discharge orifice operator-controlled, manually operated device or system that reduces the pressure to a level that yields a pressure flow at the nozzle that is considerably below the risk threshold.

High-Pressure Water Cleaning

The use of high-pressure water, with or without the addition of other liquids or solid particles, to remove unwanted matter from various surfaces, where the pressure of the liquid jet exceeds 1000 psig at the orifice.

Warning: The limit of 1000 psig does not mean that pressures below 1000 psig cannot cause injury or require any less attention to the principles of this practice. Adequate precautions, similar to those of this practice, are required at all pressures.

High-Pressure Water Cutting

The use of high-pressure water, with or without the addition of other liquids or solid particles, to penetrate into the surface of a material for the purpose of cutting that material, where the pressure of the liquid jet exceeds 1000 psig at the orifice.

Hose Assembly

A hose with safety coupling attached in accordance with manufacturer's specifications.

Lance

A rigid metal tube used to extend the nozzle from the end of the hose.

Lancing

An application whereby a lance and nozzle combination is inserted into, and retracted from, the interior of a pipe or tubular product.

Moleing

An application whereby a hose fitted either with a nozzle or with a nozzle attached to a lance is inserted into, and retracted from, the interior of a tubular product. It is a system commonly intended for cleaning the internal surfaces of tubes, pipes, or drains. It can be self-propelled by



its backward-directed jets and is manufactured in various shapes, sizes, and combinations of forward- and backward-directed jets.

Nozzle

A device with one or more openings where the fluid discharges from the system. The nozzle restricts the area of flow of the fluid, accelerating the water to the required velocity and shaping it to the required flow pattern and distribution for a particular application. Combinations of forward and backward nozzles are often used to balance the thrust. Such nozzles are commonly referred to as tips, jets, orifices, etc.

Operator

A person who has been trained in accordance with the original manufacturer's instructional training program and has been qualified through demonstrating the knowledge, experience, and ability to perform the assigned task.

Operator Trainee

A person not fully qualified due to the lack of sufficient knowledge or experience, or both, to perform the assigned task without supervision.

Pressure Water Jet System

Water delivery systems that have nozzles or other openings whose function is to increase the speed of liquids that may cause injury. Solid particles or additional chemicals may also be introduced, but the exit in all cases will be in a free stream. The system shall include the pumps (pressure-producing devices), hoses, lances, nozzles, valves, safety devices, and personal protective equipment, as well as any heating elements or injection systems, attached thereto.

Shotgunning

An application whereby a lance or nozzle combination can be manipulated in virtually all planes of operation.

5.0 TEXT

This procedure is intended to provide guidance on the proper operation of pressure water jet cleaning and cutting equipment.

This procedure is also applicable at lower pressures at which there is foreseeable risk of injury.

All equipment shall be operated in a manner consistent with the manufacturer instructions for the specific model of equipment to be used. Such instructions and manuals shall be kept in a water-proof compartment with the equipment. (NOTE: Rental equipment shall not be accepted without the manufacturer's manual.)

5.1 Qualified Operators

Only personnel who have undergone a proper training program and who have demonstrated the knowledge and skill, and gained the experience to perform all likely

assigned tasks shall operate water jetting equipment. They may also supervise the training of new operators.

5.2 Training

Before being assigned to their first water jetting jobs, associates shall receive proper training. A core module for pressurized water systems is available from the Training Department. This shall be supplemented with site-specific, hands-on training per the manufacturer's instructions for the specific equipment in use. Training shall cover the following topics.

5.2.1 Cutting Action. The cutting action of a water jet and the potential hazard it poses to the human body shall be demonstrated through the use of audiovisual aids or actual use of equipment (by cutting through a piece of lumber, a concrete block, etc.).

5.2.2 System Operation. The operation of water jetting systems shall be explained by pointing out potential problems and proper corrective actions.

5.2.3 Operating Pressure. The need to operate equipment at or below the manufacturer's recommended working pressure shall be stressed.

5.2.4 Control Devices. The operation of all control devices shall be explained. The importance of not tampering with any control devices, as well as the importance of keeping them in proper working order, shall be stressed.

5.2.5 Equipment Maintenance. The importance of the proper and timely care and maintenance of water jetting equipment shall be presented. Instructions shall be provided on the procedures to follow in maintaining equipment and when the equipment must be returned for care by more qualified associates.

Stress that equipment shall not be repaired, or connections tightened, when the unit is in operation or the pump is running.

5.2.6 Valve Maintenance. Point out that valves and seating surfaces in pressure regulating devices encounter high wear during water jetting. These items require frequent inspections, maintenance, and/or replacement to ensure proper operation.

5.2.7 Hose. The proper method of identifying and connecting hoses, including laying out without kinks, protecting hoses from excessive wear, identifying a worn or unsafe hose, and proper tools to use on couplings and fittings shall be explained. Fittings and couplings on hoses shall not be tightened or tampered with while the hose is pressurized. Safety connectors (whipchecks) should be used across all hose connections.



5.2.8 Stance. The proper stance for sound footing and how to use the various devices for lancing, shotgunning, and moleing shall be demonstrated. The trainee, under close supervision, shall be trained to use the various devices while the unit is slowly pressurized and is operating at its normal working capacity.

5.2.9 Proficiency. Personnel shall demonstrate knowledge and skill in the proper operation of equipment through practical applications before performing indirectly supervised work.

5.3 Personal Protective Equipment

The minimum personal protective equipment (PPE) shall be explained. Instructions shall be given as to when and how specific clothing and other types of protective devices shall be worn according to the type of work performed, locations, etc.

5.3.1 Compliance. All applicable recommended practices and regulations, instructions, and warnings covering PPE shall be followed as prescribed by the original equipment manufacturer's programmed instructional material.

5.3.2 Head Protection. All operators shall wear hard hats with attached face shields.

5.3.3 Eye Protection. Suitable eye protection (adequate for the purpose and of adequate fit on the person) shall be provided to all operators of pressure water jetting equipment and must be worn within the working area. Where liquids liable to cause eye damage (see Material Safety Data Sheets) are encountered, it is necessary to use either a combination of visor and impact-resistant goggles, or a full hood with shield.

5.3.4 Body Protection. All operators shall be supplied with suitable waterproof clothing and jet-resistant PPE (i.e., foot and leg guards) having application for the type of work being undertaken. Garments shall provide full protective cover to the operator, including arms. Liquid- or chemical-resistant suits shall be worn where there is a reasonable probability of injury (see Material Safety Data Sheets) that can be prevented by such equipment.

5.3.5 Hand Protection. Adequate hand protection shall be supplied to all operators and shall be worn when there is a reasonable probability of injury that can be prevented by such equipment. (See original equipment manufacturer specifications.)

5.3.6 Foot and Leg Protection. All operators shall be supplied with waterproof boots with steel toecaps and shanks. **Metatarsal guards and leg guards shall be used by the jetting gun operators.**

5.3.7 Hearing Protection. Pressure water jetting operations may produce noise levels in excess of 90 dB(A). Suitable ear protection issued in accordance with the recommended practices of the original equipment manufacturer must be worn. Provision shall be made for regular inspection and maintenance, including daily cleaning of hearing protection devices that are of the reusable type. All personnel and operators shall receive instruction in the correct use of ear protectors such that noise exposure lies within the limits as specified by the original equipment manufacturer's instructions.

5.3.8 Respiratory Protection. A respiratory protection program shall be implemented where there is a reasonable probability of injury that can be prevented by such a program.

5.3.9 Equipment Limitations. It should be recognized that some protective equipment may not necessarily protect the operator from injury by direct high-pressure water jet impact. Shields and guards shall be used as provided in the original equipment operator's instructions and training programs to prevent any injury.

5.4 Pre-operating Procedures

5.4.1 Planning. Preplan each job. Follow the steps outlined in the original manufacturer's instructions and programmed training materials. Personnel familiar with the item to be cleaned, the material to be cut, and the work environment shall meet with the personnels that will be performing the work and outline potential hazards of the work area, environmental problems, safety standards, and emergency aid procedures.

5.4.2 Checklist. Use the manufacturer's checklist, or listing of critical items, to ensure that the proper equipment selection is followed (see Attachment 2).

5.4.3 Dump Valve. All systems shall incorporate at least one fluid shut-off or dump device. The orifice operator must always be able to shut down the water jet by releasing pressure on the trigger, switch, or foot valve pedal.

5.4.4 Warning Barriers. Erect suitable barriers to encompass the hazard area and post signs to warn personnel they are entering a hazardous area. The perimeter should be outside the effective range of the jet wherever possible. Barriers may be of rope, safety tape, barrels, etc., as long as they give an effective warning and are highly visible.

5.4.5 Hook-ups. Hose shall be arranged so that a tripping hazard does not occur. Support hoses, pipes, and fittings to prevent excessive sway or wear, or both, created by vibration or stress on the end connections when laid on the ground,



over sharp objects or on vertical runs, shall be used. Check all hoses for evidence of damage, wear, or imperfections. The check shall be made periodically during the operation.

5.4.5.1 Fittings. Clean and lubricate all fittings before installing in the system. Be sure all fittings, hoses, and nozzles are fit for the purpose.

5.4.5.2 Pre-flushing. Flush the system completely with sufficient water to remove any contaminants before installing the nozzle.

5.4.5.3 Nozzles. Remove nozzles and check all orifices for any blockage or damage, or both, or for imperfections.

5.4.5.4 Electrical Equipment. Any electrical equipment in the immediate area of the operation that presents a hazard to the operator shall be de-energized, shielded, or otherwise made safe. GFCIs shall be used for any necessary power hook-ups.

5.5 Operational Procedures

5.5.1 Work Area. Isolate the workpieces/items to be jetted from any unprotected areas to a protected pressure water jetting area. Cutting or cleaning in place or adjacent to the installed position can be done with the necessary clearance and permission of the occupier and equipment/facility owner.

5.5.2 Area Limits. Area limits applicable to the cutting or cleaning operations shall be defined by barriers and should be marked with notices to warn against access to other personnel and specific hazards present. Suitable barriers shall be an approved form of hazard warning, rope, or tape, as a minimum. Alternatively, a suitable barrier shield is acceptable at any reasonable distance. Notices should read "Danger - Keep Clear, Pressure Water Jetting in Operation - Severe Injury May Result", or other suitable wording.

5.5.3 Corrosive Materials. Where there is a possibility of encountering corrosive or toxic material, the general contractor or employer or owner shall be requested to inform the person in charge of pressure water jetting of any precautions that may be necessary, including the collection and disposal of waste materials.

5.5.4 Work Surface. Operators should have good access to the workpiece, safe walking and working surfaces, and secure footing. The work area should be kept clear of loose items and debris to prevent tripping and slipping hazards.

5.5.5 Unauthorized Access. Prevent access by unauthorized persons into the area where pressure water jet cleaning or cutting, or both, is taking place. The area

shall be secured as described in Section 5.5.2. The perimeter should be outside the effective range of the jet wherever possible.

- 5.5.6 Approaching the Operator.** Personnel having reasons to enter the pressure water jet cleaning and cutting area must wait until the jet is stopped and their presence is known. Personnel wishing to have the jet stopped shall approach a team member other than the jet operator. The jet operator shall not be distracted until the jet has been stopped.
- 5.5.7 Side Protection.** Suitably placed side shields shall be provided to safeguard personnel and equipment against contact with grit or solids removed by the jet.
- 5.5.8 Pressurizing the System.** Increase pressure slowly on the system while it is being inspected for leaks or faulty components, or both. Repair or replace components only when the equipment is properly locked out and tagged. The system shall be depressurized, shut down, and the key removed for repairs.
- 5.5.9 Team Operations.** In jetting operations a minimum of two persons, one at the pump and one at the orifice or gun, shall be employed at all times.
- 5.5.10 Supervision.** All pressure water jetting operations shall be controlled by a supervisor who has been trained in accordance with the instructions of the original equipment manufacturer in all aspects of the jetting operation.
- 5.5.11 Number of Operators.** The operators of the pressure water jetting equipment should consist of two or more operators according to the equipment being used and the nature of the job. These operators shall work as a team, with one member designated in charge. The operator of the gun or lance shall take the lead role while jetting is in progress.
- 5.5.12 Gun Operator.** One operator from the team shall hold the lance, gun, or delivery hose with the nozzle mounted on it. That operator's primary duty is to direct the jet.
- 5.5.13 Second Operator.** The second operator of the team shall attend the pump unit, keep close watch on the first operator for signs of difficulty or fatigue, and watch the surrounding area for intrusion by other persons or unsafe situations. If required, the operator will shut off the pressure until any unsafe acts or conditions have been corrected and it is safe to continue.

Warning: Exercise caution in shutting off the pressure rapidly, as this can cause loss of footing by the gun operator.



5.5.14 Additional Operators. Additional operators are required in the following circumstances:

- To assist the first operator with the handling of the lance if it is too long or too heavy for one person; or
- To provide communication if the lance operator is out of sight of the pump unit operator.

5.5.15 Job Rotation. The team members should rotate their duties during any job to minimize fatigue to the operator holding the lance or gun.

5.5.16 Team Leader. The team leader is responsible for basic equipment checks, the preparation of the working area for safe operation, and for obtaining a permit to work (if applicable).

5.5.17 Code of Signals. Before starting a jetting operation, the team members, one of whom must be in charge, shall agree on signals to be used during the operation of the equipment.

5.5.18 Fitness. The operator and other team members shall be capable of performing the required operations safely. All shall be capable of speaking and reading the instructions and warnings in the language of their place of work.

5.6 Single Person Operation

Single person operation is allowed where the pressure does not constitute a hazard to personnel. Single person operations are prohibited at operating pressures exceeding 1000 psig and may be deemed unsafe at lower pressures due to jobsite conditions.

(NOTE: All HAZWOPER operations are required to use the buddy system.)

5.6.1 Single Operator Guidelines. All other recommendations pertaining to team operations shall apply.

5.7 Shotgunning

5.7.1 Controls. The person operating the nozzle shall have direct control of the dump system.

5.7.2 Attendance. The pressurized system shall never be left unattended.

5.7.3 Multiple Operation. When more than one shotgunning operation is being performed within the same area, install a physical barrier or maintain adequate spacing between operators to prevent the possibility of injury from the pressure water.



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- 5.7.4 **Target Holding.** Never manually hold objects to be cleaned.
- 5.7.5 **Connection Protection.** The point where the hose connects to the gun shall be shrouded by a protective device such as a heavy duty hose, shoulder guard, and the like, to prevent injury to the operator should the hose, pipe, or fitting rupture.
- 5.7.6 **Minimum Length.** When used, the minimum length of the shotgun lance extension shall be 4 feet (1.2 mm) from the triggering device to the nozzle.
- 5.7.7 **Hose Protection.** Use steel-braided hoses on air-operated, fail-safe systems to keep the system from being activated by someone stepping on the hose or running over it.

5.8 Moleing or Flex Lancing

- 5.8.1 **Control.** The operator shall have direct control of the dump system.
- 5.8.2 **Reversing.** A positive method shall be used to prevent the nozzle from reversing direction inside the item being cleaned. Safety guards for this purpose shall be used.
- 5.8.3 **Retrojets.** During manual operations, the entrance to a line or pipe shall not be cleaned with a nozzle containing back jets without adequate shielding.
- 5.8.4 **Clearance.** The clearance between the outside diameter of the hose, lance, and nozzle assembly and the inside wall of the item being cleaned shall be sufficient to allow adequate washout of water and debris.
- 5.8.5 **Pressurization.** During manual operation, insert the nozzle into the tube prior to pressurizing. Conversely, depressurize the system before removing the nozzle from the tube.
- 5.8.6 **End Identification.** Hoses shall be conspicuously marked no closer than 24 inches (600 mm) from the nozzle to warn the operator of the nozzle location.
- 5.8.7 **Nozzle Support.** Where the length of the nozzle and rigid coupling is less than the inside diameter of the pipe, a length of rigid pipe of not less than the diameter of the pipe being cleaned shall be fitted directly behind the nozzle, or a suitable safety shield shall be provided to protect the operator. This is to prevent the nozzle from turning around 180° and doubling back towards the operator. Specific safety guards shall be used for this purpose.



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5.9 Ridge Lancing

5.9.1 **Control.** The operator inserting the nozzle shall have direct control of the dump system.

5.9.2 **Clearance.** The clearance between the outside diameter of the lance and nozzle and the inside wall of the item being cleaned shall be sufficient to allow adequate washout of water and debris.

5.9.3 **Pressurization.** When under manual operation the nozzle shall be inserted into the tube prior to pressurizing. Conversely, the system shall be depressurized before removal of the nozzle from the tube, unless proper shielding is provided.

5.9.4 **Shields.** When lancing tubes with a rigid lance, a guard shall be installed around the lance to prevent a lance nozzle from being inadvertently withdrawn and causing injury.

5.10 Additives

Any water additive (chemical, detergent, or solid particle) shall be used in accordance with the manufacturer's recommendations.

5.11 Proper Operation

5.11.1 **Start-up.** Do not start the pump unit and bring it up to pressure unless each team member is in his designated position, the nozzle is held in or directed at the workpiece, and the lance or gun is securely held.

5.11.2 **Adjustments.** Apart from operational procedures, no attempt shall be made to perform maintenance or adjust any nut, hose connection, fitting, etc., while the system is under pressure. Stop the pumps, discharge any pressure in the line, and remove the key prior to making any such adjustment. Take care to release the pressure in the dry shut-off gun and the line when the unit is switched off.

5.11.3 **Equipment Malfunction.** If for any reason the water flow does not shut off when the trigger or foot pedal is released, cease work until the item has been serviced, repaired, or changed by properly trained personnel. Equipment shall be shut down, depressurized, and the key removed prior to making repairs.

5.11.4 **Reaction Force.** The operators shall be allowed to experience the reaction force of the jet progressively until the required operating pressure is reached. Use the lowest pressure compatible with the work to be done. Do not adjust the pressure without the operator being aware of this operation.



5.11.5 Effect of Line Pulses. Operators shall be made aware of the reactive effect of pressure in the line that can transmit a severe jolt to the operator when the dump valve or dry shut-off valve is operated. To minimize this effect, keep total hose lengths as short as possible. Damping devices shall be introduced into the system in accordance with the original equipment manufacturer's designs or instructions.

5.11.6 Thermoplastic Hoses. Thermoplastic hose shall not be used for water jetting unless specifically designed for this purpose.

5.11.7 Operator Position. While operating, the team members shall be safely positioned. Stop the jetting if any person encroaches into the working area.

5.11.8 Work Stoppage. Stop work in the following cases:

- In the event that leaks or damage become apparent;
- If any person becomes aware of any change in conditions or of any hazards being introduced or existing;
- If plant or work alarms are sounded; or
- If any of the practices in this procedure are not being followed.

5.11.9 Hose Protection. Protect all hoses from being run over and crushed by vehicles, fork lift trucks, and the like.

5.11.10 Back Thrust. The back thrust from a linearly directed jet can be calculated from the equation:

$$B = 0.052 Q(P)^{0.5}$$

where:

B = Back thrust, lb(kg)

Q = Flow rate, gal/min (or metric equivalents), and

P = Jet pressure (psi)

It is not recommended that one person be required to withstand a back thrust of more than one third of his or her body weight for any extended period of time.

5.12 Use of Lances and Nozzles

5.12.1 Lances. Lances that are rigid or semirigid, having nozzles fitted to them with any combination of forward, backward, or 90° angle jets, shall be used with either a dump system or dry shut-off control valve. When a flexible lance or nozzle mounted on a hose is in use, do not operate the jet at pressure unless the nozzle is properly positioned inside the workpiece or the operator is protected by screens or proper shielding from the rear-facing jets. If necessary, clean the lead-in to the workpiece by other methods.

- 5.12.2 Flexible Lances.** Flexible lances, used to clean pipes where the inside diameter of the pipe is not small enough to prevent the lance from turning back on itself, shall have a piece of rigid straight tube, slightly longer than the diameter of the pipe, fitted immediately behind the nozzle to prevent this from happening.
- 5.12.3 Distance Indicator.** When using an assembly that allows the nozzle to enter the workpiece with restricted visibility, clearly mark the lance, hose, or floor in a manner that enables the operator to judge how far the nozzle is in the workpiece before pressure is applied and, conversely, so that pressure is released before the apparatus is completely withdrawn from the workpiece.
- 5.12.4 Lance Length.** The length of a rigid lance or combination of lances shall be such that the operator can maintain control at all times.
- 5.12.5 Jet Pressure.** Operators shall select the nozzle and minimum operating pressure to allow effective and efficient jetting.
- 5.12.6 Improper Use.** Should an operator enter a manhole or access port for any purpose (with the jetting machine turned off), the hose shall not be used to support his weight when climbing up or down.



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7.0 CROSS REFERENCES

ASTM E-1575-93, *Standard Practice for Pressure Water Cleaning and Cutting*
Water Jet Technology Association's *Recommended Practices for the Use of Manually Operated High Pressure Water Jetting Equipment*

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Reservice and Operational Checklist for Pressure Water Jet Cleaning and Cutting Equipment



ATTACHMENT 1
PRESSURIZED WATER CLEANING AND CUTTING EQUIPMENT

Responsibility Matrix

Action	Procedure Section	Responsible Party			
		Location Manager	Site Supervisor	Project Manager	HS
Provide training	5.2	X		X	
Job set-up/checklist	5.4.2		X	X	
Incorporate requirements in HASP	5.13			X	X



**ATTACHMENT 2 - RESERVICE & OPERATIONAL CHECKLIST FOR PRESSURE
 WATER JET CLEANING AND CUTTING EQUIPMENT**

The following information shall be verified before starting work:

ITEM #	DESCRIPTION	✓
1.	Date (Print): _____	
2.	Location (Print): _____	
3.	Equipment being cleaned (Print): _____	
4.	Is the area, including the other end of unit being cleaned, properly secured?	
5.	Have precautions been taken to protect all electrical equipment?	
6.	Is there any hazard to personnel resulting from damage to the equipment such as release of corrosive chemicals, flammable liquids, gases, or the like?	
7.	Are all fittings of the correct pressure rating?	
8.	Are all hoses of the correct pressure rating?	
9.	Are all fittings in good operating condition?	
10.	Are all hoses in good operating condition?	
11.	Are all nozzles free from plugging and in good operating condition?	
12.	Have precautions been taken to prevent line-mole reversal?	
13.	Is the filter on the pump suction clean and in good operating condition?	
14.	Is there an adequate water supply?	
15.	Have precautions been taken against freezing?	
16.	Do all personnel have proper personal protective equipment for this job?	
17.	Do all personnel have proper training for this job?	
18.	Are all personnel qualified to perform this work?	
19.	Has the complete hook-up been flushed and air removed from the system prior to installing the nozzle?	
20.	Has hook-up, including pipes, hoses, and connections, been pressure tested with water at the maximum operating pressure?	
21.	Is the dump system operating properly (will it dump when released)?	
22.	Are all control systems operational?	
23.	Is the location of emergency medical aid known?	



PROCEDURE

Subject: EXCAVATION AND TRENCHING

1.0 PURPOSE AND SUMMARY

The purpose of this procedure is to describe the company requirements for excavation and trenching safety. These requirements are based on the federal Occupational Safety and Health Administration (OSHA) excavation standard found in 29 Code of Federal Regulations (CFR) 1926, Subpart P.

Some company activities are likely to occur in states or localities that either currently have or will have requirements that differ from those contained within the federal standard. In such circumstances, the local health and safety representative will be responsible for ensuring that these requirements are included in either a site health and safety plan or a similar document and conveyed to all affected employees. If federal, state, or local regulations vary or conflict, the more protective requirements and practices will be followed.

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3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President of Health & Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

Accepted Engineering Practices

Those requirements or practices which are compatible with standards required by a registered professional engineer.

Angle of Repose

The greatest angle above the horizontal plane at which a material will lie without sliding.

Benching

A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels of steps, usually with vertical or near-vertical surfaces between levels.

Competent Person

An employee who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees and who has the authority to take prompt corrective measures to eliminate them.

Company

All wholly-owned subsidiaries of the IT Group, Inc.

Excavation

Any man-made cut, cavity, trench or depression in an earth surface, including its sides, walls, or faces, formed by earth removal.

Registered Professional Engineer

An individual currently registered as a professional engineer (preferably civil) in the state where work is to be performed.

Sheeting



Members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

Shield

A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Shields may be pre-manufactured or job-built in accordance with 1926.652(c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields".

Shoring

Structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

Sloping

A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

Support System

A structure such as underpinning, bracing, or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

Tabulated Data

Tables and charts approved by a registered professional engineer and used to design and construct a protective system.

Trench

A narrow (in relation to its length) excavation made below the surface of the ground. In general, the depth is greater than the width at the bottom, but the width of a trench at the bottom is not greater than 15 feet.

Type A Soil

Cohesive soils with an unconfined compressive strength of 1.5 ton per square foot (tsf) (144kPa) or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, soil is NOT Type A if:

- The soil is fissured;
- The soil is subject to vibration from heavy traffic, pile driving, or similar effects;
- The soil has been previously disturbed;
- The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater; or

- The material is subjected to other factors that would require it to be classified as a less stable material.

Type B Soil

This classification refers to:

- Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa)
- Granular cohesionless soils including: angular gravel (similar to crushed rock), silt, silt loam, sandy loam, and, in some cases, silty clay loam and sandy clay loam.
- Previously disturbed soils except those which would otherwise be classified Type C soil;
- Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subjected to vibration;
- Dry rock that is not stable; or
- Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V), but only if the material would otherwise be classified as Type B.

Type C Soil

This classification refers to:

- Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less;
- Granular soils including gravel, sand, and loamy sand;
- Submerged soil or soil from which water is freely seeping;
- Submerged rock that is not stable; or
- Material in a sloped, layered system where the layers dip into the excavation or a slope of four horizontal to one vertical (4H:1V) or steeper.

5.0 TEXT

5.1 Pre-Excavation Requirements

- 5.1.1 Underground Utilities.** Prior to opening an excavation, the estimated location of underground utilities such as sewer, telephone, fuel, electric, water, or any other underground installation that may be reasonably expected to be encountered during the excavation work shall be determined.



Utility companies or a utility location service shall be contacted within the established pre-notification time, advised of the proposed work, and asked to delineate the location of all underground utilities. Employees should be careful to protect and preserve the utility markings until they are no longer required for safe excavation. At least 3 feet of clearance between any underground utility and the cutting edge or point of powered excavation equipment will be maintained until the precise location of the utility is determined. Initial excavation within this 3 foot area will be conducted manually.

5.1.2 Surface Encumbrances. All surface encumbrances (trees, poles, boulders, etc.) that may create a hazard to employees shall be removed or supported.

5.1.3 Vehicular Traffic. Employees exposed to vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material. Traffic control devices (i.e., barricades, signs, cones, flagpersons, etc.) shall be specified and used in accordance with regulations applicable to the roadway or area in which excavation activities are occurring.

5.1.4 Training. Those who supervise the entry of personnel into an excavation must have completed a training course that included instruction in:

- Types of hazards associated with excavation operations;
- Safe work practices and techniques;
- A review of applicable Federal, state and local regulations; and
- A review of this procedure.

Employees who enter excavations are required to complete a site-specific training session to enable them to recognize unsafe conditions in and around the excavation. This training can be conducted during a tailgate safety meeting that emphasizes the specific excavation hazards that may be encountered.

Training documentation shall be maintained in the project file with a copy forwarded to the Knoxville Training Department.

As part of standard employee supervision process, training shall be complemented with on-the-job instruction and reinforcement of accepted practices to the extent necessary to assure compliance with this procedure and all other applicable regulations.



5.2 Excavation Work Practices

5.2.1 General. Each employee working within an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with 29 CFR 1926 Subpart P, except when the excavation is made entirely in stable rock or when the excavation is less than 5 feet deep and examination of the ground by a competent person provides no indication of a potential cave-in. A competent person shall ensure that protective systems, when required, are installed and maintained per the design specifications.

No employees shall be permitted to enter an excavation unless it is absolutely essential to do so and all requirements of this procedure are met.

5.2.2 Supervision. Work in an excavation shall at all times be supervised by a competent person. This individual will remain outside of the excavation at all times, and will be responsible for identifying any unusual developments above ground which may warn of impending earth movement.

5.2.3 Soil Classification. Based on the results of tests described in Attachment 3, the competent person will classify each soil/rock deposit as stable rock, Type A, Type B, or Type C. When layers of soil/rock exist, the weakest layer will be classified; however, each layer may be classified individually when a more stable layer lies under a less stable layer. If the properties or conditions of a soil/rock deposit change in any way, re-evaluation will be required.

5.2.4 Access and Egress. Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a competent person qualified in structural design, and shall be constructed in accordance with the design.

A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are 4 or more feet in depth so as to require no more than 25 feet of lateral travel for employees.

5.2.5 Protective Systems. Protective systems shall be designed in accordance with 29 CFR 1926.652(b) or (c) and shall have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system.

5.2.6 Exposure to Falling Loads. No employees shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or



unloaded provided the vehicles are equipped with a cab shield and/or canopy adequate to protect the operator from shifting or falling materials.

5.2.7 Warning System for Mobil Equipment. When mobile equipment is operated adjacent to an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs.

5.2.8 Hazardous Atmospheres. Where an oxygen deficient (less than 19.5% O₂) or hazardous atmosphere exists, or could reasonably be expected to exist, the excavation shall be tested before employees enter. Testing shall be conducted as often as necessary to ensure that the atmosphere remains safe. Some excavations may be considered confined spaces which require compliance with IT Procedure HS300.

Adequate precautions shall be taken to prevent employee exposure to oxygen deficient or hazardous atmospheres. As appropriate, ventilation and/or respiratory protective devices shall be used.

5.2.9 Water Accumulation Hazards. Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. If water is controlled or prevented from accumulating by the use of water removal equipment, the process shall be monitored by a competent person to ensure proper operation.

If the excavation work interrupts the natural drainage of surface water (streams, run-off channels), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to run-off from heavy rains shall be regularly inspected by a competent person.

5.2.10 Stability of Adjacent Structures. Structures adjoining an excavation shall be evaluated to assess their stability. Excavation below the level of the base or footing of any foundation or retaining wall that could reasonably be expected to pose a hazard to employees shall only be permitted when:

- A support system (underpinning) is provided to ensure the safety of employees and the stability of the structure;
- The excavation is in stable rock;
- A registered professional engineer has determined that the structure will be unaffected by the excavation; or
- A registered professional engineer has determined that such excavation will not pose a hazard to employees.



Sidewalks, pavements and other surface structures shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.

5.2.11 Protection from Loose Rock or Soil. Employees shall be protected from loose rock or soil which could fall or roll from the excavation face or edge. Such protection could consist of scaling to remove loose materials, or the installation of protective barriers. All spoil shall be placed at least 2 feet from the edge of the excavation. It is strongly recommended that spoil be placed 4 or more feet from the excavation edge so as not to cover surface indicators of subsidence (such as fissures or cracks).

5.2.12 Inspections. The competent person shall make daily inspections of excavations, adjacent areas, and protective systems for evidence of conditions that could result in a cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. The inspection shall be made prior to start of work, and as needed throughout the shift. Inspections shall be made after each rainstorm or other hazard-increasing event and will be documented using Attachment (2).

Where the inspection finds evidence of any hazardous condition, exposed employees shall be immediately removed from the hazardous area until necessary precautions have been taken.

5.2.13 Fall Protection. Where employees or equipment are permitted to cross over excavations, walkways or bridges shall be provided. Standard guardrails shall be provided where walkways are 6 feet or more above lower levels.

Adequate barriers or other types of physical protection shall be provided at all remotely located excavations. All wells, pits, shafts, etc., shall be barricaded or covered and shall be backfilled as soon as possible.

6.0 EXCEPTION PROVISIONS

Variances and exceptions may be requested pursuant to the provisions of procedure HS013, Health and Safety Procedure Variances.



Procedure No.	HS307
Revision No.	2
Date of Revision	09/27/99
Last Review Date	09/27/99
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7.0 CROSS REFERENCES

HS013 Health and Safety Procedure Variances
HS050 Training Requirements
HS051 Tailgate Safety Meetings
HS300 Confined Spaces
29 CFR 1926 Subpart P - Excavations

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Excavation Inspection
3. Soil Classification Worksheet
4. Selection of Protective Systems for Excavations 20 Feet or Less in Depth
5. Sloping Options
6. Shoring or Shielding Options



ATTACHMENT 1
EXCAVATION AND TRENCHING

Responsibility Matrix

Action	Procedure Section	Responsible Party					
		Employee	Supervisor	Registered Professional Engineer	VP Health and Safety	Local H&S Representative	Competent Person
Incorporate state, local, or client-specific excavation requirements into project plans.	1.0					X	
Issue, revise, and maintain procedure	3.1				X		
Coordinate identification of underground utilities.	5.1.1		X				
Determine need for traffic control devices.	5.1.3		X				
Participate in excavation training.	5.1.4	X	X			X	X
Ensure that protective systems are installed and maintained.	5.2.1						X
Classify Soil Type	5.2.3						X
Design Structural Ramps	5.2.4						X
Selection and design of protective system(s)	5.2.5			X			
Determine stability of adjacent structures.	5.2.10			X			
Inspecting excavation for hazardous conditions	5.2.12	X	X				X



**ATTACHMENT 2
 EXCAVATION INSPECTION**

**THIS INSPECTION IS TO BE COMPLETED BY THE COMPETENT PERSON
 EACH DAY THAT EMPLOYEES WILL BE ENTERING AN EXCAVATION.**

Project Name: _____ Project No.: _____

Date: _____ Time: _____ Competent Person: _____

Soil Classification (see Soil Classification Worksheet): _____

Excavation Depth: _____ Excavation Width: _____

Type of Protective System Used: _____

	✓		
	YES	NO	N/A
1. GENERAL:			
Surface encumbrances removed or supported			
Employees protected from loose rock or soil that could pose a hazard by falling or rolling into the excavation.			
Hard hats, steel-toed boots, and safety glasses worn by all employees.			
Spoils, materials, and equipment set back at least 2 feet from the edge of the excavation.			
Walkways over excavations 6 feet or more above lower levels are equipped with standard guardrails.			
Warning vest or other highly visible clothing provided and worn by all employees exposed to public vehicular traffic.			
Employees required to stand away from vehicles being loaded or unloaded.			
Warning system established and utilized when mobile equipment is operating near excavation edge.			
Employees prohibited from going under suspended loads.			
2. UTILITIES:			
Utility companies contacted and/or utility locations delineated.			
Underground installations protected, supported, or removed while excavation is open.			
3. MEANS OF ACCESS AND EGRESS:			
Lateral travel to means of egress no greater than 25 feet in trench excavations 4 feet or more in depth.			
Ladders used in excavations secured and extended 3 feet above the edge of the trench.			
Structural ramps used by employees designed by a competent person.			
Structural ramps used for equipment designed by a registered professional engineer.			



	YES	NO	N/A
4. WET CONDITIONS:			
Precautions taken to protect from the accumulation of water.			
Water removal equipment monitored by a competent person.			
Surface water or runoff diverted or controlled to prevent accumulation in the excavation.			
Inspections made after every rainstorm or other hazard-increasing occurrence.			
5. HAZARDOUS ATMOSPHERE:			
Atmosphere within the excavation tested where there is a reasonable possibility of an oxygen deficient, combustible, or otherwise hazardous atmosphere.			
Adequate precautions taken to protect employee from exposure to a hazardous atmosphere.			
Testing conducted to ensure that the atmosphere remains safe.			
Emergency equipment, such as breathing apparatus, safety harness and line, and basket stretcher readily available where hazardous atmosphere does exist.			
6. SUPPORT SYSTEMS:			
Materials and/or equipment for support systems selected based on soil analysis, trench depth, and expected loads.			
Materials and equipment used for protective systems inspected and in good condition.			
Damaged materials and equipment used for protective systems inspected by a Registered Professional Engineer after repairs and before being placed back into service.			
Protective systems installed without exposing employees to the hazards of cave-ins, collapses, or from being struck by materials or equipment.			
Members of support systems securely fastened to prevent failure.			
Support systems provided to insure stability of adjacent structures, buildings, roadways, sidewalks, walls, etc.			
Excavations below the level of the base or footings approved by a registered professional engineer.			
Removal of support systems progresses from the bottom, and members are released slowly as to note any indication of possible failure.			
Excavation of material to a level of greater than 2 feet below the bottom of the support system and only if the system is designed to support the loads calculated for the full depth.			
Shield system placed to prevent lateral movement.			
Employees are prohibited from remaining in shield system during vertical movement.			
7. REMARKS:			
<hr/> <hr/>			



ATTACHMENT 3
SOILS CLASSIFICATION WORKSHEET

The following worksheet outlines the visual and manual tests that the competent person must perform at least once, and each time soil conditions change. At least one visual and one manual test must be performed; however, performing several tests is recommended so that the condition of the excavation is thoroughly examined.

Project Name: _____ Project Number: _____

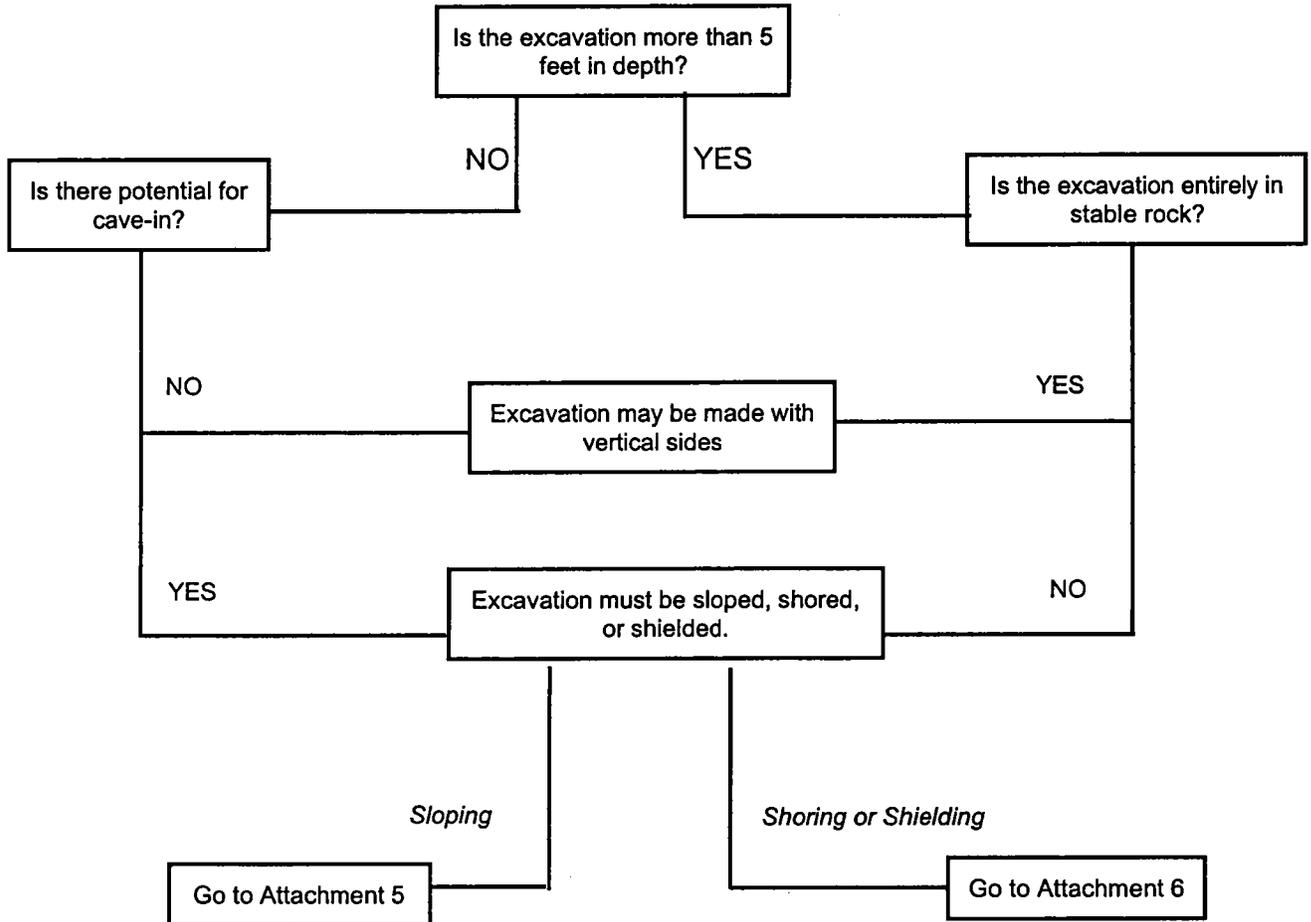
Date: _____ Time: _____

Where was the sample taken from? _____

I. VISUAL TESTS: One or more visual tests are required for each classification and each time conditions change.					
1. Estimate range of particle sizes:	a. primarily fine-grained = cohesive material b. primarily coarse-grained = granular material				
2. Observe excavated soil:	a. clumps = cohesive material b. breaks up easily = granular material				
3. Observe sides and adjacent surface area of opened excavation:	a. crack like openings = fissured material b. soil spalls off vertical sides = possible fissured material				
4. Previous excavation activities:	a. previously disturbed soil	b. not previously disturbed soil			
5. Observe opened side of excavation:	a. layered systems c. estimate degree of slope of layers:	b. layers sloped towards excavation _____			
6. Water condition:	a. evidence of surface water c. depth of water table :	b. water seeping from sides _____			
7. Vibration present:	a. area adjacent to excavation	b. area within excavation			
II. MANUAL TESTS- One or more manual tests are required for classification and each time soil conditions change.					
1. Plastically- soil is cohesive if following is true:	a. mold soil samples into a small ball b. roll ball into thread 1/8" diameter c. pick up 2" length of 1/8" thread by one end without breaking				
2. Dry Soil Strength:	a. crumbles on its own or with moderate pressure = granular b. falls into clumps which break into smaller clumps that are only broken with difficulty = clay with gravel, sand, or silt. c. breaks into clumps which do not break into smaller clumps and can only be broken with difficulty with no visual indication of fissures = unfissured.				
3. Thumb penetration test: <i>(These tests are to be run on a large clump of material as soon as it is excavated.)</i>	a. can be easily indented by the thumb but penetrated by thumb only with great effort = Type A b. easily penetrated several inches by thumb and molded by light finger pressure = Type C				
4. Unconfined Compressive Strength: <i>(Saturated Soil Needed)</i>	a. Pocket Penetrometer reading (take 10 readings and average) 0 - 0.5 = Type C, 0.5 - 1.5 = Type B, 1.5 - 2.0 = Type A b. Shear Vane reading X2: 0 - 0.5 = Type C, 0.5 - 1.5 = Type B, 1.5 - 2.0 = Type A				
5. Drying Test: <i>(A dry soil sample 1" thick X 6' diameter is needed)</i>	a. develops cracks = fissured material b. dries without cracks and breaks by hand with considerable force significant cohesive content = unfissured cohesive material. c. sample breaks easily by hand = fissured cohesive or granular material d. easily pulverize dry clumps by hand or by stepping on them = granular e. don't pulverize easily = fissured cohesive.				
SOIL CLASSIFICATION:	Type A	Type B	Type C	Stable Rock	Other _____
COMPETENT PERSON:	_____		_____	_____	_____
	Print Name	Signature	Date		

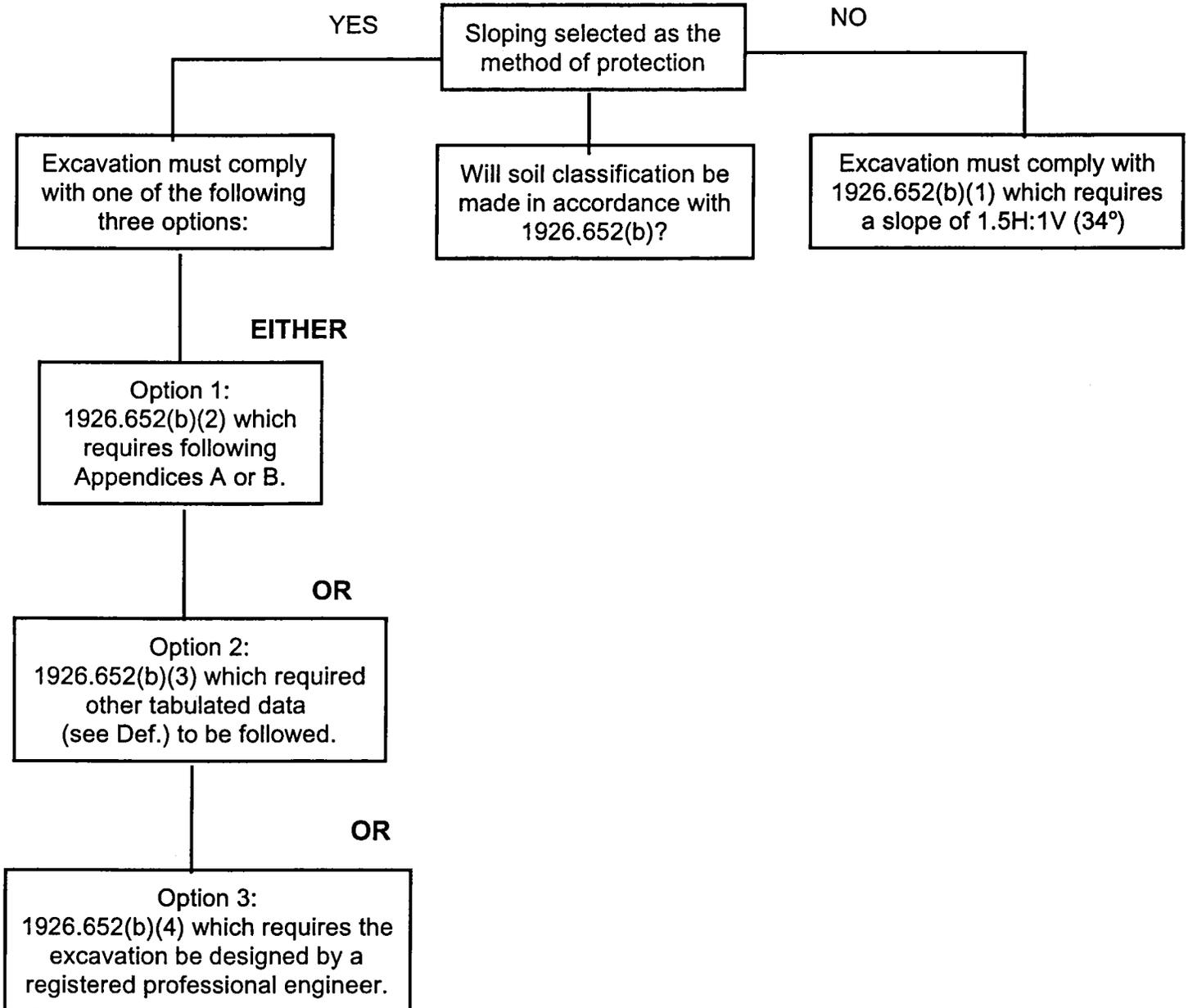


ATTACHMENT 4
SELECTION OF PROTECTIVE SYSTEMS FOR EXCAVATIONS 20 FEET OR LESS IN DEPTH

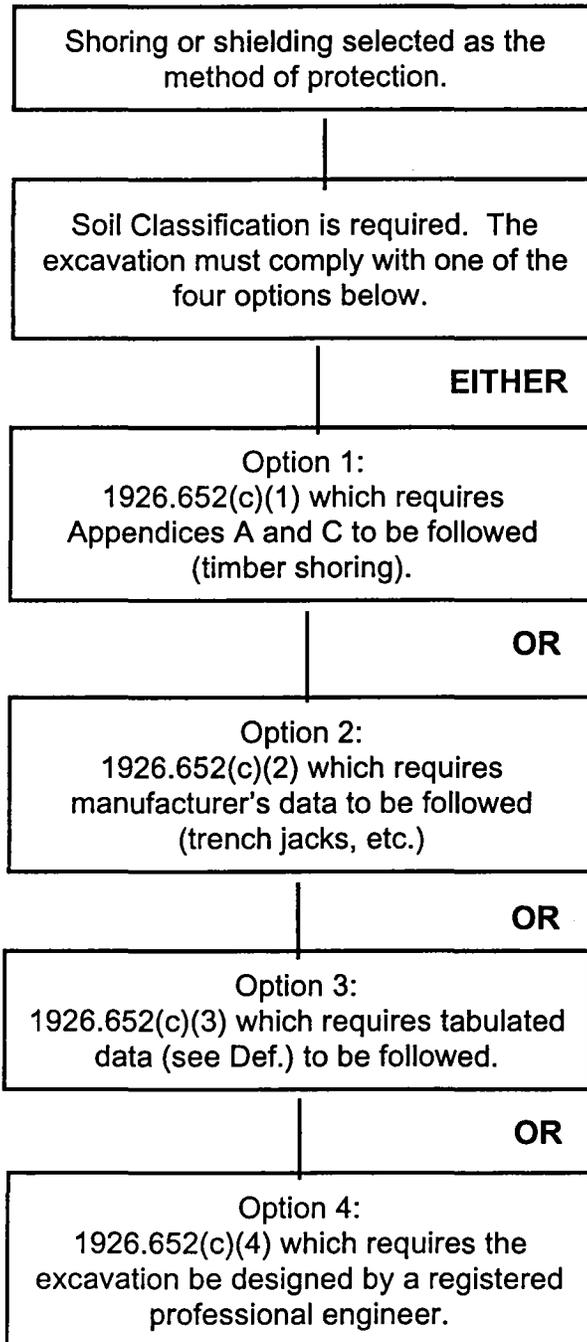


For excavations greater than 20 feet in depth, design by a registered professional engineer in compliance with 1926.652 (b) and (c) is required.

**ATTACHMENT 5
SLOPING OPTIONS**



**ATTACHMENT 6
SHORING OR SHIELDING OPTIONS**





PROCEDURE

Subject: HEAT STRESS

1.0 PURPOSE AND SUMMARY

This procedure establishes the guidelines to protect employees from the effects of heat related illness. It describes the four major types of heat-induced illnesses, methods of prevention, types of treatment, and includes discussions on the monitoring of heat stress situations.

Some clients may have monitoring requirements that differ from those contained in this procedure. In such circumstances, the more protective monitoring requirements will be followed.

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 - 5.1.1 Heat Rash
 - 5.1.2 Heat Cramps
 - 5.1.3 Heat Exhaustion
 - 5.1.4 Heat Stroke
 - 5.2 Prevention
 - 5.3 Monitoring
 - 5.3.1 Wet Bulb Globe Temperature
 - 5.3.2 Physiological
 - 5.4 Training
- 6.0 Exception Provisions
- 7.0 Cross References
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3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.



3.2 Action/Approval Responsibilities
The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

Acclimatization - Series of physiological and psychological adjustments that occur in an employee during initial exposures to hot environmental conditions.

Company - All wholly-owned subsidiaries of The IT Group, Inc.

Maximum Heart Rate - Amount of work (beats) per minute a healthy person's heart can be expected to safely deliver. Maximum heart rate (MHR) is calculated by subtracting an employee's age from 200.

5.0 TEXT

Adverse climatic conditions are important considerations in planning and conducting site operations. High ambient temperature can result in health effects ranging from transient heat fatigue, physical discomfort, reduced efficiency, personal illness, increased accident probability, etc., to serious illness or death. Heat stress is of particular concern when chemical protective garments are worn, since these garments prevent evaporative body cooling. Wearing personal protective equipment places employees at considerable risk of developing heat stress.

Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, workload, and the individual characteristics of the worker. Because heat stress is probably one of the most common (and potentially serious) illnesses, regular monitoring and other preventive precautions are vital.

5.1 Signs, Symptoms, and Treatment

5.1.1 Heat Rash

Heat rash can be caused by continuous exposure to hot and humid air and skin abrasion from sweat soaked clothing.

Signs and Symptoms: The condition is characterized by a localized red skin rash and reduced sweating. Aside from being a nuisance, the ability to tolerate heat is reduced.

Treatment: Keep skin hygienically clean and allow it to dry thoroughly after using chemical protective clothing.

5.1.2 Heat Cramps

Heat cramps are caused by profuse perspiration with inadequate electrolytic fluid replacement. This often robs the larger muscle groups (stomach and quadriceps) of blood which can cause painful muscle spasms and pain.

Signs and Symptoms: Muscle spasms and pain in the extremities and abdomen.

Treatment: Remove employee to a cool place and give sips of water or an electrolytic drink. Watch for signs of heat exhaustion or stroke.

5.1.3 Heat Exhaustion

Heat exhaustion is a mild form of shock caused by increased stress on various organs to meet increased demand to cool the body. Onset is gradual and symptoms should subside within one hour.

Signs and Symptoms: Weak pulse; shallow breathing; pale, cool, moist skin; profuse sweating; dizziness; fatigue.

Treatment: Remove employee to a cool place and remove as much clothing as possible. Give sips of water or electrolytic solution and fan the person continually to remove heat by convection. CAUTION: Do not allow the affected person to become chilled — treat for shock if necessary.

5.1.4 Heat Stroke

Heat stroke is the most severe form of heat stress; the body must be cooled immediately to prevent severe injury and/or death. **THIS IS A MEDICAL EMERGENCY!**

Signs and Symptoms: Red, hot, dry skin; body temperature of 105 degrees Fahrenheit (°F) or higher; no perspiration; nausea; dizziness and confusion; strong, rapid pulse.

Treatment: Heat stroke is a true medical emergency. Transportation of the victim to a medical facility must not be delayed. Prior to transport, remove as much clothing as possible and wrap the victim in a sheet soaked with water. Fan vigorously while transporting to help reduce body temperature. Apply cold packs, if available; place under the arms, around the neck, or any other place where they can cool large surface blood vessels. If transportation to a medical facility is delayed, reduce body temperature by immersing victim in a cool water bath (however, be careful not to over-chill the victim once body temperature is reduced below 102°F). If this is not possible, keep victim wrapped in a sheet and continuously douse with water and fan.



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5.2 Prevention

The implementation of preventative measures is the most effective way to limit the effects of heat-related illnesses. During periods of high heat, adequate liquids must be provided to replace lost body fluids. Replacement fluids can be a 0.1 percent salt water solution, a commercial mix such as Gatorade, or a combination of these with fresh water. The replacement fluid temperature should be kept cool, 50°F to 60°F, and should be placed close to the work area. Employees must be encouraged to drink more than the amount required to satisfy thirst. Employees should also be encouraged to salt their foods more heavily during hot times of the year.

Cooling devices such as vortex tubes or cooling vests can be worn beneath impermeable clothing. If cooling devices are worn, only physiological monitoring will be used to determine work activity.

All workers are to rest when any symptoms of heat stress are noticed. Rest breaks are to be taken in a cool, shaded rest area. Employees shall remove chemical protective garments during rest periods and will not be assigned other tasks.

All employees shall be informed of the importance of adequate rest and proper diet in the prevention of heat stress and the harmful effects of excessive alcohol and caffeine consumption.

5.3 Monitoring

The initiation of heat stress monitoring will be required when employees are working in environments exceeding 90°F ambient air temperature. If employees are wearing impermeable clothing, this monitoring will begin at 78°F. There are two general types of monitoring that the health and safety representative can designate to be used: wet bulb globe temperature (WBGT) and physiological. Attachment 2 will be used to record the results of heat stress monitoring.

5.3.1 Wet Bulb Globe Temperature

The WBGT index is the simplest and most suitable technique to measure the environmental factors which most nearly correlate with core body temperature and other physiological responses to heat. When WBGT exceeds 25.9°C (78°F), the work regimen in Table 1 and Figure 1 of the section "Heat Stress" in the latest edition of the American Conference of Governmental Industrial Hygiene (ACGIH) Threshold Limit Value (TLV) Booklet should be followed.

5.3.2 Physiological

Physiological monitoring can be used in lieu of or in addition to WBGT. It is anticipated that this monitoring can be self-performed once the health and safety representative demonstrates appropriate techniques to affected employees. Since individuals vary in their susceptibility to heat, this type of monitoring has its advantages. The two parameters that are to be monitored at the beginning of each rest period are:



- Heart Rate - Each individual will count his/her radial (wrist) pulse as early as possible during each rest period. If the heart rate of any individual exceeds 75 percent of their calculated maximum heart rate (MHR = 200 - age) at the beginning of the rest period, then the work cycle will be decreased by one-third. The rest period will remain the same. An individual is not permitted to return to work until his/her sustained heart rate is below 75 percent of their calculated maximum heart rate.
- Temperature - Each individual will measure his/her temperature with a thermometer for one minute as early as possible in the first rest period. If the temperature exceeds 99.6°F at the beginning of the rest period, then the work cycle will be decreased by one-third. The rest period will remain the same.
- An individual is not permitted to return to work if his/her temperature exceeds 100.4°F

5.4 Training

Employees potentially exposed to heat stress conditions will be instructed on the contents of this procedure. This training can be conducted during daily tailgate safety meetings.

6.0 EXCEPTION PROVISIONS

Variances and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variances

7.0 CROSS REFERENCES

HS013 Health and Safety Procedure Variances
HS051 Tailgate Safety Meetings

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Heat Stress Monitoring Record



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**ATTACHMENT 1
HEAT STRESS**

Responsibility Matrix

Action	Procedure Section	Responsible Party		
		Vice President, Health and Safety	Project Supervisor	Health and Safety Representative
Issuance, Revision, and Maintenance of Procedure	3.1	X		
Conduct Monitoring	5.3			X
Inform Employees About Procedure	5.4		X	X



PROCEDURE

Subject: HEARING CONSERVATION PROGRAM

1.0 PURPOSE AND SUMMARY

The purpose of this procedure is to establish guidelines for the company hearing conservation program. Regulatory requirements mandate that the company administer a hearing conservation program whenever employee sound exposures equal or exceed an 8-hour time-weighted average (TWA) sound level of 85 decibels (dB).

Evidence is well established that worker exposure to sound of sufficient intensity and duration can result in hearing damage. This procedure prescribes the control measures required to prevent employee exposure to excessive sound levels and includes provisions for:

- Monitoring of the workplace to determine employee exposures.
- An audiometric testing program which includes baseline and annual audiograms.
- An employee training and information program.
- Description of various control measures that can be used to decrease exposures.
- Providing hearing protection to all affected employees when administrative or engineering controls fail to reduce sound levels to below the action level.
- Recordkeeping requirements.

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5.5	Control Measures



- 5.5.1 Sound Control at the Source
- 5.5.2 Sound Control in the Transmission Path
- 5.5.3 Protection for the Receiver
- 5.6 Recordkeeping
- 6.0 Exception Provisions
- 7.0 Cross References
- 8.0 Attachments

3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

Action Level - An 8-hour TWA of 85 dB or a dose of 50 percent.

Company - All wholly-owned subsidiaries of The IT Group, Inc.

Standard Threshold Shift (STS) - Change in hearing threshold relative to the baseline audiogram of 10 dB or more at 2,000, 3,000, and 4,000 hertz (Hz) in either ear.

5.0 TEXT

5.1 General

The company hearing conservation program will be implemented and protection against the effects of sound exposure will be provided whenever sound levels exceed the action level.

5.2 Monitoring

Monitoring of employee exposures to sound will be conducted whenever it is anticipated that exposure may exceed the action level. This monitoring will be conducted by a qualified individual who, through professional credentials, training, or experience, has the necessary qualifications to specify and use the type of monitoring equipment (area or personal) that will best represent employee exposures. This monitoring will be repeated whenever changes in the work environment lead to the possibility of additional exposures or inadequacy of selected hearing protection. Employees will be provided the opportunity to observe monitoring and will be notified when the results exceed the action level.



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Sound level monitoring instrumentation will be operated on the A-weighted scale in slow response mode. Employee sound exposures will be computed in accordance with Attachment 2 and without regard to any attenuation provided by the use of hearing protection.

5.3 Audiometric Testing

Audiometric testing will be provided to all employees exposed at or above the action level. Testing will be in accordance with Procedure HS100, Medical Policies and Procedures.

5.3.1 Baseline Audiogram. Audiometric test results obtained from the pre-hire medical examination will be used as the baseline audiogram. Testing to establish a baseline audiogram shall be preceded by at least 14 hours without exposure to workplace sound. Employees will also be notified of the need to avoid high levels of non-occupational sound exposure during this 14-hour period.

5.3.2 Annual Audiograms. Annual audiograms will be conducted for all employees exposed at or above the action level during the preceding year. Each annual audiogram will be compared to that employee's baseline audiogram to determine if the audiogram is valid and if a STS has occurred.

5.4 Employee Training and Information

All employees who are exposed to sound levels above the action level are required to participate in a formal training program. This program will be presented by a health and safety representative and include, as a minimum, the following information:

- The effects of sound on hearing.
- The purpose of hearing protection; the advantages, disadvantages, and attenuation of various types; and instructions on selection, fitting, use, and care.
- The specific nature of operations which could result in exposure to excessive sound levels.
- The purpose of audiometric testing and an explanation of the test procedures.
- The engineering controls and administrative practices associated with the employee's job assignment.

This training program will be repeated annually. Participating employees are required to complete the Hearing Protection Training Completion Record (Attachment 3). This record will be maintained by the company Training Department in Knoxville. In addition, tailgate safety meetings will be periodically used to instruct employees on the need for hearing protection in designated areas.



The project/location manager will make available to affected employees or their authorized representatives a copy of 29 Code of Federal Regulations (CFR) 1910.95 and will also post a copy in the workplace.

5.5 Control Measures

A straightforward method of controlling sound exposure is to examine the problem in terms of its three basic elements including:

- Sound arises from a source;
- Travels over a path; and
- Affects a receiver or listener.

The solution to a given sound problem might require alteration or modification of any or all of these three basic elements including:

- Modifying the source to reduce its sound output;
- Altering or controlling the transmission path to reduce the sound level reaching the listener; or
- Providing the receiver with hearing protection (but only if the sound source or path cannot be controlled).

5.5.1 Sound Control at the Source. Perhaps the best method for controlling sound at its source is the initial equipment selection process. The following summarizes those features that the buyer should look for and steps to be taken in selecting equipment:

- Low-sound certification.
- Advertisement of “quiet” operation, evidence of sound control design.
- Evidence of “lower” and “slower” operating characteristics.
- Conductance of side-by-side sound tests of equipment.
- Request an “on-site” or “in operation” inspection of mechanical equipment before purchase.

Most mechanical devices are complex sound generators. Though it is impractical to discuss all possible solutions to all sound problems, some general control measures and methods have been provided below:



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- Reduce impact or impulse sound by reducing the weight, size, or height of fall of impacting mass.
- Reduce speed in machines and flow velocities and pressure in fluid conveyance systems.
- Balance rotating parts to control machinery sound and vibration of fans, fly wheels, pulleys, cams, shafts, etc.
- Reduce frictional resistance between rotating, sliding, or moving parts by frequent lubrication and proper alignment; static and dynamic balancing of rotating parts; and/or correction of eccentricity or “out-of-roundness” of wheels, gears, rollers, pulleys, etc.
- Reduce resistance in air or fluid systems by use of low flow velocities, smooth surfaces of duct or pipe systems, and long-radius turns and flared sections in pipes, etc., to reduce turbulence.
- Isolate vibration elements in machinery; install motors, pumps, etc., on most massive part of machine; use belt or roller drives in place of gear trains; use flexible hoses and wiring instead of rigid piping and stiff wiring; etc.
- Apply vibration damping materials such as liquid mastics; pads of rubber, felt, foam, or fibrous blankets; or sheet metal viscoelastic laminates or composites to vibrating machine surface.
- Reduce sound leakage from the interior of machines such as compressors by sealing or covering all openings or applying acoustical materials to machine interiors.

5.5.2 Sound Control in the Transmission Path. Another effective way to limit employee exposure to sound is through the use of transmission path controls. These controls may include, but are not necessarily limited to:

- Separation of the sound source and receiver.
- Use of sound absorbing materials on ceiling, floor, or wall surfaces.
- Use of sound barriers and deflectors in the sound path.
- Use of acoustical lining on inside surfaces of passageways, ducts, pipe chases, or electrical channels.



- Use of mufflers or silencers on all gasoline or diesel engines, regardless of size, and particularly on equipment when large quantities of high-pressure, high-velocity gases, liquids, steam, or air are discharged.
- Use vibration isolators and flexible couplers where the sound transmission path is structural in character.

5.5.3 Protection for the Receiver. When engineering controls fail to reduce sound levels to below the action level, hearing protection will be provided. Hearing protection will be provided at no cost to employees and will be replaced as necessary.

Supervisors will ensure that hearing protection is worn by all employees who are exposed at or above the action level. Employees will be given the opportunity to select their hearing protection from a variety of suitable protection devices that attenuate their exposure to the action level or below. Attenuations are determined by subtracting 7 dB from the noise reduction rating (NRR) of the protector and subtracting the remainder from the TWA sound level.

5.6 Recordkeeping

The company will maintain records of all audiometric test records required by this procedure and retain them for at least the following periods:

- Sound exposure measurement records will be retained for two (2) years.
- Audiometric test records will be retained for the duration of the affected employee's employment.

All records required by this procedure will be provided upon request to employees, former employees, representatives designated by the individual employee, and any authorized government representative.

6.0 EXCEPTION PROVISIONS

Variances and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variances.

7.0 CROSS REFERENCES

HS013 Health and Safety Procedure Variances
HS100 Medical Policies and Procedures

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Sound Exposure Computation
3. Hearing Protection Training Completion Record



ATTACHMENT 1
HEARING CONSERVATION PROGRAM

Responsibility Matrix

Action	Procedure Section	Responsible Party		
		Health and Safety Representative	Project/Location Manager	Vice President, Health and Safety
Issue, Revise, and Maintain Procedure	3.1			X
Monitor Employee Exposures	5.2	X		
Provide Training	5.4	X		
Make Available/Post 29 CFR 1910.95	5.4		X	



ATTACHMENT 2

SOUND EXPOSURE COMPUTATION

Computation of Employee Sound Exposure

- A. Sound dose is computed using Table 1 as follows:

When the sound level is constant over the entire work shift, the sound dose (D), in percent, is given by:

$$D = 100 C/T$$

Where C is the total length of the work day, in hours, and T is given in Table 1.

- B. When the work shift sound exposure is composed of two or more periods of sound at different levels, the total sound dose over the work day is given by:

$$D = 100 (C_1/T_1 + C_2/T_2 \dots + C_n/T_n)$$

Where C_n indicates the total time of exposure at a specific sound level and T_n indicates the reference duration for that level as given by Table 1.

- C. The eight-hour TWA sound level, in decibels, may be computed from the dose, in percent, by means of the formula:

$$TWA = 16.61 \log_{10}(D/100) + 90$$

For an eight-hour work shift with the sound level constant over the entire shift, the TWA is equal to the measured sound level.

Conversion Between "Dose" and "8-Hour TWA" Sound Level

Sound exposure is usually measured with an audio dosimeter which gives a readout in terms of "dose." Dosimeter readings can be converted to an 8-hour TWA sound level.

In order to convert the reading of a dosimeter into TWA, use Table 2. This table applies to dosimeters that are set to calculate dose or percent exposure according to the relationships in Table 1. So, for example, a dose of 91 percent over an 8-hour day results in a TWA of 89.3 decibels and a dose of 50 percent corresponds to a TWA of 85 decibels.

If the dose as read on the dosimeter is less than or greater than the values found in Table 2, the TWA may be calculated by using the formula:

$$TWA = 16.61 \log_{10}(D/100) + 90$$

Where TWA equals 8-hour TWA sound level and D equals accumulated dose in percent exposure.



Table 1
Permissible Sound Exposure

A-Weighted Sound Level (decibels)	Permitted Duration Per Workday (T) (hours)	A-Weighted Sound Level (decibels)	Permitted Duration Per Workday (T) (hours)
80	32.0	106	0.87
81	27.9	107	0.76
82	24.3	108	0.66
83	21.1	109	0.57
84	18.4	110	0.50
85	16.0	111	0.44
86	13.9	112	0.38
87	12.1	113	0.33
88	10.6	114	0.29
89	9.2	115	0.25
90	8.0	116	0.22
91	7.0	117	0.19
92	6.1	118	0.16
93	5.3	119	0.14
94	4.6	120	0.125
95	4.0	121	0.11
96	3.5	122	0.095
97	3.0	123	0.082
98	2.6	124	0.072
99	2.3	125	0.063
100	2.0	126	0.054
101	1.7	127	0.047
102	1.5	128	0.041
103	1.3	129	0.036
104	1.1	130	0.031
105	1.0		



Table 2
Conversion From "Percent Sound Exposure" or "Dose" To "8-Hour TWA Sound Level"

Dose or Percent Sound Exposure (D)	TWA	Dose or Percent Sound Exposure (D)	TWA	Dose or Percent Sound Exposure (D)	TWA	Dose or Percent Sound Exposure (D)	TWA
10	73.4	104	90.3	260	96.9	640	103.4
15	76.3	105	90.4	270	97.2	650	103.5
20	78.4	106	90.4	280	97.4	660	103.6
25	80.0	107	90.5	290	97.7	670	103.7
30	81.3	108	90.6	300	97.9	680	103.8
35	82.4	109	90.6	310	98.2	690	103.9
40	83.4	110	90.7	320	98.4	700	104.0
45	84.2	111	90.8	330	98.6	710	104.1
50	85.0	112	90.8	340	98.8	720	104.2
55	85.7	113	90.9	350	99.0	730	104.3
60	86.3	114	90.9	360	99.2	740	104.4
65	86.9	115	91.1	370	99.4	750	104.5
70	87.4	116	91.1	380	99.6	760	104.6
75	87.9	117	91.1	390	99.8	770	104.7
80	88.4	118	91.2	400	100.0	780	104.8
81	88.5	119	91.3	410	100.2	790	104.9
82	88.6	120	91.3	420	100.4	800	105.0
83	88.7	125	91.6	430	100.5	810	105.1
84	88.7	130	91.9	440	100.7	820	105.2
85	88.8	135	92.2	450	100.8	830	105.3
86	88.9	140	92.4	460	101.0	840	105.4
87	89.0	145	92.7	470	101.2	850	105.4
88	89.1	150	92.9	480	101.3	860	105.5
89	89.2	155	93.2	490	101.5	870	105.6
90	89.2	160	93.2	500	101.6	880	105.7
91	89.3	165	93.6	510	101.8	890	105.8
92	89.4	170	93.8	520	101.9	900	105.8
93	89.5	175	94.0	530	102.0	910	105.9
94	89.6	180	94.2	540	102.2	920	106.0
95	89.6	185	94.4	550	102.3	930	106.1
96	89.7	190	94.6	560	102.4	940	106.2
97	89.8	195	94.8	570	102.6	950	106.2
98	89.9	200	95.0	580	102.7	960	106.3
99	89.9	210	95.4	590	102.8	970	106.4
100	90.0	220	95.7	600	102.9	980	106.5
101	90.1	230	96.0	610	103.0	990	106.5
102	90.1	240	96.3	620	103.2	999	106.6
103	90.2	250	96.6	630	103.3		



ATTACHMENT 3

HEARING PROTECTION TRAINING COMPLETION RECORD

INITIAL

- 1. I have been informed about the health hazards associated with exposure to excessive sound levels and its potential effect on hearing.
- 2. I have been informed about the types of work that may result in exposure to excessive sound levels, and the necessary protective steps to prevent excessive exposure, including engineering controls and administrative practices.
- 3. I understand the purpose for, proper use, and limitations of hearing protection devices, and I have received instructions on selection, fitting, use, and care of such devices.
- 4. I have been informed about the purpose of audiometric testing and an explanation of the test procedures.
- 5. Copies of the applicable regulations governing occupational exposure to excessive sound have been made available to me.

PRINT NAME: _____

SIGNATURE: _____

EMPLOYEE NUMBER: _____

DATE: _____

Please File Completed Forms and Forward a Copy to the Knoxville Training Department



PROCEDURE

Subject: PERSONAL PROTECTIVE EQUIPMENT

1.0 PURPOSE AND SUMMARY

This procedure stipulates that IT will provide the personal protective equipment necessary for associates to perform their work safely, as established by the Health & Safety Department. Special purchasing programs for prescription safety glasses and safety shoes are also described. Head, eye, body, and foot protection are discussed in this procedure. Respiratory and hearing protection are cross referenced to the appropriate IT procedures.

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- 5.0 Text
 - 5.1 Eye Protection
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 - 5.6 Body Protection
 - 5.7 Providing Personal Protective Equipment to Non-IT Personnel
 - 5.8 Management Duties
- 6.0 Exception Provisions
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3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President of Health & Safety, is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

(Not Applicable.)



5.0 TEXT

IT Corporation will provide suitable personal protective equipment as required for the nature of the job being performed, such as, but not limited to, boots, protective clothing, respirators, face shields, safety eyewear, respirator ophthalmic hanger devices, hard hats, and gloves. This personal protective equipment will be specified by the Health & Safety Department prior to use, subject to an assessment of the hazards to which associates will be potentially exposed. Documentation shall be in the project-specific Health and Safety Plan (HASP) or equivalent document.

Associates shall use HS-approved protective equipment on any task where there is potential exposure to: physical hazards such as equipment operation, objects dropping from above, or flying particles; or exposure to toxic or irritating gases, fumes, vapors, liquids, or other materials which might cause respiratory distress or skin irritation.

Associates shall be trained in the proper use, maintenance, and limitations of protective equipment. ~~Safety equipment shall be replaced when it is damaged, contaminated, or has worn out.~~ Training requirements are summarized in IT Procedure HS050.

Associates shall wear hard hats, eye protection, and steel-toed foot protection (chemical resistant when required) at all IT job sites (excluding field offices) and industrial facilities, unless HASP/site rules provide exemption. It is the responsibility of all associates to report to any work site prepared to work in Level D PPE. All other protective equipment is the responsibility of the project.

5.1 Eye Protection

All associates engaged in or working in areas adjacent to eye-hazardous activities or operations shall wear appropriate eye protection.

- Safety glasses are required for impact protection, and shall meet ANSI Standard Z87.1 requirements.
- Chemical goggles are required for protection against chemical splash.
- Face shields are required for face protection from chemical splash and are not a substitute for eye protection.
- Full-face respirators can provide eye and face protection in lieu of safety glasses, goggles, or face shields.

5.1.1 Prescription Eye Protection. IT will provide prescription safety glasses (meeting ANSI Standard Z87.1) for field/shop/lab personnel, and computer glasses for computer users, as required by their individual vision status and job. Glasses will be provided every two years unless damaged on-the-job, or the associate exhibits a significant change of prescription.



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Lenses shall be clear polycarbonate or plastic. Special tints or dark lenses can be obtained for special applications (e.g., extended outdoor work) with prior written approval from the Health & Safety Department.

Associates requiring corrective lenses inside of respirator face-pieces will be provided with safety lenses and frames sized for respirators and the respirator insert, in addition to conventional prescription safety glasses.

Associates will arrange and pay for the eye examination through the company-provided vision care program. The company will pay for fitting services and the safety glasses.

The company has established a national contract with a protective eyewear provider. Associates should contact the local HS representative (with current lens prescription), who will coordinate with the local purchasing representative to order eyewear. Associates choosing to use another provider will be reimbursed up to \$65 for safety or computer glasses, after the Health & Safety Department has verified that the glasses meet the ANSI Standard requirements.

5.2 Foot Protection

Basic foot protection is required for all IT job sites and industrial locations. Specialized footwear shall be provided as required by the nature of the work. Special foot protection may include, but is not limited to, chemically resistant, thermally shielded, metatarsal guards, etc.

5.2.1 Leather Safety Shoes. Safety shoes may be used in place of chemical resistant footwear when an associate will be working in a clean or uncontaminated work areas. Generally, when the associate desires to use safety footwear other than standard chemical resistant footwear provided by IT, IT considers it the responsibility of the associate to provide such footwear and ensure that it meets ANSI Standard Z41. IT supervision will enforce the use of appropriate protective footwear per the requirements of the site-specific Health and Safety Plan. Where state or local regulations require (i.e., California), IT will provide all necessary safety equipment.

Associates can purchase safety shoes through national purchasing agreements established by IT. Under the limited circumstances where IT will provide safety shoes, such purchases must be approved by the project or appropriate department/local manager. After the Health & Safety Department has verified that the safety shoes meet ANSI requirements, the associate will be reimbursed for the actual purchase price of the shoes up to a maximum of \$80.00.

Athletic-style safety shoes ("safety sneakers") are prohibited for all field operations due to the difficulties created by these styles in supervising proper use of protective footwear. Associates in fixed laboratory operations



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may wear athletic-style safety shoes with the prior approval of the Lab Director or HS Coordinator.

5.3 Head Protection

Hard hats meeting ANSI Z89.1 shall be provided to protect associates from impact, penetration, falling objects, and/or limited electrical shock and burn, as appropriate for work site hazards.

5.4 Respiratory Protection

Respirators shall be provided, in accordance with IT Procedure HS601, Respiratory Protection Program.

5.5 Hearing Protection

Hearing protection shall be provided, in accordance with IT Procedure HS402, Hearing Conservation Program.

5.6 Body Protection

Protective clothing, gloves, boots, and other protective equipment shall be provided as appropriate for the hazards associated with the tasks being performed.

5.7 Providing Personal Protective Equipment to Non-IT Personnel

The following personal protective equipment may be provided to non-IT personnel:

- Hard hats
- Chemical goggles
- Safety glasses (non-prescription)
- Face shields
- Chemical resistant boots
- Chemical resistant gloves
- Hearing protectors
- Disposable chemical resistant personal protective clothing

5.8 Management Duties

It is the responsibility of the Health & Safety Department to specify safety equipment requirements for each job.

It is the responsibility of project managers or location managers to provide adequate quantities of safety equipment required for their job(s) or project(s).

It is the responsibility of supervisors to verify that required safety equipment is properly used.



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6.0 EXCEPTION PROVISIONS

Variances and exceptions shall be permitted pursuant to the provisions of IT Procedure HS013, "Health & Safety Procedure Variances".

7.0 CROSS REFERENCES

HS050 Training Requirements

HS402 Hearing Conservation Program

HS601 Respiratory Protection Program

ANSI Standard Z41, *Personal Protection - Protective Footwear*

ANSI Standard Z87.0, *Practice for Occupational and Educational Eye and Face Protection*

ANSI Standard Z89.1, *Protective Headwear for Industrial Workers*

8.0 ATTACHMENTS

1. Responsibility Matrix



ATTACHMENT 1
PERSONAL PROTECTIVE EQUIPMENT

Responsibility Matrix

Action	Procedure Section	Responsible Party			
		Vice President, HS	Local HS Department	Project/Location Managers	Supervisors
Issue, revise, and maintain this procedure.	3.1	X			
Approve all personal protective equipment prior to use.	5.0		X		
Coordinate reimbursement to associate for PPE purchases.	5.1.1, 5.2.1		X		
Provide adequate quantities of safety equipment as required.	5.8			X	
Verify that required safety equipment is properly used.	5.8				X



PROCEDURE

Subject: RESPIRATORY PROTECTION PROGRAM

1.0 PURPOSE AND SUMMARY

The purpose of this procedure is to prescribe the requirements of the company Respiratory Protection Program (RPP). This procedure provides information and guidance on the proper selection, medical evaluation, training, use, and care of respiratory protective equipment and complies with the requirements of 29 CFR 1910.134 (1998).

All operations which require the use of respiratory protection are subject to the provisions of this procedure.

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3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

Program responsibilities are detailed throughout this procedure. The Responsibility Matrix summarizes these items and can be found as Attachment 1.

4.0 DEFINITIONS

Action Level (AL) - Airborne contaminant concentration which is one-half of the Permissible Exposure Guideline (PEG).

Air Purifying Respirator (APR) - Negative pressure respirator (also referred to as a cartridge respirator) which filters contaminated air through chemical or mechanical filter elements. APRs include: cartridge, canister, gas masks, and single-use respirators (single-use respirators are not approved for use by the company).

Approved Respirator - Any respirator, identified by manufacturer and model, that has been approved by NIOSH 42 CFR Part 84 and has been incorporated into the List of Approved Respiratory Protective Equipment (Attachment 2).

Assigned Protection Factor (APF) - A term that is reserved in the OSHA Standard 1910.134 (January, 1998). Attachment 3 provided PFs for the respiratory protective equipment based upon type of device and method of fit testing. The company will continue to use the PFs established by NIOSH until OSHA issues their definition of APF.

Company - All wholly-owned subsidiaries of The IT Group, Inc.

Contractor Personnel - A group of persons hired to perform a specific activity based on their expertise and ability to operate independent of direct supervision. Contractor personnel are supervised by their management group which reports to an employee of the company for project direction.



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End-of-Service-Life Indicator (ESLI) - A system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

Emergency - Emergency means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

Exposure Limit - Several published airborne contaminant concentration values exist which are used in establishing acceptable personnel exposures to contaminants. OSHA publishes the Permissible Exposure Limit (PEL), NIOSH publishes the Recommended Exposure Limit (REL), and the ACGIH publishes the Threshold Limit Value (TLV). All of these exposure limits are based on an 8-hour work shift, 40-hour work week, and 40-year work life. The values may vary from contaminant to contaminant as well as between publishing bodies.

Field Office - Any office or satellite office performing field activities which may require the use of respiratory protection.

Filtering Facepiece (Dust Mask) - A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

Fit Factor (FF) - This term means a quantitative estimate of the fit of a particular respirator to a specific individual and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn. The FF incorporates a safety factor of 10 because protection factors in the workplace tend to be much lower than the fit factors achieved during fit testing. Acceptable fit factors are 100 for a tight-fitting half facepiece and 500 for a tight-fitting full facepiece respirators.

HASP - Health and Safety Plan.

Health and Safety Representative - A member of the company Health and Safety Functional Resource Group who, through credentials, training, or experience, has the necessary qualifications and authority to specify respiratory protection and evaluate respiratory protection program elements.

Immediately Dangerous to Life or Health (IDLH) - An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Labor Pool Personnel - Temporary personnel hired for a given expertise or ability. Labor pool personnel report directly to an employee of the company.

Nuisance Level - Level of airborne contaminants which is below one-half the action level for that contaminant and presents no other health or safety hazard.



Permissible Exposure Guideline (PEG) - This term designates a specific exposure limit and is based on the best available information. The PEG will be the lower (more protective) of the values for the PEL and TLV. However, the REL shall take precedence for Hazardous Waste Operations (subject to 29 CFR 1910.120 or 1926.65) if no PEL exists, or for contaminants where no PEL or TLV exists. If there is no PEL, TLV, or REL, a Health and Safety Representative shall determine an appropriate permissible exposure guideline.

Permissible Exposure Limit (PEL) - An occupational exposure index promulgated by OSHA which carries the force of law. This value represents the allowable concentration to which it is believed an employee may be exposed to 8 hours a day, 40 days a week, for a 40-year working life without experiencing adverse health effects.

Positive Pressure Respirator - A respirator in which the pressure inside the respirator exceeds the ambient air pressure outside the respirator.

Powered Air Purifying Respirator (PAPR) - A positive pressure APR which incorporates a fan and a battery pack unit. The system pulls contaminated air through the filter elements before delivery to the facepiece under positive pressure. Air pressure in the mask must remain above ambient pressure.

Qualitative Fit Test - A procedure for assuring that the respirator provides adequate protection based on a pass/fail fit test that relies on the individual's response to the test agent. Standard fit test protocol will utilize the irritant smoke methods as described in Attachment 4.

Quantitative Fit Test - A fit test that provides an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respiratory Protection Program Coordinator (RPP Coordinator) - A person designated by the Health and Safety Representative to administer and supervise the respiratory program at a local facility or project location. This person will have the necessary training or credentials to execute this task.

Recommended Exposure Limit (REL) - An occupational exposure index published by NIOSH which is a recommended guideline for employee protection. This value represents the allowable concentration to which it is believed an employee may be exposed to 10 hours a day, 40 hours a week, for a 40-year working life without experiencing health effects.

Supplied Air Respirator (SAR) - Positive pressure respirator which supplies an independent source of breathing air to the user. Two types of SARs are available: self-contained breathing apparatus (SCBA) and airline.

Threshold Limit Value (TLV) - An occupational exposure index published by ACGIH which is recognized as an industry guideline and represents the concentration to which it is believed that nearly all employees may be exposed to 8 hours a day, 40 hours a week without experiencing adverse health effects.



5.0 TEXT

The company will employ engineering controls (e.g., enclosure, ventilation, material substitution, etc.) as the primary method to limit employee exposure. However, for those situations where engineering and administrative controls are ineffective at controlling employee exposure, the use of respiratory protective equipment may be required.

This RPP provides specific requirements for selection, assignment, training, and medical evaluation for persons expected to wear respiratory protection.

5.1 Assignment of Equipment to Contractor/Labor Pool Personnel

Contractor personnel shall provide their own respiratory protective equipment and shall also confirm meeting all other requirements of their own RPP and that of the company's RPP (i.e., medical clearance, training, etc.).

The company may provide the following respiratory protective equipment to Contractor Personnel:

- Disposable equipment such as filter elements.
- Hardware for airline systems (up to, but not including, the airline and facepiece) which employees are sharing.

The company will not provide the following respiratory protective equipment to Contractor Personnel:

- APR or PAPR facepieces.
- SCBAs, SAR respirators, or airline.

The company may provide respiratory protective equipment to Labor Pool Personnel if the following have been established:

- The labor pool personnel have successfully completed training as required by 29 CFR 1910.134 and other applicable regulations.
- The labor pool personnel have been fit tested in relation to projected exposure levels and contaminants to be encountered.
- The labor pool personnel have been medically approved to wear respirators.
- All other RPP requirements have been met.

5.2 Approval, Selection, and Purchase of Respiratory Protective Equipment

The following requirements are designed to guide correct selection of respiratory protective equipment.

5.2.1 Approval. The Vice President, Health and Safety has approved respirators manufactured by Survivair as the primary respirators for use by employees. For employees who cannot achieve a satisfactory fit or comfort factor in Survivair respirator, Mine Safety Appliance (MSA) respirators will be selected. The list of approved model respirators is included in Attachment 2. Contractor personnel may select any respiratory protective equipment that has received approval from NIOSH.

5.2.2 Selection. The Health and Safety Representative shall base the selection of respiratory protective equipment upon an assessment of potential respiratory hazards that may be encountered. This assessment may utilize a variety of written information such as the NIOSH Pocket Guide to Chemical Hazards, Material Safety Data Sheets, analytical data, air monitoring results, or other applicable information. The selection process shall incorporate the following guidelines:

- Respiratory protection is to be selected by Health and Safety Representatives only. Full facepiece respirators are the usual preference because of superior protection factor and the face/eye protection afforded. Half facepiece respirators can only be used in situations where less than one-half the PEG is expected. The type of respirator selected will be documented in the Project HASP.
- Selection of the appropriate respiratory protective equipment shall include factors such as the chemical state and physical form of the chemical contaminant, atmospheric concentration during routine and emergency events, potential physical hazards, expected job task requirements, and the performance of the respirator in providing the appropriate level of protection against these hazards.
- Consideration shall be given to the nature of the hazardous operation, location of the hazardous area relative to nonhazardous breathing air supply, duration of wear, activities to be performed, and characteristics and function of the respiratory protective equipment to be worn.
- Selected respirators (i.e., Survivair or MSA) shall be NIOSH certified and used in compliance with the conditions of its certification when employees are exposed to toxic materials or other hazardous atmospheres.



- Respirators must provide adequate face and eye protection for the expected task.
- If an APR or PAPR is used, the respirator shall be equipped with an end-of-service life-indicator (ESLI) certified by NIOSH for the contaminant. If an ESLI is not available for the contaminant, a cartridge element change schedule shall be implemented which is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life. This information will be described in the HASP.
- The PF for the respirator selected (Attachment 3) shall be used according to the following relationship with the PEG to establish justification for selection:

$$PF \times PEG > \text{Maximum anticipated contaminant concentration}$$

If this equation is false, a respirator with a greater PF must be selected. Also review Attachment 3 to determine the required fit testing for the expected maximum anticipated contaminant concentration. The Health and Safety Representative may determine that a more conservative approach (e.g., 50 percent PF) may be needed. Decision to do so should be documented in the Project HASP.

- Manufacturer-established limitations of the APR filter elements relative to the contaminants of concern shall be used to establish further justification for the selected respirator should the APR's FF not disqualify its use (e.g., maximum anticipated contaminant concentration).

5.2.3 Purchase. The purchase request of respiratory protective equipment (including cartridges, airlines, compressed air) should be reviewed by a Health and Safety Representative to indicate that the ordered material meets established requirements. **Under no circumstances may anyone (purchasing, warehouse, project manager, etc.) purchase or provide other than the specific respiratory protection equipment selected by the Health and Safety Representative.**

5.3 Medical Evaluation

No employee shall be assigned to a task that requires the use of a respirator unless it has been determined that he/she is physically able to perform the work while using the required respirator. The medical evaluation must be conducted prior to fit testing and work requiring the use of respiratory equipment.

The medical evaluation shall be performed by a physician typically in conjunction with a physical examination meeting the requirements of 29 CFR 1910.120 (f) *Medical Surveillance*. The physician will be informed of the type of work expected of the



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employee, the types of respiratory protection and personal protective equipment required, and other information indicating the expected stresses of the task. The company medical director shall be given a copy of the company RPP and a copy of 1910.134 (e) *Medical Evaluation*.

The company medical director shall provide a written recommendation regarding the employee's ability to use respiratory protection. The company shall ensure that the company medical director supplies the employee with a copy of this recommendation.

Additional medical evaluations will be provided to the employee if:

- Any medical signs or symptoms due to respirator use are reported by the employee, supervisory, or health and safety personnel.
- A change in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on an employee.

5.4 General Program Requirements

5.4.1 Responsibilities. The following information describes the responsibilities for the selection, use, and maintenance of respiratory protective equipment based upon job function:

Management

- Management shall take necessary and cost-effective measures to reduce, where possible, the need for respiratory protective equipment (e.g., enclosed cabs on heavy equipment to reduce airborne dust, operations performed upwind, etc.)
- Respiratory protective equipment shall be provided by management whenever it is determined that such equipment is necessary to protect the health of the employee or when requested by an employee and approved by the Health and Safety Representative.
- Management shall assign work tasks requiring the use of respiratory protective equipment to only those employees who are medically qualified to wear respiratory protective equipment.
- Management shall ensure that employees are trained in the use of respiratory protection prior to being assigned to an activity that requires its use.



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- Management shall provide the means for the maintenance of respiratory protection as required.

Health and Safety Representative

- Health and Safety Representatives shall determine appropriate respiratory protection for each job. The decision logic for this selection shall be documented in the Project HASP.
- Health and Safety Representatives shall monitor compliance with the various aspects of this program, provide technical assistance regarding respirator selection and use, evaluate the effectiveness of the RPP, and support respirator training and fit testing at locations under their control.
- Health and Safety Representatives shall conduct regular audits to determine compliance with this procedure. This audit can include a review of maintenance, training, medical and air monitoring records, and review the status of this procedure with regard to current regulatory requirements.
- Health and Safety Representatives shall maintain or oversee maintenance of all other records required by this RPP and shall provide for the training and fit testing of personnel assigned respiratory protective equipment.
- Health and Safety Representatives shall appoint a RPP Coordinator for each location which uses or may have a need to use respiratory protection. The Health and Safety Representative must assure the RPP Coordinator has the necessary training to fulfill his/her responsibilities.

RPP Coordinator

- The RPP Coordinator shall be responsible for cleaning, maintenance, and storage of all respirators not routinely used or not individually assigned.
- The RPP Coordinator shall maintain respirator supplies, including spare parts; submit purchase requests for new equipment; and assure that sufficient quantities of cartridges are available for each field office/project.
- The RPP Coordinator shall assure that air supply and emergency respiratory protection is properly inspected and maintained.
- Respirators shall be repaired by either qualified personnel under the direction of the RPP Coordinator, or by contracted supplier.



- The RPP Coordinator shall maintain models and sizes of respirators available for selection and fitting.
- The RPP Coordinator shall conduct fit testing.

Training Department

- Records pertaining to training and fit testing will be maintained by the Training Department.

Employee

- The employee shall use the provided respiratory protective equipment when instructed to do so in accordance with training received.
- The employee shall clean, disinfect, and properly store the assigned respirator, unless other arrangements are made on a project level.
- The employee shall guard against damage to the assigned respirator.
- The employee shall inspect the respirator before each use and after cleaning.
- The employee shall report any malfunction of the respirator immediately to their supervisor and/or the RPP Coordinator.
- The employee shall report to their supervisor any change in their medical status that may impact their ability to wear a respirator safely.

5.4.2 Use of Corrective Lens Eyewear. In general, contact lenses are permitted to be worn when respiratory protection is used. Although in certain instances, client- or project-specific rules may not allow for their use.

If an employee chooses not to wear contact lenses, management shall assure that the appropriate frames or ophthalmic device attachments are obtained and provided at no cost to the employee.

5.4.3 Obstruction of Face Seal. Employees who wear respirators are required to be clean shaven to the extent that there is no obstruction between the wearer's skin and the facepiece. Trimmed mustaches and facial hair which does not interfere with the seal are allowable.

In addition, respirators shall not be worn when conditions prevent a good face-to-facepiece seal such as corrective lenses or goggles, or other personal protective equipment.

5.5 Instruction, Training, and Fit Test

5.5.1 Instruction and Training. The Training Department shall provide a standard respiratory protective equipment training program for use by qualified personnel such as the Health and Safety Representative or RPP Coordinator. The Training Department will support training at the project location if the project does not have the qualified personnel and/or the equipment to support its own program. As an alternative, the project location may use a respiratory manufacturer's training program if the program meets company requirements, a competent person conducts the training, adequate equipment is available for demonstration, and fit testing is conducted along guidelines established in this procedure. The Training Department must approve all alternative training methods.

The basic respirator training program shall include, as a minimum, the following:

- Training and annual retraining of employees in the selection, use, maintenance, and limitation of each respirator type used.
- Instruction on the nature of the respiratory hazards and potential health effects resulting from exposure.
- Opportunity for "hands on" experience with the respiratory protective equipment.
- Proper fitting, including demonstrations and practice in wearing, adjusting, and determining the fit of the respirator. A selection of respirators shall be available to determine the most comfortable respirator and the best fit.
- Instruction on how to test the face-to-facepiece seal.
- A familiarization period of wear in ambient air.
- For APRs, wearing the respirator in a test atmosphere (typically irritant smoke) for qualitative fit testing. The qualitative fit test shall follow the guidelines outlined in Section 5.5.2.
- Training to recognize and cope with emergency situations (including respirator failure)
- Training and fit testing shall be repeated annually, unless specific OSHA regulations require a more frequent time period (e.g., asbestos, lead operations). Each person receiving training shall complete the Respirator Fit Test Form (Attachment 5).



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- Training records will be maintained by the Training Department and the location Health and Safety Representative. On-site records of training and fit testing will be maintained as required by specific regulation (e.g., asbestos work) (refer to Section 5.8).
- It is the responsibility of the RPP Coordinator to verify that all project personnel meet the requirements of this RPP.

5.5.2 Fit Testing. Prior to the use of any negative or positive pressure tight-fitting facepiece, the employee must be fit tested.

- All employees assigned to operations requiring the use of respiratory protective equipment shall have been fit tested within 12 months, or as required by specific regulations (e.g., asbestos, lead operations). Fit test and qualification cards (or a copy of the completed Attachment 5) must be available during operations.
- The employee shall be fit tested with the same size and model as they are expected to wear.
- Qualitative fit test (QLFT) shall be used when a protection factor of 10 or less is required for a negative pressure respirator.
- Quantitative fit test (QNFT) shall be used when a protection factor of greater than 10 is required for a negative pressure respirator. When executing the QNFT, the acceptable test result is 100 for tight fitting half-facepiece respirators and 500 for full-facepiece respirators.
- Fit testing for tight-fitting atmosphere supplying respirators and tight-fitting APRs shall be in a negative pressure mode regardless of the mode of operation that is used for respiratory protection.
- Assessment of comfort shall be made after allowing adequate time for this evaluation. This evaluation shall include reviewing the following points with the employee: positioning of the mask on nose, room for eye protection if required, room to talk, and positioning of the mask on the face and cheeks.
- The following criteria shall be used to help determine the adequacy of the respirator fit: chin properly placed, strap tension, fit across the nose bridge, and tendency to slip.



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- If physical obstruction (e.g., facial hair, eyeglasses) interferes with the face-to-facepiece seal, then it shall be altered or removed so as to eliminate any interference and allow for a satisfactory fit. If the employee refuses to alter the physical obstruction, then they shall be denied a satisfactory fit report and referred to his/her supervisor for consideration.
- The fit test protocol (Attachment 4) shall be followed. The Health and Safety Representative and Training Department shall determine which fit test protocol shall be followed depending upon the situation.

5.6 Maintenance Program

Each RPP Coordinator is responsible for verifying the respirator maintenance program is implemented in an effective manner for the facility or project site, the working conditions, and the potential hazards involved. As a minimum, the following aspects must be implemented:

- Inspection
- Cleaning and sanitizing
- Repair
- Respirator storage
- Inspection and repair documentation, as required
- Compliance with manufacturer recommendations.

Detailed information regarding cleaning, inspection, maintenance, and storage is found in Attachment 7. The RPP Coordinator shall verify compliance with the maintenance program by periodic inspections and field audits.

5.6.1 Inspection

- All respiratory protective equipment systems shall be inspected by the wearer for defects and/or deterioration immediately prior to and after each use.
- Any defects shall be reported to their supervisor immediately and the respirator removed from use until it can be repaired or replaced.
- Respiratory protective equipment systems not used routinely (including all SCBAs and equipment designated only for emergency use) shall be inspected before and after each use and at least every 30 days. Cylinders shall be recharged whenever the pressure falls below 90 percent of the manufacturer's recommended pressure level. This inspection shall be documented by some method on the unit (i.e., tag). Records of inspections shall be kept through appropriate documentation. Attachment 6 provides an example of inspection documentation for SCBAs. At a minimum, these records will include: date, inspector, and any unusual



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finding or condition. Any repairs or modifications shall be documented in detail.

- General field inspection shall include a check of the following: tightness of all connections, facepiece, valves, and any connecting tubes or filtering elements.
- Employees who are manufacturer-qualified repair technicians shall be used for all maintenance beyond field inspections, tests, and user-performed cleaning.
- Air supplied respiratory systems shall be inspected by a manufacturer's authorized representative at the manufacturer's recommended schedule. Manufacturers typically require an annual flow test and a complete overhaul every 5 to 7 years.
- **Specific inspection procedures are outlined in Attachment 7.**

5.6.2 Cleaning and Sanitizing. Employees maintaining their own respirators shall be thoroughly briefed on how to clean and disinfect them. On projects where employees clean their own respirator, the generally accepted procedure involves washing with detergent and warm water using a soft brush, submersion in sanitizing agent, thoroughly rinsing in clean water, drying in a clean place, and storage in sealed plastic bags or equivalent. Precautions to be taken to prevent damage from rough handling during this procedure are detailed in Attachment 7.

At locations where employees share respirators, a centralized cleaning and maintenance facility with specialized equipment and/or materials and personnel trained in respirator maintenance must be established. Cleaning and inspection is primarily the responsibility of the user.

5.6.3 Repair. The company will only use respiratory protective equipment that is physically sound.



- If defects are found during any inspection, two remedies are possible. If parts and trained personnel are available, repair and/or adjustment may be made immediately. If parts or trained repair people are unavailable, the device shall be removed from service until it can be repaired. Under no circumstances shall a device that is known to be defective remain in service.
- Replacement or repair shall be done by adequately trained personnel. For negative pressure respirators, the Health and Safety Representative or RPP Coordinator may train or supervise personnel in the replacement of items such as inhalation/exhalation valves, head harness, cartridge adapters, and lenses. For air-supplied respirators, field repairs are limited to replacement of head harness and lenses. All other work must be completed by a factory-certified repair person.

Repair shall only be made with parts designed for the respirator. Substitution of parts from a different brand or type invalidates the respirator's approval and is prohibited.

5.6.4 Storage. Respirators must be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture, damaging chemicals, and mechanical damage.

- Respirators shall be stored in such a manner that the facepiece, exhalation valve, and straps are not distorted.
- Respirators shall be stored in sealable containers (e.g., ziplock bags) after cleaning and disinfecting.
- The storage location of emergency respiratory protection shall be readily accessible and prominently identified.
- Respirators shall be stored in an area free of contamination.

5.7 Field Use

The following guidelines for the use of respirators (or equivalent) shall be incorporated into the Project HASP as appropriate. Additional guidelines may be required based on working conditions and hazards involved. Each location where respiratory protective equipment is required or worn shall include in the Project HASP justification for the selected respiratory protective equipment systems worn as outlined in Section 5.2 of this procedure.

5.7.1 General Requirements. The following general requirements shall be followed whenever respiratory protection is used:



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- Employees shall be allowed to leave the regulated area to readjust the facepiece or to wash their faces and to wipe clean the facepieces of their respirators in order to minimize potential skin irritation associated with respirator use.
- Respiratory protective equipment shall not be passed on from one person to another until it has been cleaned and sanitized, per program requirements.
- Respirators will be inspected, and a positive/negative pressure test performed prior to each use.
- Entry into oxygen-deficient (< 19.5 percent O₂) atmospheres, Immediately Dangerous to Life and Health (IDLH) atmospheres, or areas requiring EPA Level A protection is prohibited without the prior approval of the Vice President, Health and Safety or the CIH assigned to the business line.
- Head coverings such as Tyvek hoods shall not be allowed to pass between the face-to-facepiece seal.
- The harness straps of tight-fitting respirators shall not be positioned or worn over hard hats.

5.7.2 Specific Requirements. The following information details specific requirements by respirator class:

Air Purifying Systems

- When APRs are worn, new filter elements shall be installed at the beginning of operations. The filter elements shall be changed whenever the ESLI (color indicators) indicates that cartridge life has expired (e.g., mercury cartridges). When no ESLIs are available, filter replacement will be based on the calculations performed by the Health and Safety Representative. Additionally, the cartridges will be replaced if "breakthrough" is perceived or whenever an increase in breathing resistance is detected. In most cases, the cartridges will be replaced a minimum of once daily, usually at the end of the work shift.

Powered Air Purifying Systems

- When PAPRs are worn, employees shall change filter elements after each day's activities. The filter elements shall be changed whenever the ESLI (color indicators) indicates that cartridge life has expired (e.g., mercury cartridges). When no ESLIs are available, filter replacement will be



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based on the calculations performed by the Health and Safety Representative. Additionally, the cartridges will be replaced if "break-through" is perceived or when airflow through filter elements decreases to an unacceptable level as indicated by the manufacturer's test device.

Compressed Air

- Compressed air used for breathing shall meet at least the requirements of the specification for Grade D breathing air or better (D, E, or G; not A, K, or L) as described in the American National Standard Commodity Specification for Air, ANSI/CGA G-7.1-1989. Further information is provided in Attachment 7, Guide to Respiratory Protective Equipment Cleaning, Inspection, Maintenance, and Storage.
- Breathing air suppliers must provide certification of analysis stating conformance, as a minimum, to Grade D breathing air standards as previously referenced for each cylinder and/or air lot.
- Air delivered in bulk, e.g., tube trailers, shall have each tube or unit, or a representative number of tubes or units verified as to oxygen content prior to using that tube.
- Pure oxygen shall NOT be used at any time in open-circuit SCBAs or airline respirators.
- Breathing air cylinders shall be legibly identified with the word "AIR" by means of stenciling, stamping, or labeling as near to the valve end as practical.
- Breathing air cylinders may be stored on their sides provided the valve caps are in place.

Supplied Air Breathing Systems

- Airline couplings shall be incompatible with outlets for other gas systems to prevent inadvertent servicing of airline respirators with nonrespirable gases or oxygen.
- Standard airline couplings for breathing air systems are Foster quick connect fittings with locking dots. Hansen quick connect fitting may also be used, but must not be used where they can be inadvertently actuated and disconnected. For example, Hansen fittings could be used at the regulator connection, but not on the airline unless protected from disconnection by some other means.



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- The hose line length shall not exceed 300 feet from the air bank regulator to the user.
- No more than three connections, excluding the connection to the regulator and final connection to the respirator, shall be between the breathing air cylinders and the user.
- Breathing air hose shall be protected from direct contact with chemical materials which may permeate the hose. Acceptable methods of protection include suspension of the hose from the surface or covering with a commercially available sleeve or visqueen. Breathing air hose which has become contaminated will be removed from service and disposed of properly.
- The breathing air regulator shall be adjusted to provide air pressure as per the manufacturer's recommendations. For Survivair units, this pressure shall be between 80 to 125 psi pressure.
- Cascade systems shall be equipped with low pressure warning alarms or similar warning devices to indicate air pressure in the manifold below 500 psi.
- When a cascade system is used to supply breathing air, a worker outside the Exclusion Zone shall be assigned as safety standby within audible range of the low pressure alarm.
- When a cascade system is used to recharge SCBA air cylinders, it shall be equipped with a high-pressure supply hose and coupling rated at a capacity of at least 3,000 psi. The supply hose and coupling shall be relatively short (≤ 3 feet) and secured to prevent whipping when pressurized.
- Large supplied air cylinders shall be stored and handled to prevent damage to the cylinder or valve. Cylinders shall be stored upright with the protective valve cover in place and in such a way (e.g., supported with substantial rope or chain in the upper one-third of the cylinder, or in racks designed for the purpose) as to prevent the cylinder from falling. Cylinders shall not be dropped, dragged, rolled, or allowed to strike each other or to be struck violently. Cylinders shall never be exposed to temperatures exceeding 125°F. Cylinders with visible external damage, evidence of corrosion, or exposure to fire shall not be accepted or used.



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- Only cylinders within current hydrostatic test periods shall be used. For fiber wrapped bottles designated by the DOT-E label, hydrostatic testing shall be completed every 3 years. Maximum service life for these cylinders is 15 years. Steel or aluminum cylinders shall be hydrostatically tested every 5 years. No maximum service life is established for steel or aluminum cylinders.
- SCBAs shall only be used in the positive pressure mode when in the Exclusion Zone.
- Standby SCBA equipment must be present when air supply systems are used in IDLH or potentially IDLH atmospheres.

Escape/Egress Units

- These respirators are intended for use in areas where escape with a short-term (5 minute) air supply is necessary. They may be used as adjuncts to airline respirators as a backup air supply, or as independent emergency devices in areas where respiratory protective equipment is not normally required.
- Appropriate training shall be accomplished and documented prior to assigning employees to tasks or locations subject to the use of these respirators.
- Escape/egress units (5-minute air supply) shall never be used as primary standby respirators for confined space entry.
- Escape/egress units shall never be used to enter, or continue working in, a hazardous atmosphere.

5.7.3 IDLH Atmospheres. For all IDLH atmospheres, the company shall ensure that:

- One employee or, when needed, more than one employee is located outside the IDLH atmosphere.
- Visual, voice, or signal line communication is maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere.
- The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue.



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- The employer or designee is notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue.
- The employer or designee authorized to do so by the employer, once notified, provides necessary assistance appropriate to the situation.
- Employee(s) located outside the IDLH atmosphere are equipped with:
 - Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied air respirator with escape/egress unit.
 - Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry. Equivalent means of rescue can be considered.

5.8 Recordkeeping

The following documents must be part of the site recordkeeping program:

- Employees' medical clearances for respirator use
- Respirator training and fit testing forms.

5.9 Program Evaluation

This RPP shall be reviewed annually at the direction of the Vice President, Health and Safety.

6.0 EXCEPTION PROVISIONS

Variations and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variations.

7.0 CROSS REFERENCES

Title 29, Code of Federal Regulations, Section 1910.134.

AIHA, *Respiratory Protection, A Manual and Guideline*, 1980.

American National Standards Institute Practices for Respiratory Protection Z88.2-1992 (or most recent publication)

NIOSH, *Certified Equipment List* (most recent version)



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Company Health and Safety Procedures:

- HS013 Health and Safety Procedure Variances
- HS040 Stop Work Authority
- HS050 Training Requirement
- HS052 Health and Safety Plans
- HS102 Management of Employee Exposure and Medical Records
- HS104 Employee Notification of Industrial Hygiene Monitoring Records
- HS300 Confined Spaces
- HS304 Compressed Gas Cylinders
- HS600 Personal Protective Equipment

8.0 ATTACHMENTS

1. Responsibility Matrix
2. List of Approved Respiratory Protective Equipment
3. Respirator Type, Protection Factor, and Fit Testing Method
4. Mandatory Respirator Fit Test Protocol
5. Respirator Fit Test Form
6. Emergency Respiratory Protective Equipment Monthly Inspection Checklist
7. Guide to Respiratory Protective Equipment Cleaning, Inspection, Maintenance, and Storage



**ATTACHMENT 1
 RESPIRATORY PROTECTION PROGRAM**

Responsibility Matrix

Action	Procedure Section	Responsible Party					
		Employee	Health and Safety Representative	Project/ Location Management	VP, Health and Safety	Training	RPP Coordinator
Issue, Revise, and Maintain Procedure	3.1				X		
Assure Proper Selection of Respirators	5.2.2		X				
Review Purchase Requests for Respiratory Equipment	5.2.3		X				
Conduct Fit Testing	5.4		X				X
Assure Compliance with RPP	5.4		X	X			X
Assure Training	5.4		X	X			X
Audit Program Compliance	5.4		X		X		X
Assist/Approve Local Training Program	5.4					X	
Maintenance Program	5.6	X	X	X			X
Field Use	5.7	X	X	X			X
Recordkeeping	5.8	X	X			X	X
Program Evaluation	5.9				X		



ATTACHMENT 2

LIST OF APPROVED RESPIRATORY PROTECTIVE EQUIPMENT

AIR PURIFYING RESPIRATORS (APR)					
Respirator Class	Respirator Type	Respiratory Performance	Manufacturer	Model Name	Model Number
Standard APR	Half-Face	Negative Pressure	Survivair	Blue 1	2100-10 S 2200-10 M 2300-10 L
			MSA	Comfo II	479529 S 479428 M 479530 L
	Full-Face	Negative Pressure	Survivair	20/20	202062 S 202072 M 202082 L
			MSA	Ultra Twin	480263 S 480259 M 480267 L
Powered APR	Hood	Continuous Positive Pressure	Survivair	PAPR	5200-15
			MSA	Optimair 6	480251 S 480247 M 480255 L

SUPPLIED AIR RESPIRATORS (SAR)					
Respirator Class	Respirator Type	Respiratory Performance	Manufacturer	Model Name	Model Number
Airline SAR	Full-Face	Positive Pressure Demand	Survivair	Panther	P968455
			MSA	Premaire	497291
SCBA SAR	Full-Face	Positive Pressure Demand	Survivair	Cougar	P 9643310
			MSA	MMR WorkMask 2216	Varies on Components
Emergency	Escape/Egress Unit	Continuous Flow	Survivair	5 min. EEGA	9750870
			MSA	Custom Air V	484353



ATTACHMENT 3

RESPIRATOR TYPE, PROTECTION FACTOR, AND FIT TESTING METHOD

Respirator Type	Protection Factor	QLFT	QNFT
Half-Face, Negative Pressure (<100 Fit Factor) ¹	10	Yes	Yes
Full-Face, Negative Pressure (<100 Fit Factor) Used in Atmosphere up to 10 Times the PEG	10	Yes	Yes
Full-Face, Negative Pressure (>100 Fit Factor) Used in Atmospheres Over 10 Times the PEG ²	50	No	Yes
PAPR	100	Yes	Yes
SCBA/SAR Used in Positive Pressure (Pressure Demand Mode)	10,000	Yes	Yes

Footnotes:

1. If quantitatively fit tested, the device must demonstrate a fit factor of at least 100.
2. If quantitatively fit tested, the device must demonstrate a fit factor of at least 500.



ATTACHMENT 4

MANDATORY RESPIRATOR FIT TEST PROTOCOL

OSHA-Accepted Fit Test Protocols

A. Fit Testing Procedures - General Requirements

The company shall conduct fit testing using the following procedures. The requirements in this attachment apply to all OSHA-accepted fit test methods, both QLFT and QNFT. There are several OSHA-accepted fit test protocols for QLFT. This procedure includes only the irritant smoke protocol since it requires less equipment and is more practical for field use.

1. The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.
2. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension, and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.
3. The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.
4. The test subject shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit.
5. The more acceptable facepieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in the following Item A.6. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
6. Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:
 - a. Position of the mask on the nose;
 - b. Room for eye protection;
 - c. Room to talk; and
 - d. Position of mask on face and cheeks.
7. The following criteria shall be used to help determine the adequacy of the respirator fit:
 - a. Chin properly placed;
 - b. Adequate strap tension, not overly tightened;
 - c. Fit across nose bridge;
 - d. Respirator of proper size to span distance from nose to chin;



- e. Tendency of respirator to slip; and
 - f. Self-observation in mirror to evaluate fit and respirator position.
8. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests.
9. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache, or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.
10. If a test subject exhibits difficulty in breathing during the tests, he/she shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing his/her duties.
11. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.
12. *Exercise Regimen:* Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.
13. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.
14. *Test Exercises:* The following test exercises are to be performed for all fit testing methods prescribed in this attachment, except for the controlled negative pressure (CNP) method. A separate fit testing exercise regimen is contained in the CNP protocol.

Each test exercise shall be performed for one minute, except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

The test subject shall perform exercises, in the test environment, in the following manner:

- a. *Normal Breathing:* In a normal standing position, without talking, the subject shall breathe normally.
- b. *Deep Breathing:* In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.

- c. *Turning Head Side to Side*: Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.
- d. *Moving Head Up and Down*: Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).
- e. *Talking*: The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can count backward from 100, recite a memorized poem or song or read from a prepared text such as the Rainbow Passage.

Rainbow Passage:

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

- f. *Grimace*: The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT.)
- g. *Bending Over*: The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.
- h. *Normal Breathing*: Same as Item A.14.a.



B. Qualitative Fit Test (QLFT) Protocols

1. General:

- a. The employer shall ensure that persons administering QLFT are able to perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.
- b. The employer shall ensure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed.

2. Irritant Smoke (Stannic Chloride) Protocol: This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

a. General Requirements and Precautions:

1. The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).
2. Only stannic chloride smoke tubes shall be used for this protocol.
3. No form of test enclosure or hood for the test subject shall be used.
4. The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor shall take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.
5. The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the buildup of irritant smoke in the general atmosphere.

b. Sensitivity Screening Check: The person to be tested must demonstrate his/her ability to detect a weak concentration of the irritant smoke.

1. The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.
2. The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.
3. The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating



properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.

c. Irritant Smoke Fit Test Procedure:

1. The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).
2. The test subject shall be instructed to keep his/her eyes closed.
3. The test operator shall direct the stream of irritant smoke from the smoke tube toward the face seal area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the facepiece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within 6 inches of the respirator.
4. If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.
5. The exercises identified in Item A.14 of this attachment shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of six inches.
6. If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire sensitivity check and fit test procedure.
7. Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.
8. If a response is produced during this second sensitivity check, then the fit test is passed.

C. Quantitative Fit Test (QNFT) Protocols

The following quantitative fit testing procedures have been demonstrated to be acceptable: quantitative fit testing using a nonhazardous test aerosol (such as corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS], or sodium chloride) generated in a test chamber, and employing instrumentation to quantify the fit of the respirator; quantitative fit testing using ambient aerosol as the test agent and appropriate instrumentation (condensation nuclei counter) to quantify the respirator fit; quantitative fit testing using controlled negative pressure and appropriate instrumentation to measure the volumetric leak rate of a facepiece to quantify the respirator fit.

1. General:



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- a. The employer shall ensure that persons administering QNFT are able to calibrate equipment and perform tests properly, recognize invalid tests, calculate fit factors properly, and ensure that test equipment is in proper working order.
 - b. The employer shall ensure that QNFT equipment is kept clean, and is maintained and calibrated according to the manufacturer's instructions so as to operate at the parameters for which it was designed.
2. Ambient Aerosol Condensation Nuclei Counter (CNC) Quantitative Fit Testing Protocol: The ambient aerosol CNC quantitative fit testing (Portacount™) protocol quantitatively fit tests respirators with the use of a probe. The probed respirator is only used for quantitative fit tests. A probed respirator has a special sampling device, installed on the respirator, that allows the probe to sample the air from inside the mask. A probed respirator is required for each make, style, model, and size that the employer uses and can be obtained from the respirator manufacturer or distributor. The CNC instrument manufacturer, TSI Inc., also provides probe attachments (TSI sampling adapters) that permit fit testing in an employee's own respirator. A minimum fit factor pass level of at least 100 is necessary for a half-mask respirator and a minimum fit factor pass level of at least 500 is required for a full facepiece negative pressure respirator. The entire screening and testing procedure shall be explained to the test subject prior to conducting the screening test.



a. Portacount™ Fit Test Requirements:

1. Check the respirator to make sure the sampling probe and line are properly attached to the facepiece and that the respirator is fitted with a particulate filter capable of preventing significant penetration by the ambient particles used for the fit test (e.g., NIOSH 42 CFR 84 Series 100, Series 99, or Series 95 particulate filter) per manufacturer's instruction.
2. Instruct the person to be tested to don the respirator for five minutes before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable. This individual shall already have been trained on how to wear the respirator properly.
3. Check the following conditions for the adequacy of the respirator fit: chin properly placed; adequate strap tension, not overly tightened; fit across nose bridge; respirator of proper size to span distance from nose to chin; tendency of the respirator to slip; and self-observation in a mirror to evaluate fit and respirator position.
4. Have the person wearing the respirator do a user seal check. If leakage is detected, determine the cause. If leakage is from a poorly fitting facepiece, try another size of the same model respirator, or another model of respirator.
5. Follow the manufacturer's instructions for operating the Portacount™ and proceed with the test.
6. The test subject shall be instructed to perform the exercises in Item A.14 of this attachment.
7. After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried.

b. Portacount™ Test Instrument:

1. The Portacount™ will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The Pass or Fail message will indicate whether or not the test was successful. If the test was a Pass, the fit test is over.
2. Since the pass or fail criterion of the Portacount™ is user programmable, the test operator shall ensure that the pass or fail criterion meet the requirements for minimum respirator performance in this attachment.
3. A record of the test needs to be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; and date tested.

3. Controlled Negative Pressure (CNP) Quantitative Fit Testing Protocol - The CNP protocol provides an alternative to aerosol fit test methods. The CNP fit test method technology is based on exhausting air from a temporarily sealed respirator facepiece to generate and then maintain a constant negative pressure inside the facepiece. The rate of air exhaust is controlled so that a constant negative pressure is maintained in the respirator during the fit test. The level of pressure is selected to replicate the mean inspiratory pressure that causes leakage into the respirator under normal use conditions. With pressure held constant, air flow out of the respirator is equal to air flow into the respirator. Therefore, measurement of the exhaust stream that is required to hold the pressure in the temporarily sealed respirator constant yields a direct measure of leakage air flow into the respirator. The CNP fit test method measures leak rates through the facepiece as a method for determining the facepiece fit for negative pressure respirators. The CNP instrument manufacturer, Dynatech Nevada, also provides attachments (sampling manifolds) that replace the filter cartridges to permit fit testing in an employee's own respirator. To perform the test, the test subject closes his/her mouth and holds his/her breath, after which an air pump removes air from the respirator facepiece at a pre-selected constant pressure. The facepiece fit is expressed as the leak rate through the facepiece, expressed as milliliters per minute. The quality and validity of the CNP fit tests are determined by the degree to which the in-mask pressure tracks the test pressure during the system measurement time of approximately five seconds. Instantaneous feedback in the form of a real-time pressure trace of the in-mask pressure is provided and used to determine test validity and quality. A minimum fit factor pass level of 100 is necessary for a half-mask respirator and a minimum fit factor of at least 500 is required for a full facepiece respirator. The entire screening and testing procedure shall be explained to the test subject prior to conducting the screening test.

a. CNP Fit Test Requirements:

1. The instrument shall have a non-adjustable test pressure of 15.0 mm water pressure.
2. The CNP system defaults selected for test pressure shall be set at 15 mm of water (-0.58 inches of water) and the modeled inspiratory flow rate shall be 53.8 liters per minute for performing fit tests.

(Note: CNP systems have built-in capability to conduct fit testing that is specific to unique work rate, mask, and gender situations that might apply in a specific workplace. Use of system default values, which were selected to represent respirator wear with medium cartridge resistance at a low-moderate work rate, will allow inter-test comparison of the respirator fit.)

3. The individual who conducts the CNP fit testing shall be thoroughly trained to perform the test.
4. The respirator filter or cartridge needs to be replaced with the CNP test manifold. The inhalation valve downstream from the manifold either needs to be temporarily removed or propped open.
5. The test subject shall be trained to hold his/her breath for at least 20 seconds.
6. The test subject shall don the test respirator without any assistance from the individual who conducts the CNP fit test.



7. The QNFT protocol shall be followed according to Item C.1 of this attachment with an exception for the CNP test exercises.

b. CNP Test Exercises:

1. Normal Breathing: In a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject needs to hold head straight ahead and hold his/her breath for 10 seconds during the test measurement.
2. Deep Breathing: In a normal standing position, the subject shall breathe slowly and deeply for 1 minute, being careful not to hyperventilate. After the deep breathing exercise, the subject shall hold his/her head straight ahead and hold his/her breath for 10 seconds during test measurement.
3. Turning Head Side to Side: Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side for 1 minute. The head shall be held at each extreme momentarily so the subject can inhale at each side. After the turning head side to side exercise, the subject needs to hold head full left and hold his/her breath for 10 seconds during test measurement. Next, the subject needs to hold head full right and hold his/her breath for 10 seconds during test measurement.
4. Moving Head Up and Down: Standing in place, the subject shall slowly move his/her head up and down for 1 minute. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling). After the moving head up and down exercise, the subject shall hold his/her head full up and hold his/her breath for 10 seconds during test measurement. Next, the subject shall hold his/her head full down and hold his/her breath for 10 seconds during test measurement.
5. Talking: The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song for 1 minute. After the talking exercise, the subject shall hold his/her head straight ahead and hold his/her breath for 10 seconds during the test measurement.
6. Grimace: The test subject shall grimace by smiling or frowning for 15 seconds.
7. Bending Over: The test subject shall bend at the waist as if he/she were to touch his/her toes for 1 minute. Jogging in place shall be substituted for this exercise in those test environments such as shroud-type QNFT units that prohibit bending at the waist. After the bending over exercise, the subject shall hold his/her head straight ahead and hold his/her breath for 10 seconds during the test measurement.
8. Normal Breathing: The test subject shall remove and re-don the respirator within a one-minute period. Then, in a normal standing position, without



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talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject shall hold his/her head straight ahead and hold his/her breath for 10 seconds during the test measurement. After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of a respirator shall be tried.

c. CNP Test Instrument:

1. The test instrument shall have an effective audio warning device when the test subject fails to hold his/her breath during the test. The test shall be terminated whenever the test subject failed to hold his/her breath. The test subject may be refitted and retested.
2. A record of the test shall be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; and date tested.



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**ATTACHMENT 5
 RESPIRATOR FIT TEST FORM**

NAME (Please Print): _____ SIGNATURE: _____
 SSN: _____ - _____ - _____ HOME DEPT: _____ DATE: _____
 CONDUCTED BY: _____ LOCATION: _____

FIT TEST PROTOCOL

QUANTITATIVE:
 Fit Factor _____

QUALITATIVE:
 Irritant Smoke:
 Other (specify):

**TYPE OF RESPIRATOR
 (Circle Appropriate One)**

APR/HF APR/FF SCBA
 SAR/EGS PAPR OTHER

Respirator Manufacturer: _____
 Model: _____
 Size: _____

INITIAL:

1. I understand why respiratory protection is needed and where and when it should be used.
2. I know how to use this respirator properly.
3. I know how to clean and inspect this respirator.
4. I understand the limitations and restrictions of this respirator.
5. I wore this respirator in normal air and performed the user seal.
6. I wore this respirator equipment in a test atmosphere.
7. I understand that a good gas-tight face seal cannot be achieved with obstructions such as facial hair or glasses.
8. I understand that corrective lenses compatible with the full facepiece are available by my manager.

ATTACHMENT 6



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EMERGENCY RESPIRATORY PROTECTIVE EQUIPMENT MONTHLY INSPECTION CHECKLIST

INSPECTED BY (Print): _____ DATE: _____

BACKPACK#: _____

AIR CYLINDER#: _____

			PASS	FAIL
A. Backpack and Harness Assembly	1. Straps	Inspect for complete set Inspect for damaged straps	<input type="checkbox"/>	<input type="checkbox"/>
	2. Buckles	Inspect for mating ends Check locking function	<input type="checkbox"/>	<input type="checkbox"/>
	3. Backplate and Cylinder Lock	Inspect backplate for cracks, missing screws/rivets Inspect cylinder hold down strap Inspect strap tightener	<input type="checkbox"/>	<input type="checkbox"/>
B. Cylinder and Cylinder Valve Assembly	1. Cylinder	Cylinder tight to backplate Current Hydrostatic Test Inspect cylinder for dents, gouges Is cylinder at least 90% filled?	<input type="checkbox"/>	<input type="checkbox"/>
	2. Head and Valve Assembly	Inspect cylinder valve lock for presence Inspect cylinder gauge for condition Proper function of cylinder valve lock Test for cylinder leakage	<input type="checkbox"/>	<input type="checkbox"/>
C. Regulator and High Pressure Hose	1. High Pressure Hose and Connector	Leakage in hose Leakage in hose to cylinder connector	<input type="checkbox"/>	<input type="checkbox"/>
	2. Regulator and Low Pressure Alarm	Read regulator gauge (at least 1,000 psi) Low pressure alarm sounds at 500 psi Test integrity of diaphragm Test for positive pressure Test bypass system	<input type="checkbox"/>	<input type="checkbox"/>
D. Facepiece and Corrugated Breathing Tube	1. Facepiece	Inspect harness for deterioration Inspect facepiece body for deterioration Inspect lens Inspect exhalation valve	<input type="checkbox"/>	<input type="checkbox"/>
	2. Breathing Tube and Connector	Inspect breathing tube for deterioration Inspect connector for threads and gasket	<input type="checkbox"/>	<input type="checkbox"/>
	3. Leak Test and Cleaning	Perform negative pressure test on facepiece/ breathing tube Clean and sanitize facepiece	<input type="checkbox"/>	<input type="checkbox"/>
Note: Any item marked "Fail" will place the equipment out of service until repaired or replaced.				

ATTACHMENT 7

GUIDE TO RESPIRATORY PROTECTIVE EQUIPMENT: CLEANING, INSPECTION, MAINTENANCE, AND STORAGE

A program for the maintenance of respirators shall include the following:

- Cleaning and sanitizing
- Inspection for defects
- Maintenance and repair
- Storage
- Assurance of breathing air quality.

The following maintenance, inspection, and storage program is recommended.

1. **Cleaning and Sanitizing**

Respirators issued to an individual shall be cleaned and sanitized regularly. Each respirator shall be cleaned and sanitized before being worn by different individuals. Respirators intended for emergency use shall be cleaned and sanitized after being used. The following shall be completed in addition to the manufacturer's instruction for cleaning:

- a. Remove, when necessary, the following components of respiratory inlet covering assemblies before cleaning and sanitizing:
 1. Filters, cartridges, canisters
 2. Speaking diaphragms
 3. Valve assemblies
 4. Any components recommended by the respirator manufacturer.
- b. Wash respiratory inlet covering assemblies in warm (43°C or 110°F maximum temperature) cleaner sanitizer solution. A stiff bristle (not wire) brush may be used to facilitate removal of dirt or other foreign material.
- c. Rinse the respirator inlet covering assemblies in clean, warm (43°C or 110°F maximum temperature) water.
- d. Drain all water, and air dry the respiratory inlet covering assemblies.
- e. Clean and sanitize all parts removed from the respiratory inlet covering assemblies as recommended by the manufacturers
- f. If necessary to remove foreign material, hand wipe respiratory inlet covering assemblies, all parts, and all gasket- and valve-sealing surfaces with damp, lint-free cloth.
- g. Inspect parts and replace any that are defective.



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- h. Reassemble parts on respirator inlet covering assemblies.
- i. Visually inspect and, where possible, test parts and respirator assemblies for proper function.
- j. Place assembled respirators in appropriate containers for storage.

Machines may be used to expedite the cleaning, sanitizing, rinsing, and drying of large numbers of respirators. Extreme care shall be taken to ensure against tumbling, agitation, or exposure to temperatures above those recommended by the manufacturer (normally 43 °C or 100 °F maximum), as these conditions are likely to result in damage to the respirators.

Ultrasonic cleaners, clothes washing machines, dishwashers, and clothes dryers have been specially adapted and successfully used for cleaning and drying respirators.

Cleaner sanitizers that effectively clean the respirator and contain a bactericidal agent are commercially available. The bactericidal agent frequently used is a quaternary ammonium compound. Strong cleaning and sanitizing agents and many solvents can damage rubber or elastomeric respirator parts. These materials must be used with caution.

Alternatively, respirators may be washed in a detergent solution and then sanitized by immersion in a sanitizing solution. Some sanitizing solutions that have proven effective are: (a) a hypochlorite (bleach) solution (50 parts per million chlorine), 2-minute immersion; (b) an aqueous iodine solution (50 parts per million of iodine), 2-minute immersion; or (c) a quaternary ammonium solution (200 parts per million of quaternary ammonium compounds in water with less than 500 parts per million total hardness), 2-minute immersion.

Inflammation of the skin of the respirator user (dermatitis) may occur if the quaternary ammonium compounds are not completely rinsed from the respirator. The hypochlorite and iodine solutions are unstable and break down with time; they may cause deterioration of rubber or other elastomeric parts and may be corrosive to metallic parts. Immersion times should not be extended beyond the mentioned time periods, and the sanitizers shall be thoroughly rinsed from the respirator parts.

Respirators may become contaminated with toxic materials. If the contamination is light, normal cleaning procedures should provide satisfactory decontamination; otherwise, separate decontamination steps may be required before cleaning.

2. Inspection

The user shall inspect the respirator immediately prior to each use to ensure that it is in proper working condition. After cleaning and sanitizing, each respirator shall be inspected to determine if it is in proper working condition, if it needs replacement parts or repairs, or if it should be discarded. Each respirator stored for emergency or rescue use shall be inspected at least monthly.

Respirator inspection shall include a check for tightness of connections; for the condition of the respiratory inlet covering, head harness, valves, connecting tubes, harness assemblies, hoses, filters, cartridges, canisters, end-of-service indicators, electrical components, and shelf-life date(s); and for the proper function of regulators, alarms, and other warning systems. Each rubber or other elastomeric part shall be inspected for pliability and signs of deterioration. Each air and oxygen cylinder shall be inspected to ensure that it is fully charged according to the manufacturer's instructions.

A record of inspection dates shall be kept for each respirator maintained for emergency or rescue use. Respirators that do not meet applicable inspection criteria shall be immediately removed from service (a temporary replacement assigned) and repaired or permanently replaced.

Inspection of hoop-wrapped air cylinders will follow the recommendations set forth in the Compressed Gas Association, Inc. publication CGA C-6.2-1988, "Guidelines for Visual Inspection & Requalification of Fiber Reinforced High Pressure Cylinders," and will be examined for the following five types of damage:

- Abrasion is damage caused by wearing, grinding, or rubbing away by friction. Abrasions less than 0.005 inch (0.127 mm) deep are acceptable and should have no adverse effects on the safety of the cylinder. Abrasions with isolated groups of fibers exposed or flat spots with a depth greater than 0.005 inch (0.127 mm) but less than 0.0075 inch (0.191 mm) are acceptable if the damage is repaired. Cylinders abraded in excess of 0.0075 inch (0.191 mm) should be taken out of service until professionally inspected.
- Cuts are damage inflicted by a sharp object. Cuts or scratches less than 0.005 inch (0.127 mm) deep are acceptable regardless of length, number, or direction. For cuts greater than 0.005 inch (0.127 mm) deep and up to a depth of 0.015 inch (0.038 mm) with a maximum 1- or 2-inch (25.4 mm or 50.8 mm) length transverse to the fiber direction, the cylinder should be removed from service until repaired. Cylinders with cuts greater than 0.015 inch (0.038 mm) with a maximum greater than 2 inches (50.8 mm) length transverse to the fiber direction or with bare metal showing through must be condemned.
- Impact damage is caused by a cylinder striking or being struck by another object. Impact damage is considered slight if a frosted area is noted in the impact area. These cylinders may be returned to service. Impact damage is severe if evidence of fiber cutting, delamination, and possible structural damage is apparent. Cylinders sustaining severe impact damage should be evaluated using the guidelines for cuts and structural damage.
- Structural damage is damage which causes a visual change in original cylinder configuration. This change can include any evidence of bulges, a cocked end fitting, concave areas on the domes or on the cylinder section, or, if by visual inspection of the cylinder interior, there is evidence of damage involving deformation of the liner. Structurally damaged cylinders must be immediately removed from service and condemned.



- Heat or fire damage to a cylinder is evident by discoloration, charring, or burning of the composite, labels, paint, or plastic components of the valve. Such damage would cause a cylinder to be removed from service and condemned. Note: If the cylinder is only soiled from smoke or other debris and is found to be intact underneath, it may be returned to service.

3. Maintenance and Repair

Replacement of parts or repairs shall be done only by persons trained in proper respirator maintenance and assembly. Replacement parts shall be only those designated for the specific respirator repaired. Reducing or admission valves, regulators, and alarms shall be adjusted or repaired by the respirator manufacturer or a technician trained by the manufacturer. Instrumentation for valve, regulator, and alarm adjustments and tests should be calibrated to a standard traceable to the National Institute of Standards and Technology (NIST), at a minimum of every 3 years.

4. Storage

Respirators shall be stored in a manner that will protect them against physical and chemical agents such as vibration, shocks, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirators shall be stored to prevent distortion of rubber or other elastomeric parts. Respirators shall not be stored in such places as lockers and tool boxes, unless they are protected from contamination, distortion, and damage. Emergency and rescue respirators that are placed in the work areas shall be quickly accessible at all times, and the storage cabinet or container in which they are stored shall be clearly marked.

5. Assurance of Breathing Air Quality

Compressed gaseous air, compressed gaseous oxygen, liquid air, and liquid oxygen used for respiration shall be of high purity. Compressed gaseous air shall meet at least the requirements of the specification for Type I-Grade D breathing air, and liquid air shall meet at least the requirements for Type II-Grade B breathing air as described in ANSI/CGA G-7.1-1989.

The CGA designation for Grade D and Grade E breathing air is as follows:

- Grade D breathing air, as per ANSI/CGA G-7.1-1989, shall contain between 19.5 and 23.5 percent oxygen with the balance predominantly nitrogen, a maximum of 5 mg/m³ oil (condensed), a maximum of 10 ppm carbon monoxide, no pronounced odor, and a maximum of 1,000 ppm carbon dioxide.
- Grade E breathing air, as per ANSI/CGA G-7.1-1989, shall contain between 20 and 22 percent oxygen with the balance predominantly nitrogen, a maximum of 5 mg/m³ oil (condensed), a maximum of 10 ppm carbon monoxide, no pronounced odor, a maximum of 500 ppm carbon dioxide, and 25 ppm total hydrocarbon content (as methane).
- Note: The quality verification for oil is not required for synthesized air whose oxygen and nitrogen components are produced by air liquefaction. Carbon monoxide quality



verification is not required for Grade D breathing air if synthesized air when nitrogen component was previously analyzed and meets National Foundry (NF) specification and when the oxygen component was produced by air liquefaction and meets United States Pharmacopeia (USP) specification.

Compressed gaseous air may contain low concentrations of oil introduced from equipment during processing or normal operation. If high-pressure oxygen passes through an oil- or grease-coated orifice, an explosion or fire may occur. Therefore, compressed gaseous oxygen shall not be used in supplied air respirators or in open-circuit type self-contained breathing apparatus that have previously used compressed air. Oxygen concentrations greater than 23.5 percent shall be used only in equipment designed for oxygen service or distribution.

The dew point of air used to recharge self-contained breathing apparatus shall be -65°F or lower (less than 25 ppm water vapor). The driest air obtainable (dew point of -100°F or lower) should be used for recharging SCBA cylinders to be used in environments with ambient temperatures below -25°F. The dew point of breathing air used with supplied air respirators should be lower than the lowest ambient temperature to which any regulator or control valve on the respirator or air-supplied system will be exposed.

Breathing air couplings shall be incompatible with outlets for nonrespirable plant air or other gas systems to prevent inadvertent servicing of supplied air respirators with nonrespirable gases. **It is recommended that Foster or Hansen fittings be reserved for breathing air systems.** Breathing air outlets shall be labeled.

Breathing air may be supplied to supplied air respirators from cylinders or air compressors. Cylinders shall be tested and maintained in accordance with applicable DOT specifications for shipping containers (49 CFR 173 and 178). Breathing gas containers shall be marked in accordance with ANSI/CGA C-4-1990. Specific test recommendations for purchased breathing air are given in the following table.

Method of Preparation	Analysis Recommended
Compression: Supplier does not fill cylinders with any other gases.	Check 10% of cylinders from each lot for ppm CO and odor.
Compression: Supplier fills cylinders with gases other than air.	Analyze all cylinders for percent oxygen. Check 10% of cylinders from each lot for ppm CO and odor.
Reconstitution.	Analyze all cylinders for percent oxygen. Check 10% of cylinders from each lot for ppm CO and odor.

A compressor shall be constructed so as to avoid entry of contaminated air. For all air compressors, including portable types, the air intake location shall be carefully selected, and monitored closely to ensure continued quality of air supply to the compressor. The system shall be equipped as necessary with a suitable in-line air-purifying sorbent bed and filter to further assure breathing air quality. Maintenance and replacement/refurbishment of



compressor and associated air-purifying/filter media shall be performed periodically, by trained personnel following manufacturer's recommendations and instructions.

As part of acceptance testing, and prior to initial use, representative sampling of the compressor air output shall be performed to ensure that it complies with the requirements in Paragraph 1 of this section. To ensure a continued high-quality air supply, and to account for any distribution system contaminant input, a representative sample should be taken at distribution supply points. Samples should be collected on a periodic basis, as directed by the Program Coordinator. Specific test recommendations are given in the following table.

Type/Sample	Oil Lubricated	Non-Oil Lubricated	Combustion Engine Powered
Water Vapor	✓	✓	✓
Carbon Monoxide	✓		✓
Condensed Hydrocarbon	✓		✓
Carbon Dioxide			✓
Odor	✓	✓	✓

NOTES:

1. When using air compressors, intake location shall be carefully selected and monitored closely to ensure air supplied to the compressor is of adequate quality.
2. No frequency for periodic checks of air quality is specified, due to wide variation in equipment types, use, working environments, and operating experience.
3. Continuous monitoring of temperature and carbon monoxide are not required.
4. For non-oil lubricated compressors that operate at less than 35 psi, no sampling for water is required.
5. These requirements apply to systems designed for breathing air, other air-supply systems need to be evaluated on a case-by-case basis for the type and frequency of testing.

Further details on sources of compressed air and its safe use can be found in CGA G-7-1988.



PROCEDURE

Subject: MOTOR VEHICLE OPERATION: GENERAL REQUIREMENTS

1.0 PURPOSE AND SUMMARY

This procedure prescribes the general requirements for the operation of motor vehicles on company business. All operators of company owned, leased, and rented vehicles, as well as personal vehicles used on company business, are covered by this procedure. U.S. Department of Transportation (DOT) regulated personnel must also comply with the guidelines contained in Procedure HS810. Key elements of this procedure include:

- All employees who drive or may drive on company business must be familiar with the requirements of this procedure and certify their acceptance of the Company Rules for Motor Vehicle Operation (Attachment 2). In addition, the most current version of Attachment 2 must be signed annually during each employee's performance review.
- All new hire candidates shall complete the Pre-employment Driving Record Certification (Attachment 3). This certification will be evaluated via the established point system to determine driving privilege status.
- Employees must report all vehicular citations incurred while on company business to their supervisor. Once reported, the established evaluation criteria in Section 5.4 will be used to determine corrective actions.
- Employees utilizing vehicles while on company business are required to review this procedure and attend a company-designated driver training class.
- Requests for the re-instatement of denied or revoked driving privileges can be made to the appropriate business line health and safety manager.

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- 5.3 Pre-employment Driving Record Point System
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- 5.5 Training
- 5.6 Reinstatement of Driving Privilege
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- 8.0 Attachments

3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

Chargeable Vehicle Accident - Any at-fault vehicle accident meeting any one of the following criteria:

- An individual other than an employee of the company is a party in the accident.
- Property owned by a person or entity other than the company is damaged.
- When only company employees, company owned or leased (not rented) vehicles, and property is involved and damage exceeds \$1,000.00.

Company - All wholly-owned subsidiaries of The IT Group, Inc.

Motor Vehicle - Any passenger vehicle, including trucks, used upon the highway or in private facilities for transporting passengers and/or property. This includes personal vehicles operated on company business. For the purpose of this procedure, off-road vehicles, such as earthmoving equipment, forklifts, non-highway use trucks, etc., are not considered vehicles.

5.0 TEXT

5.1 Company Rules for Motor Vehicle Operation



All employees who will or may be required to operate a company owned, leased, or rented motor vehicle or a personal vehicle used on company business shall acknowledge acceptance of the Company Rules for Motor Vehicle Operation (Attachment 2) prior to such operation. The signed form shall be retained in the employee's personnel file. Each year during performance appraisals, covered employees shall be required to sign a copy of the most current Company Rules for Motor Vehicle Operation, which will then replace the previous copy in the personnel file.

5.2 Pre-employment Evaluation

The local Health and Safety Assistant shall distribute a copy of this procedure to all new hire candidates for the completion of Attachments 2 and 3. Information provided shall be evaluated via the point system in Section 5.3, and the hiring manager advised regarding any hiring or driving privilege restrictions that may apply. Hiring of persons with regular driving duties (e.g., field technicians and leadmen, sales persons, or others with assigned company motor vehicles) may only proceed after the information contained in Attachment 3 is evaluated.

Once Attachment 3 is completed, it is to be faxed to the Corporate Health and Safety Department at (412) 858-3976. The driving status of the prospective employee will be reported to the appropriate Human Resources Department in two to three working days. The local Health & Safety Assistant will notify the appropriate Human Resources manager when the attachments are not returned.

Discrepancies between the certified driving record report and Attachment 3 shall be reviewed with the prospective employee. Deliberate falsification of driving record information will disqualify prospective employees from being hired.

5.3 Pre-employment Driving Record Point System

The following point system will be used to evaluate the driving record of all new hire candidates that can reasonably be expected to operate a motor vehicle during their employment. For contested accidents or citations, conviction/settlement dates shall be used to determine point system applicability.

Pre-employment Driving Record Point System	
Description	Assigned Point Value
Overweight, loss of load, vehicular equipment infraction, etc.	1
Moving violation: speeding, failure to stop, failure to signal turn, etc.	2
At-fault accident	3
Major citation: reckless driving, hit and run, suspended license, speed contest, open container, etc.	6
Driving under the influence	8

If a new hire candidate has accumulated three (3) points or less in the last twelve (12) months or five (5) points or less in the last twenty-four (24) months, they will be given the privilege to drive motor vehicles on company business without restrictions.



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If they accumulate four (4) to six (6) points in the last twelve (12) months or six (6) to eight (8) points in the last twenty-four (24) months, they will be placed on probation for a period of twelve (12) months. They will be afforded the privilege to drive motor vehicles on company business during this probationary period. Any company-related driving infractions (i.e., speeding tickets, at-fault accidents, citations, etc.) accumulated during this probationary period will result in termination of the privilege to drive a motor vehicle on company business.

If the new hire candidate has accumulated seven (7) to eleven (11) points in the last twelve (12) months or nine (9) to fifteen (15) points in the last twenty-four (24) months, they will not be eligible for company driving privileges. Employment can only be offered with the strict understanding of denial of the privilege to drive motor vehicles on company business. After the first twelve (12) months of employment, the employee can petition the Vice President, Health and Safety or his/her designee for reconsideration of driving privileges.

The accumulation of twelve (12) points or more in the last twelve (12) months or sixteen (16) points or more in the last twenty-four (24) months will preclude employment.

5.4 Employee Evaluation Criteria

All employees who may operate a motor vehicle on company business will become familiar with the requirements of this procedure, complete the currently-designated company driver training class, and complete Attachment 2 prior to such operation. The employee driving evaluation criteria is based upon infractions incurred while on company business. It is imperative that employees notify their supervisors within 24 hours of a work-related citation or accident. Once notified, the supervisor will ensure the completion of Attachment 4, forward it to the appropriate Human Resources Department, and initiate one of the following corrective actions.

5.4.1 Minor Citation

When an employee is given a minor citation (i.e., speeding ticket, moving violation, failure to signal turn, loss of load, etc.), the employee's supervisor will meet with the employee to discuss the corrective action that must be taken so that further violations do not occur. At a minimum, the supervisor shall require the employee to attend a recognized course in defensive driving on his/her own time. The cost of this training will be borne by the employee. The supervisor will provide written direction to the employee regarding the assigned corrective action(s). The supervisor will forward a copy to the appropriate Human Resources Department for inclusion in the employee's personnel file.



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5.4.2 Major Citation

When an employee is given a major citation (i.e., reckless driving, suspended license, hit and run, speed contest, etc.), the supervisor will hold a meeting with the employee, at which time the supervisor will complete the company Disciplinary Action Form (Procedure HR207) thereby informing the employee that any additional infractions will lead to more severe disciplinary action. In addition, the employee will be required to attend a recognized defensive driving course on his/her own time and will be suspended from work for one day without pay. A copy of the Disciplinary Action Form shall be forwarded to the appropriate Human Resources Department for their information and inclusion in the employee's personnel file.

5.4.3 Failure to Notify

Should an employee fail to notify his/her supervisor of a work-related citation or accident within 24 hours of occurrence, his/her company driving privilege will be revoked. The supervisor will also take disciplinary action that is appropriate for the unreported event. If the unreported event is either an at-fault accident or driving under the influence case, the termination process will be initiated. All disciplinary actions shall be documented to the employee by the supervisor. This copy, and any written response by the employee, shall be forwarded to the appropriate Human Resources Department for their information and inclusion in the employee's personnel file.

5.4.4 At-Fault Accident

Whenever an employee operating a company owned/leased/rented vehicle or their personal vehicle on company business is involved in an at-fault vehicle accident, an Accident Review Board shall be convened and recommend the corrective action to be taken. At a minimum, the action shall include the completion of a recognized driver safety course on their time and at their expense. All disciplinary actions resulting from at-fault vehicle accidents will be reviewed for consistency by the appropriate Safety Council.

Depending upon the circumstances and severity of the accident, termination of the employee can be considered. As above, this must be approved by the appropriate Human Resources Department. All communication to the employee regarding the accident and resulting action shall be in writing with a copy to the appropriate Human Resources Department for their information and inclusion in the employee's personnel file.

5.4.5 Driving Under the Influence

Whenever an employee is convicted or pleads no contest to a company-related driving under the influence charge, he/she will be immediately terminated.



5.5 Training

All employees who will, or may reasonably be expected to, drive a company owned/ leased/rented vehicle shall review this procedure and complete the currently-designated company driver training class prior to such operation. This class is designed to be locally taught and must include the following elements: federal/state/local driving rules, company driving rules, emergency/accident procedures, defensive driving techniques, and specific guidelines on the vehicle(s) to be operated. Locations conducting this class shall provide the Knoxville Health and Safety Training Department with a copy of the course attendance sheet.

5.6 Reinstatement of Driving Privilege

Any employee who has had his/her privilege to drive a motor vehicle on company business revoked or denied, and who desires to reinstate this privilege, must apply to the business line health and safety manager for reinstatement. The business line health and safety manager shall specify a rehabilitation program (if applicable), an external safe driving course, and any other requirements which he/she deems appropriate. Once the employee completes the program, documentation of successful completion must be formally presented to the Vice President, Health and Safety, or his/her designee. If the documentation is accepted, the driving privilege may be reinstated.

Reinstatement of the driving privilege may occur one (1) time, at the discretion of the Vice President, Health and Safety or his/her designee. If employee driving performance leads to a subsequent revocation of this privilege, such revocation shall be permanent.

6.0 EXCEPTION PROVISIONS

Variances and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variances.

7.0 CROSS REFERENCES

HR207 Employee Disciplinary Action
HS013 Health and Safety Procedure Variances
HS020 Accident Prevention Program: Reporting, Investigation, and Review
HS810 Motor Vehicle Operation: Federal Motor Carrier Safety Regulations for Driver Qualifications

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Company Rules for Motor Vehicle Operation
3. Pre-employment Driving Record Certification
4. Notification of Work-Related Citation



ATTACHMENT 1

MOTOR VEHICLE OPERATION: GENERAL REQUIREMENTS
RESPONSIBILITY MATRIX

Action	Procedure Section	Responsible Party					
		Local Health & Safety Assistant	Business Line Health and Safety Manager	Supervisor	Accident Review Board	Corporate Health and Safety	Vice President, Health and Safety
Issue, Revise, and Maintain This Procedure	3.1						X
Ensure Employees Complete Attachment 2	5.1			X			
Distribute HS800 to New Hire Candidates for Completion of Attachments 2 and 3	5.2	X					
Request Evaluation of New Hire Driving Record	5.2	X					
Obtain Driving Record and Determine Driving Status	5.2					X	
Initiate Corrective Actions	5.4			X			
Ensure Completion and Distribution of Attachment 4	5.4			X			
Accident Review	5.4.4				X		
Ensure Drivers Meet Training Requirements	5.5			X			
Specify Program for Reinstatement of Driving Privilege	5.6		X				
Reinstatement of Driving Privilege	5.6						X



ATTACHMENT 2

COMPANY RULES FOR MOTOR VEHICLE OPERATION

1. Prior to motor vehicle operation, all motor vehicle operators are required to provide the company with current documentation of licensing for the motor vehicle(s) to be operated. Supervisors shall review and approve said documentation.
2. The motor vehicle operator is responsible for the vehicle, and for conducting a pre-trip inspection prior to use (including load, if applicable). No vehicle with any mechanical defect which endangers the safety of the driver, passengers, or the public shall be used.
3. All vehicles, other than automobiles, shall have small convex mirrors attached to the side mirrors.
4. The operator is responsible for complying with all state and local traffic laws, as well as customer regulations concerning motor vehicle operation.
5. The operator and all passengers shall use seat belts at all times when the vehicle is in motion.
6. No employee shall operate a motor vehicle when abnormally tired, temporarily disabled, or under the influence of alcohol or drugs.
7. No employee shall allow a company owned, leased, or rented motor vehicle to be operated by an unauthorized employee or non-employee.
8. All employees shall drive defensively at all times.
9. No employee shall drive beyond any barricades or into any area with designations such as "HAZARDOUS" or "DO NOT ENTER."
10. Use caution when driving through congested areas, or near where personnel and equipment are working.
11. Whenever possible, a spotter shall be used for backing all vehicles. This may be a fellow company employee, or a non-company employee who is willing to help.
12. Unless required, such as on a client's property, keys shall not be left in an unattended vehicle.
13. Employees shall not leave the driver's seat of a vehicle while the motor is running. Exemption: Vehicles equipped with a power take-off device with parking brake set and chocks in place.
14. No motorcycles are to be operated on company business.
15. Radar detectors are prohibited in all company owned, leased, or rented vehicles.



COMPANY RULES FOR MOTOR VEHICLE OPERATION

- 16. Analytical samples will be transported in accordance with 49 CFR regulations. Regulated hazardous substances shall not be transported in personal vehicles.
- 17. In case of an accident, the following steps shall be taken:
 - A. Stop.
 - B. Call for medical assistance in case of injuries.
 - C. Notify police.
 - D. Complete Vehicle Accident Report and submit to your supervisor as soon as possible.
- 18. Whenever a vehicle is stopped upon the traveled portion of a highway or the shoulder of a highway, for any cause other than necessary traffic stops, the driver shall, as soon as possible, place or activate the warning devices with which the vehicle is equipped.
- 19. Employee must notify the supervisor within one (1) working day regarding work related citations, accidents, and license expiration, suspension, or revocation.
- 20. Before operating any company vehicle, the operator shall briefly walk around the vehicle to inspect for unsafe conditions or obstructions, and to check that the load (if applicable) is properly secured.
- 21. No employee is authorized to operate a company vehicle (including rentals) after having been on duty for a period of 16 hours. No employee may drive for more than 12 hours in any single on-duty period. Once either of these criteria have been met, a period of 8 consecutive hours off duty is required before driving duties may be resumed. These are maximum, not minimum, requirements and employees may be unfit to drive after shorter on-duty periods. Commercial DOT drivers are subject to the more restrictive hours of service regulations described in Procedure HS810.
- 22. Project-assigned hourly employees are not permitted to operate company owned, leased, or rented vehicles after 10:00 p.m. without written authorization from their supervisor.

I have read and understand company Procedure HS800 and the company Rules for Motor Vehicle Operation, and agree to abide by all requirements.

Employee's Name (Printed)	Employee's Signature	Date
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ATTACHMENT 3

PRE-EMPLOYMENT DRIVING RECORD CERTIFICATION

DATE _____ REQUESTOR _____ PHONE NO. _____

CANDIDATE'S HOME DEPARTMENT NUMBER _____

	<u>Assigned Point Value</u>
Overweight, loss of load, vehicular equipment infraction, etc.	1
Moving violation: speeding, failure to stop, failure to signal turn, etc.	2
At-fault accident	3
Major citation: reckless driving, hit and run, suspended license, speed contest, open container, etc.	6
Driving under the influence	8

In the space provided below, please list all violations and accidents currently listed on your driving record by the state issuing your driver's license (include all states for which you have held a driver's license during the last two [2] years). Determine the number of points assigned from the table above, and write in column labeled "Points." Finally, write the sum total of all points where indicated.

<u>Violations/Accidents</u>	<u>Driver License #/State</u>	<u>Date (mo/yr)</u>	<u>Points</u>
-----------------------------	-------------------------------	---------------------	---------------

Total Points _____

I hereby certify that the information provided is a complete and accurate statement of my driving record for the previous twenty-four (24) months. I authorize the company to obtain a copy of my driving record from the state of issuance of my license(s). I understand that falsification of data will disqualify me from being hired.

Driver's License No. _____ State of Issuance _____

Expiration Date _____ Date of Birth _____

 S.S.N. _____

New Hire Candidate Name (Printed)

 Signature

 Date

PLEASE FAX THIS FORM TO THE CORPORATE HEALTH AND SAFETY DEPARTMENT AT (412) 858-3976



Procedure No. HS800
Revision No. 13
Date of Revision 02/09/00
Last Review Date 02/09/00
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ATTACHMENT 4

NOTIFICATION OF WORK-RELATED CITATION

This form is to be completed by employees incurring a work-related vehicular citation. Once complete, it is to be signed by the employee's supervisor and forwarded to the appropriate Human Resources Department for inclusion in the employee's personnel file.

Employee Name _____ Employee No. _____ Date _____

Nature of Citation _____

Location of Citation (City, State) _____

Date/Time Citation Received _____

Is Citation Being Contested? No Yes Details _____

Employee Signature _____ Date _____

Corrective Action Being Taken _____

Supervisor Signature _____ Date _____

APPENDIX D
ACTIVITY HAZARD ANALYSES

ACTIVITY HAZARD ANALYSIS FOR WELL ABANDONMENT

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Well Abandonment	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use • Observe work area and location of other personnel before lifting or moving objects with sharp edges 	Leather gloves	
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads • Warm up muscles before engaging in manual lifting activities • Review lifting posture/techniques regularly at safety meetings 		
	Caught In/ Between Moving Parts of Mixer for Grout	<ul style="list-style-type: none"> • Identify and understand parts of equipment which may cause crushing, pinching, rotating or similar injuries • Assure guards are in place to protect from these parts of equipment during operation • Provide and wear proper work gloves when the possibility of crush, pinch, or other injury may be caused by moving/stationary edges or objects • Maintain all equipment in a safe condition • Keep all guards in place during use • De-energize and lock-out machinery before maintenance or service 		

ACTIVITY HAZARD ANALYSIS FOR WELL ABANDONMENT

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Well Abandonment (continued)	Horseplay	<ul style="list-style-type: none"> Prohibit horseplay on all project sites Review rules about horseplay with subcontract supervisors and workers Remind workers not to respond/participate in horseplay started by others 		
	Slips, Trips, Falls	<ul style="list-style-type: none"> Clear walkways, work areas of equipment, drilling overburden, debris and other materials Mark, identify, or barricade other obstructions 		
	Inhalation and Contact with the Grout	<ul style="list-style-type: none"> Provide workers proper skin, eye and respiratory protection based on the exposure hazards present Review hazardous properties of site contaminants with workers before operations begin 	Nitrile gloves, Goggles, Face shield	
	Insect Stings	<ul style="list-style-type: none"> Avoid hand mowing/clearing in dense brush areas, suspected Areas of stinging insects 	Leather gloves	
	Contact with Poison Ivy	<ul style="list-style-type: none"> Identify workers who are known to contract poison ivy Wear PPE and tape joints to keep poison ivy irritants/plant matter away from skin Use protective creams and wash with poison ivy preventing soaps when working in suspected exposure area 	Long sleeve shirts, Tyvek coveralls, Leather gloves	
	High/Low Ambient Temperature	<ul style="list-style-type: none"> Monitor for Heat stress in accordance with IT Health and Safety Procedures HS400 Provide fluids to prevent worker dehydration 		Meteorological Equipment

ACTIVITY HAZARD ANALYSIS FOR WELL ABANDONMENT

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> • Grout mixer • Grout • Hand tools 		<ul style="list-style-type: none"> • Daily equipment inspections as per manufacturers requirements • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Review AHA with all task personnel • Review SSHP • Review MSDS for Grout 	

Approved By Site Manager (Signature)

Date

ACTIVITY HAZARD ANALYSIS FOR SILT FENCE INSTALLATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Silt Fence Installation	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Use shears, opposed to knives, to cut the silt fence. 	Leather gloves	
	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways, work areas of equipment, tools, vegetation and debris • Mark, identify, or barricade other obstructions 		
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Eye Injuries	<ul style="list-style-type: none"> • Wear face shield, goggles when operating powered clearing / grubbing equipment 	Goggles and face shield	
	Overexertion	<ul style="list-style-type: none"> • Use the right tool for the task at hand • Avoid actions/activities that produce overexertion 		•
	Horseplay	<ul style="list-style-type: none"> • Prohibit horseplay at all project sites • Review rules about horseplay with subcontractor supervisors and workers • Remind workers not to respond/participate in horseplay • started by others 		•
	Allergic Reaction	<ul style="list-style-type: none"> • Review allergy hazards with work crew • Identify workers with allergies • Review work assignments PPE upgrades 	Tyvek coveralls, duct tape bottom of coveralls to boots; latex gloves, if required	•

ACTIVITY HAZARD ANALYSIS FOR SILT FENCE INSTALLATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Silt Fence Installation (continued)	Insect Stings	<ul style="list-style-type: none"> Avoid hand mowing/clearing in dense brush areas, suspected Areas of stinging insects 	Leather gloves	
	Contact with Poison Ivy	<ul style="list-style-type: none"> Identify workers who are known to contract poison ivy Wear PPE and tape joints to keep poison ivy irritants/ plant matter away from skin Use protective creams and wash with poison ivy preventing soaps when working in suspected exposure area 	Long sleeve shirts, Tyvek coveralls, Leather gloves	
	High/Low Ambient Temperature	<ul style="list-style-type: none"> Monitor for Heat stress in accordance with IT's Health and Safety Procedures # HS400 Provide fluids to prevent worker dehydration 		Meteorological Equipment
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> Silt Fence Posts Shovels 		<ul style="list-style-type: none"> Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> Review AHA with all task personnel Review SSHP Review MSDS for Grout 	

Approved By Site Manager (Signature)

Date

ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Excavation of Soil	Underground/Overhead Utilities	<ul style="list-style-type: none"> • Identify all utilities at the site before work commences • Cease work immediately if unknown utility markers are uncovered • Use manual excavation within 3 feet of known utilities • Utility clearance shall conform with 29 CFR 1926.955 (high voltage >700 kv) 15 feet phase to ground clearance; 31 feet phase to phase clearance 		
	Struck By/ Against Heavy Equipment	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals • Step away from equipment when bucket adjustments are made. • Do not attempt verbal communication in high noise Backgrounds • Park equipment in areas where operator can see clearly to dismount equipment • Report minor incidents to site supervisor 		
	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use • Observe work area and location of other personnel before lifting/moving objects with sharp edges 	Leather gloves	

ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Excavation of Soil (continued)	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA TWA 	Ear plugs	Sound Level Meter
	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear, walkways of equipment, vegetation, excavated material, tools and debris • Mark, identify, or barricade other obstructions • Exit equipment slowly and maintain three point contact • Clean boot soles before climbing on equipment 		
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Review proper lifting posture/techniques regularly at safety meetings • Obey sensible lifting limits (60 lb. Maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads • Avoid carrying heavy objects above shoulder level • Warm up muscles before engaging in manual lifting 	Warning vests, hard hat, safety glasses, steel toe work boots	
	Inhalation and Contact with Hazardous Substances	<ul style="list-style-type: none"> • Provide workers proper skin, eye and respiratory protection based on the exposure hazards present • Review hazardous properties of site contaminants with workers before operations begin • Monitor breathing zone air to determine levels of contaminants • Dampen soil using light water spray to prevent fugitive dust emissions 	Tyvek coveralls, latex inner gloves, nitrile outer gloves, neoprene or latex boots for spotter (See Section 6.0 HASP)	PID

ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Excavation of soil (continued)	Excavation Wall Collapse	<ul style="list-style-type: none"> • Construct diversion ditches or dikes to prevent surface water from entering excavation • Provide good drainage of area adjacent to excavation • Store excavated material at least 2 feet from the edge of the excavation; prevent excessive loading of the excavation face • Provide sufficient stairs, ladders, or ramps when workers enter excavations over 4 feet in depth • Treat excavations over 4 feet deep as confined spaces • Complete confined space permit entry procedure • Monitor atmosphere for flammable/toxic vapors, and oxygen deficiency • Slope, bench, shore, or sheet excavations over 5 feet deep if worker entry is required • Assign a competent person to inspect, decide soil classification and proper sloping • Inspect excavations (when personnel entry is required) daily, any time conditions change • Provide at least two means of exit for personnel working in excavations 		
	Walking on machine tracks	<ul style="list-style-type: none"> • Avoid walking on machine tracks whenever possible; clean tracks for safe walking/working surfaces • Observe track surfaces when walking, move cautiously on uneven, slippery surfaces • Avoid sudden awkward motions (pulling/jerking fuel hoses) 		
	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Monitor for Heat stress in accordance with IT Health and Safety Procedures HS400 <p>Provide fluids to prevent worker dehydration</p>		Meteorological Equipment

ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Manual Excavation	Struck/Struck By	<ul style="list-style-type: none"> • Use the right tool for the task at hand • Maintain personal balance when performing manual excavation • Concentrate on the work task being performed 		
	Overexertion	<ul style="list-style-type: none"> • Use the right tool for the task at hand • Avoid actions/activities that produce overexertion 		
	Horseplay	<ul style="list-style-type: none"> • Prohibit horseplay on all project sites • Review rules about horseplay with subcontract supervisors and workers • Remind workers not to respond/participate in horseplay started by others 		
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> • Excavator • Shovels, probes • PID 		<ul style="list-style-type: none"> • Daily equipment inspections as per manufacturers requirements • Excavation inspection/permit • Confined space permit (potential) • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Review AHA with all task personnel • Review SSHP • Review operations/safety manuals for all equipment utilized • Review site specific chemical hazards 	

Approved By Site Manager (Signature)

Date

ACTIVITY HAZARD ANALYSIS FOR SOIL LOADOUT AND DISPOSAL

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Soil Loadout and Disposal	Struck By/ Against Heavy Equipment	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic • Obey posted speed limits • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals • Exit equipment slowly and maintain three point contact • Report minor incidents to site supervision • Park equipment in areas where operator can see clearly to dismount equipment • Step away from equipment when bucket adjustments are made • Do not attempt verbal communication in high noise backgrounds • Follow hand signals of ground workers for equipment manipulation when placing/loading equipment into loader bucket. 	Warning vests, Hard hat, Safety glasses, Steel toe work boots	
	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walk ways, work areas of equipment, tools and debris • Mark, identify, or barricade other obstructions • Clean mud from boots before climbing on equipment 		
	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use 	Leather gloves	

ACTIVITY HAZARD ANALYSIS FOR SOIL LOADOUT AND DISPOSAL

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Soil Loadout and Disposal (continued)	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA TWA 	Ear plugs	Sound Level Meter
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads • Avoid carrying heavy objects above shoulder level • Avoid actions/activities that contribute to overexertion • Warm up muscles before engaging in manual lifting activities • Review lifting posture/techniques regularly at safety meetings 		
	Defective Vehicles	<ul style="list-style-type: none"> • Inspect all trucks before loading • Do not load soil or equipment into defective equipment 		
	Roadways	<ul style="list-style-type: none"> • Ensure that the roadways on the route to the landfill or final destination are designed to handle the weight of the vehicles and allow HAZMAT materials 		
	Horseplay	<ul style="list-style-type: none"> • Prohibit horseplay on all project sites • Review rules about horseplay with subcontractor supervisors and workers • Remind workers not to respond/participate in horseplay started by others 		

ACTIVITY HAZARD ANALYSIS FOR SOIL LOADOUT AND DISPOSAL

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Soil Loadout and Disposal (continued)	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Monitor for Heat stress in accordance with IT Health and Safety Procedures # HS400 • Provide fluids to prevent worker dehydration 		Meteorological Equipment
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> • Excavator • Trucks • Loader 		<ul style="list-style-type: none"> • Daily equipment inspections as per manufacturers requirements • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Review AHA with all task personnel • Review SSHP • Review operations/safety manuals for all equipment utilized • Review site specific chemical hazards 	

Approved By Site Manager (Signature)

Date

ACTIVITY HAZARD ANALYSIS FOR BACKFILLING

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Backfilling	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways, work areas of equipment, tools, construction debris and other materials • Mark, identify, or barricade other obstructions 		
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Struck by/ Against Heavy Equipment, Flying Debris, Protruding Objects	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Barricade or enclose the work area • Restrict work area entry to authorized personnel only during construction activities • Wear hard hats, safety glasses with side shields, and steel-toe safety boots • Understand and review hand signals 	Warning vests, Hard hat, Safety glasses, Steel toe work boots	
	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA TWA 	Ear plugs	Sound Level Meter

ACTIVITY HAZARD ANALYSIS FOR BACKFILLING

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Backfilling (continued)	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Monitor for Heat stress in accordance with IT Health and Safety Procedures HS400 • Provide fluids to prevent worker dehydration 		Meteorological Equipment
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> • Excavator • Dozer • Dump trucks 		<ul style="list-style-type: none"> • Daily equipment inspections as per manufacturers requirements • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Review AHA with all task personnel • Review SSHP • Review operations/safety manuals for all equipment utilized 	

Approved By Site Supervisor (Signature)

Date

ACTIVITY HAZARD ANALYSIS FOR EQUIPMENT DECONTAMINATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Equipment Decontamination	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways, work areas of equipment, vegetation, tools and debris • Mark, identify, or barricade other obstructions • Clean heavy objects of oil/grease or other slippery contamination before attempting to lift/remove • Wear gloves with grip improving surfaces for handling large, slippery objects • Clean up spills or water accumulation in walkways 		
	Struck by/Against Heavy Equipment, Protruding Objects	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals • Step away from equipment when bucket adjustments are made • Do not attempt verbal communication in high noise backgrounds 	Warning vests hard hat safety glasses, goggles and face shield, steel toe work boots	
	Inhalation and Contact with Hazardous Substances, & Splashes	<ul style="list-style-type: none"> • Provide workers proper skin, eye and respiratory protection based on the exposure hazards present • Review hazardous properties of site contaminants with workers before operations begin • Wear hard hats, safety glasses with side shields, or goggles with splash shields and steel-toe safety boots 	PVC rain suit or Tyvek coveralls, nitrile or latex gloves, neoprene or latex boots (See Section 6.0 HASP)	

ACTIVITY HAZARD ANALYSIS FOR EQUIPMENT DECONTAMINATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Equipment Decontamination (Continued)	Burns	<ul style="list-style-type: none"> • Wear proper gloves, face shield/safety goggles, shin and toe guards, and splash suits to protect workers from skin burns and injury when operating laser (high pressure washers) • Tape gloves to PPE sleeves to lessen the possibility of hot water entering gloves • Use hand tools to loosen connections and position body to avoid pressure discharge • Wear shin and toe guards to protect from burns, lacerations and similar injuries 	Goggles and face shield, shin and toe guards	
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads • Avoid actions/activities that contribute to overexertion • Warm up muscles before engaging in manual lifting activities • Review lifting posture/techniques regularly at safety meetings 		

ACTIVITY HAZARD ANALYSIS FOR EQUIPMENT DECONTAMINATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Equipment Decontamination (Continued)	Sharp Objects/ Cuts and Punctures	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges/objects or working with hand tools • Maintain all hand and power tools in a safe condition • Keep guards in place during use • Guard or pad metal edges of objects frequently used (access panels, etc.) or manipulated/bypassed during maintenance • Position heavy objects to avoid manipulation while cleaning • Get assistance and dry glove surfaces to improve grip during object manipulation while cleaning 	Leather gloves	
	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA TWA 	Ear plugs	Sound Level Meter
	Repetitive Strains	<ul style="list-style-type: none"> • Rotate job tasks on high vibration equipment • Report equipment that produces high vibration for inspection and maintenance • Wear vibration reducing gloves 		
	Strains and Sprains	<ul style="list-style-type: none"> • Maintain a safe stance and body position operating pressurized equipment • Avoid rushing 		
	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Monitor for Heat stress in accordance with IT Health and Safety Procedures # HS400 • Provide fluids to prevent worker dehydration 		Meteorological Equipment

ACTIVITY HAZARD ANALYSIS FOR EQUIPMENT DECONTAMINATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
EQUIPMENT TO BE USED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> • Pressure Sprayer 		<ul style="list-style-type: none"> • Equipment inspections • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Review SSHP • Review site-specific AHA with all task personnel • Review Health and Safety Procedure HS303 • Review site specific contamination • Review operation manuals for the pumps and related equipment 	

Approved By Site Manager (Signature)

Date

ACTIVITY HAZARD ANALYSIS FOR SOIL SAMPLING

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Soil Sampling	Handling Heavy Objects	<ul style="list-style-type: none"> Observe proper lifting techniques Obey sensible lifting limits (60 lb. maximum per person manual lifting) Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Slips, Trips, Falls	<ul style="list-style-type: none"> Clear walkways, work areas of equipment, tools, vegetation, excavated material, and debris Mark, identify, or barricade other obstructions 		
	Spills	<ul style="list-style-type: none"> Wear splash protection as necessary to prevent dermal contact Ensure spill cleanup equipment/material on hand/ready for use (i.e.: Baking soda to neutralize and sample preservative spills) Cleanup spills immediately 	Full face shield	
	Inhalation and Contact with Hazardous Substances	<ul style="list-style-type: none"> Provide workers proper skin, eye and respiratory protection based on the exposure hazards present Review hazardous properties of site contaminants with workers before operations begin 	Sample gloves	PID
	High Ambient Temperature	<ul style="list-style-type: none"> Monitor for Heat stress in accordance with IT Health and Safety Procedures HS400 Provide fluids to prevent worker dehydration 		Meteorological Equipment
EQUIPMENT TO BE USED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> Sample containers Coolers PID 		<ul style="list-style-type: none"> Excavation inspections/permits Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> Review SSHP Review site-specific AHA with all task personnel Review site specific chemical hazards 	

Approved By Site Manager (Signature) _____

Date _____

ACTIVITY HAZARD ANALYSIS FOR GROUNDWATER MONITORING AND SAMPLING

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Groundwater Monitoring and Sampling	Handling Heavy Objects	<ul style="list-style-type: none"> Observe proper lifting techniques Obey sensible lifting limits (60 lb. maximum per person manual lifting) Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Slips, Trips, Falls	<ul style="list-style-type: none"> Clear walkways, work areas of equipment, tools, vegetation and debris Mark, identify, or barricade other obstructions 		
	Spills	<ul style="list-style-type: none"> Wear splash protection as necessary to prevent dermal contact Ensure spill cleanup equipment/material on hand/ready for use (i.e.: Baking soda to neutralize and sample preservative spills) Cleanup spills immediately 	Full face shield	
	Inhalation and Contact with Hazardous Substances	<ul style="list-style-type: none"> Provide workers proper skin, eye and respiratory protection based on the exposure hazards present Review hazardous properties of site contaminants with workers before operations begin 	Full face shield, two pairs of nitrile sample gloves	PID,
	High Ambient Temperature	<ul style="list-style-type: none"> Monitor for Heat stress in accordance with IT Health and Safety Procedures HS400 Provide fluids to prevent worker dehydration 		
EQUIPMENT TO BE USED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> Sample containers Coolers PID 		<ul style="list-style-type: none"> Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> Review SSHP Review site-specific AHA Review site specific chemical hazards 	

Approved By Site Manager (Signature)

Date

APPENDIX E
ACCIDENT PREVENTION PLAN

2.0 BACKGROUND INFORMATION

2.1 OHM REMEDIATION SERVICES CORPORATION, A SUBSIDIARY OF THE IT GROUP (OHM/IT)

Contract No. N62470-97-D-5000

Task Order No. 0059

The principal tasks to be conducted are listed below:

- Monitoring Well Abandonment
- Installation of Silt Fence
- Soil Excavation
- Soil Loadout and Disposal
- Soil Sampling
- Equipment Decontamination
- Backfilling
- Groundwater Monitoring and Sampling

2.2 OHM/IT ACCIDENT EXPERIENCE

YEAR	EMR (Interstate)*	OSHA Recordable Incident Rate*
1999	0.53	3.3
1998	0.58	3.7
1997	0.54	2.5

* OHM/IT

2.3 HAZARDOUS ACTIVITIES REQUIRING ACTIVITY HAZARD ANALYSIS*

- Monitoring Well Abandonment
- Installation of Silt Fence
- Soil Excavation
- Soil Loadout and Disposal
- Soil Sampling
- Equipment Decontamination
- Backfilling
- Groundwater Monitoring and Sampling

*OHM/IT's Activity Hazard Analyses are also referred to as Job Safety Analyses (JSAs) and are located in the Site Specific Health and Safety Plan Appendix D.

3.0 STATEMENT OF SAFETY AN HEALTH POLICY

3.1 CORPORATE POLICY STATEMENT (ATTACHED)

4.0 RESPONSIBILITIES AND LINES OF AUTHORITIES

Safety responsibilities, accountability and lines of authority are discussed in Section 2.0 of the HASP. The Project Manager (PM), Site Supervisor (SS), Certified Industrial Hygienist (CIH), Health and Safety Manager (HSM), Health and Safety Coordinator (HSC), and Site Safety Officer (SSO) are responsible for formulating and enforcing health and safety requirements, and implementing the Site Specific Health and Safety Plan (HASP).

5.0 SUBCONTRACTORS AND SUPPLIERS

5.1 TBD

5.2 SUBCONTRACTOR/SUPPLIER COORDINATION AND CONTROL

OHM/IT subcontractors will be screened for safety performance and compliance with Federal Alcohol and Drug testing requirements prior to being issued any contract for site work. OHM/IT subcontractors will comply with the requirements for site safety as outlined in OHM/IT Group Health and Safety Procedure HS011 (see IT Corporate Health and Safety Procedures Manual). The Site Superintendent/Supervisor will be responsible for the conduct and control of OHM/IT subcontractors.

5.3 SUBCONTRACTOR/SUPPLIER SAFETY RESPONSIBILITIES

All subcontractor employees are subject to the same training and medical surveillance requirements as OHM/IT personnel depending on job activity. All activities involving the potential for exposure to hazardous waste materials will require medical and training certification as mandated by 29 CFR 1910.120 and 29 CFR 1926.65. All subcontractor personnel will be required to sign in daily and be required to attend a daily meeting discussing operations and safety issues. All subcontractors involved in construction/remedial activities will complete a Subcontractor Pre-Job Safety Checklist prior to the start of work at the site. Subcontractors will submit Job Safety Analyses for their work activities to the SS. The subcontractor reports directly to the Project Manager. All incidents involving subcontractor employees shall be reported to the Site Supervisor and a copy of the subcontractor's injury/illness report shall be submitted to the SS within 24 hours.

OHM/IT subcontractors are required to sign off and comply with all requirements of the OHM/IT Site-Specific Health and Safety Plan and Accident Prevention Plan. Contractors not in compliance will be immediately dismissed from the site.

Suppliers delivering various materials to the project site or providing equipment/ equipment maintenance will comply with all Naval Facility rules and regulations. Supplier personnel will not be permitted into contaminated areas unless training and medical surveillance is in accordance with 29 CFR 1910.120/1926.65. Contractors will not ride on tractors, forklifts or similar vehicles unless specific seats are provided. They will follow Facility hot work rules if hot work is required for vehicle or equipment maintenance. Trucks will be loaded and unloaded in a safe and effective manner and materials will be stored safely in designated locations only. Associated packaging will be properly disposed of and litter will not be permitted to be scattered or blown from truck beds. Operators of mobile equipment on site must observe all traffic rules such as speed limits and right-of-ways of pedestrians.

6.0 TRAINING

6.1 SAFETY INDOCTRINATION SUBJECTS:

Outlines of the site safety orientation for OHM/IT / sub-contract personnel and visitors are provided in Section 10.0 of the HASP.

6.2 MANDATORY TRAINING AND CERTIFICATIONS

Mandatory training and certifications are discussed in Section 10.0 of the HASP. All personnel entering the exclusion zone will be trained in the provisions of this Accident Prevention Plan and be required to sign the Accident Prevention Plan.

Site-specific training for Site 7012 will include a review of potential site contaminants, Hazard Communication as per 29 CFR 1910.1200/1926.59, site physical and environmental hazards, emergency response and evacuation procedures, and emergency telephone numbers will be held at the site location by the SS and SSO before any site work activities begin. Although all OHM/IT workers receive confined space training during initial 40 hour health and safety training, site specific training, including rescue procedures, will be conducted before any confined space entry is performed.

6.3 EMERGENCY RESPONSE TRAINING

All OHM/IT personnel who have completed 40 hour HAZWOPER Training are qualified as emergency responders per 29 CFR 1910.120/1926.65 (e)(3)(iv). Site Specific Emergency Response Procedures will be reviewed with all site personnel as a part of site indoctrination.

6.4 SUPERVISORY AND EMPLOYEE SAFETY MEETINGS

The OHM/IT SS and SSO will conduct daily safety meetings at the start of each work shift for on-site personnel and will require subcontractors to follow similar meeting procedures or participate in the OHM/IT daily safety meetings. Daily safety meetings will comply with HS051 (see IT Health and Safety Procedures Manual).

7.0 SAFETY AND HEALTH INSPECTIONS

7.1 SAFETY INSPECTIONS

The OHM/IT Project Manager and Site Supervisors/ Superintendents are required to conduct bi-monthly inspections of their sites using the Project Safety Inspection Report according to HS021 (see IT Health and Safety Procedures Manual). SSOs are responsible for conducting and preparing reports of daily safety inspections of work processes, site conditions, equipment conditions and submitting them to SS. The SSO will discuss any necessary corrective actions with the SS and review new procedures. Copies of these reports are maintained on file at the project locations.

The OHM/IT Health and Safety Manager (HSM) or his designated representative will periodically conduct site visits and perform Site Safety Assessments. These reports are kept on file at the Somerset, New Jersey, Office and are tracked in a database for each OHM/IT Project Manager and Supervisor/ Superintendent, including the number of action items noted during the visit and written confirmation of the corrective actions for each item. These responses are compiled and provided to program management for review.

7.2 EXTERNAL INSPECTIONS/CERTIFICATIONS

OHM/IT does not anticipate, but may consider the use of outside sources, to provide safety inspections on an as necessary basis.

As required, OHM/IT safety equipment will comply with appropriate OSHA (Occupational Safety and Health Administration), NIOSH (National Institute for Occupational Safety and Health), ANSI (American National Standards Institute), ASTM (American Society for Testing and Materials), and US Coast Guard or other recognized certification organizations.

8.0 SAFETY AND HEALTH EXPECTATIONS, INCENTIVE PROGRAMS, AND COMPLIANCE

8.1 COMPANY SAFETY PROGRAM GOALS

OHM/IT considers safety the highest priority during work at a site containing potentially hazardous materials and has established a goal of **zero incidents** for all projects. All projects will be conducted in a manner which minimizes the probability of near misses, equipment/property damage or injury. OHM/IT will establish programs to recognize people and projects that demonstrate excellence in safety performance. OHM/IT will use safety observation programs to identify and correct unsafe acts and conditions. Safety awareness programs will be used to provide continuous training and development of good safety practices. OHM/IT site supervision will investigate all incidents to determine root causes and institute corrective actions to prevent recurrence. OHM/IT will provide and enforce safety rules to protect employees, subcontractors, clients and the public.

8.2 OHM/IT SAFETY INCENTIVE PROGRAMS:

A copy of the OHM/IT Safety Incentive Award Program is provided at the project. The OHM/IT Project Manager will develop a site-specific program for approval by the HSM and the Business Line Lead within 10 days of project mobilization.

8.3 OHM/IT EMPLOYEE SAFETY RESPONSIBILITY REQUIREMENTS

Each employee is responsible for personal safety as well as the safety of others in the area and is expected to participate fully in the ***Safety Improvement Process***, particularly the Safety Observation Program. The employee will use all equipment provided in a safe and responsible manner as directed by the SS. All OHM/IT personnel will follow the policies set forth in the IT Group Health and Safety Procedures HS001-999. Site personnel concerned with any aspect of health and safety shall bring it to the attention of the SS/SSO. If not satisfied, they should contact the HSM or HSC. All project personnel have the authority to stop work if in their judgement serious injury could result from continued activity. The SS and the SSO shall be notified immediately if this becomes necessary. To protect the health and safety of all personnel, employees that knowingly disregard safety policies/procedures may be subject to disciplinary actions up to and including termination. OHM/IT Employee Safety Responsibility is fully detailed in HS010 Employee Safety and Health Work Rules (see IT Health and Safety Procedures Manual).

8.4 MANAGERS AND SUPERVISORS SAFETY ACCOUNTABILITY

It is the duty of the first line supervisor to motivate employees to adhere to OHM/IT's safety policy in each work situation. A first line supervisor for these purposes is defined as that person designated to give immediate on-site supervision to personnel involved in a task.

All supervisors shall have complete knowledge of the safe procedure for all jobs and tasks under their supervision or when in doubt, shall seek assistance prior to initiating a task. This is the only acceptable manner in which to perform the task. If the task cannot be accomplished safely, it will not be attempted.

Supervisors will:

- Explain the safety procedure involved with a task to each employee and check frequently to see that the employee understands and works as instructed.
- Allocate sufficient time for the training and coaching of all employees to insure that everyone knows the correct procedure for safely accomplishing required tasks.
- Prevent new employees from performing any tasks until required training is completed.
- Immediately correct unsafe conditions, which involved OHM/IT employees or contractors.
- Ensure that the employees are outfitted with and wear personal protective equipment as specified by this APP, site-specific health and safety plan, other OHM/IT procedures or as directed by the SSO, HSC, CIH or HSM.
- Set a good safety example.
- Obtain the cooperation of employees and contractors.
- Provide a safe work environment for employees and contractors.
- Confirm contractor safety performance records have been verified prior to contract award and monitor contractor performance during operations.
- Report all accidents, near misses and property damage in accordance with the Incident Management and Reporting Procedure.
- Establish a safety culture, using the elements of the OHM/IT Safety Improvement process, which promotes awareness, encourages participation and recognizes excellence.

9.0 ACCIDENT REPORTING

9.1 EXPOSURE DATA (MAN-HOURS WORKED)

The Vice President of Health and Safety tracks and maintains incident records as to Federal reporting requirements (OSHA 200 Log). Incident rates are reported monthly to the HSM. Incident Rates and Workers Compensation losses are tracked for each Project,

9.2 ACCIDENT INVESTIGATIONS, REPORTS AND LOGS

The site supervisor conducts Accident/incident investigations. A report is completed by the site supervisor and is required to be reviewed and signed by the site safety officer and the Project Manager. The report must be submitted to the HSM within 24 hours. All incident reporting forms are provided in HS020.

9.3 IMMEDIATE NOTIFICATION OF MAJOR INCIDENTS

OHM/IT will immediately notify the client of any major incident, including injury, fire, equipment/ property damage and environmental incident. A full report will be provided within 24 hours. The following procedure will be followed in response to any major personal injury.

9.3.1 Response

The nearest workers will immediately assist a person who shows signs of medical distress or who is involved in an accident. The work crew supervisor will be summoned.

The work crew supervisor will immediately make radio contact with the site supervisor to alert him of a medical emergency situation. The work crew supervisor will advise the following information:

- Location of the victim at the work site
- Nature of the emergency
- Whether the victim is conscious
- Specific conditions contributing to the injury, if known

The following actions will then be taken depending on the severity of the incident:

- **Life-Threatening Incident** — If an apparent life-threatening condition exists, the crew supervisor will inform the emergency coordinator by radio, and the local Emergency Response Services (EMS) will be immediately called. An on-site person will be appointed who will meet the EMS and have him/her quickly taken to the victim. OHM/IT personnel will evacuate any injury within the EZ to a clean area for treatment by (EMS) personnel. No one will be able to enter the EZ without showing proof of training, medical surveillance and site orientation.

- **Non Life-Threatening Incident** — If it is determined that no threat to life is present, the Site Safety Officer will direct the injured person through decontamination procedures (see below) appropriate to the nature of the illness or accident. Appropriate first aid or medical attention will then be administered.

*NOTE: The area surrounding an accident site must not be disturbed until the Site Safety Officer has cleared the scene.

Any personnel requiring emergency medical attention will be evacuated from exclusion and contamination reduction zones if doing so would not endanger the life of the injured person or otherwise aggravates the injury. Personnel will not enter the area to attempt a rescue if their own lives would be threatened. The decision whether or not to decontaminate a victim prior to evacuation is based on the type and severity of the illness or injury and the nature of the contaminant. For some emergency victims, immediate decontamination may be an essential part of life-saving first aid. For others, decontamination may aggravate the injury or delay life-saving first aid. Decontamination will be performed if it does not interfere with essential treatment.

If decontamination can be performed, observe the following procedures:

- Wash external clothing and cut it away.

If decontamination cannot be performed, observe the following procedures:

- Wrap the victim in blankets or plastic to reduce contamination of other personnel.
- Alert emergency and off-site medical personnel to potential contamination; instruct them about specific decontamination procedures.
- Send site personnel familiar with the incident and chemical safety information, e.g. MSDS, with the affected person.

10.0 MEDICAL SUPPORT

On-site Medical Support/Off-site Medical Arrangements are provided in Section 9.0 of the HASP.

11.0 PERSONAL PROTECTIVE EQUIPMENT

11.1 HAZARD ASSESSMENT PROCEDURES/WRITTEN CERTIFICATIONS FOR PERSONAL PROTECTIVE EQUIPMENT

Protection levels provided in the HASP will be established for the site work activities based on the levels of site contaminants and the scope of work. Once on-site, results of air monitoring and visual inspection of the work activities may indicate the need for changes in these PPE level(s). Any significant change in the PPE level will be approved by the SSO in consultation with the HSC, CIH and/or HSM. Personal Protective Equipment (PPE) selection criteria are outlined in HS 600 and HS601 (see IT Health and Safety Procedures Manual).

All personnel using respiratory protection will be cleared by a physician for use of a respirator and will be fit-tested to assure they can achieve an acceptable fit. Physician clearance and results of fit testing will be documented as required by HS100.

12.0 PLANS REQUIRED BY THE SAFETY MANUAL

12.1 HAZARD COMMUNICATION PROGRAM

The Site-Specific Hazard Communication Program is included Section 4.2 of the HASP. IT Hazard Communication Program complies with 29 CFR 1926.59/1910.1200 and is outlined in HS060 (see IT Health and Safety Procedures Manual).

12.2 EMERGENCY RESPONSE PLANS

The Site-Specific Emergency Response and Contingency Plan is included in Section 8.0 of the HASP.

12.3 LAYOUT PLANS

Site Layout Plans (indicating work zones) are attached. Work zones are defined in Section 5.0 of the HASP.

12.4 RESPIRATORY PROTECTION PLAN

The primary objective of respiratory protection is to prevent employee exposure to atmospheric contamination. When engineering measures to control contamination are not feasible, or while they are being implemented, personal respiratory protective devices will be used.

The criteria for determining respirator need have been evaluated based on the site contaminants. Air monitoring will be conducted to confirm that respiratory protection levels are adequate (see Section 8.0 HASP). All respirator users will be OSHA trained in proper respirator use and maintenance. The SS and SSO will observe workers during respirator use for signs of stress. The SS, CIH, HSM, and SSO will also evaluate the implementation of the HASP, periodically, to determine its continued effectiveness with regard to respiratory protection. All persons assigned to use respirators will have medical clearance to do so.

12.5 LEAD ABATEMENT PLAN

Not Applicable

12.6 ASBESTOS ABATEMENT PLAN

Not Applicable

12.7 ABRASIVE BLASTING

Not Applicable

12.8 CONFINED SPACE

Confined Space Entry Procedures are outlined in IT Procedure HS300 (see IT Health and Safety Procedures Manual).

12.9 HAZARDOUS ENERGY CONTROL PLAN

Lockout/Tagout Procedures are outlined in HS315. (See IT Health and Safety Procedures Manual).

12.10 CRITICAL LIFT PROCEDURES

Not Applicable

12.11 CONTINGENCY PLAN FOR SEVERE WEATHER

Contingency plans for severe weather are included in Section 9.0 of HASP. A site Specific Hurricane Preparedness Plan is located in Appendix F of the HASP.

12.12 ACCESS AND HAUL ROAD PLAN

Not Applicable

12.13 DEMOLITION PLAN

Not Applicable

12.14 EMERGENCY RESCUE (TUNNELING)

Not Applicable

12.15 UNDERGROUND CONSTRUCTION FIRE PREVENTION AND PROTECTION PLAN

Not Applicable

12.16 COMPRESSED AIR PLAN

Not Applicable

12.17 FORM WORK AND SHORING ERECTION AND REMOVAL PLANS

Not Applicable

12.18 LIFT SLAB PLANS

Not Applicable

12.19 SSHP

The OHM/IT Site Specific Health and Safety Plan is included with this submission.

12.20 BLASTING PLAN

Not Applicable

12.21 DIVING PLAN

Not Applicable

12.22 ALCOHOL AND DRUG ABUSE PREVENTION PLAN

OHM/IT substance abuse procedures are outlined in IT HS101 - Drug, and Alcohol Testing.

***13.0 CONTRACTOR INFORMATION TO MEET THE
REQUIREMENTS OF THE MAJOR SECTIONS OF EM 385-1-1***

In addition to this Accident Prevention Plan, OHM/IT has prepared a Site-Specific Health and Safety Plan to meet the major requirements of USACE Manual 385-1-1. Additional procedures for major requirements are provided in the IT Group Health and Safety Procedures Manual HS001-999.

APPENDIX F
HURRICANE PREPAREDNESS PLAN

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1.0 INTRODUCTION

PURPOSE

This procedure outlines the general responsibilities and actions to be taken in preparation for and response to a hurricane or hurricane warnings at the Atlantic Field, Atlantic, North Carolina. All personnel should understand that predicting the occurrence and path of a hurricane is difficult, however the risk can be minimized and controlled by following the procedures in this plan.

SCOPE

This procedure is applicable to all contractor personnel, including IT's subcontractors, temporary construction facilities, and remediation equipment present at the Atlantic Field project sites.

DISCUSSION

This procedure provides information on how to protect personnel and property in the event of a hurricane. In the Atlantic area, attention must be paid to all hurricanes, since there is no way to determine with 100 percent accuracy whether a hurricane will actually hit the area until a few hours before landfall.

The following table demonstrates that the accuracy of forecasting where a hurricane landfall will occur is very low more than 24 hours in advance of a storm.

Hours Before Landfall	Maximum Probability Values
72 Hours	10 Percent
48 Hours	13-18 Percent
36 Hours	20-25 Percent
24 Hours	35-45 Percent
12 Hours	60-70 Percent

2.0 DEFINITIONS

The following definitions apply to various terms used in this document.

Conditions of Readiness (CORS):

Condition V - Destructive winds are possible at Atlantic Field within 96 hours. Normal daily jobsite cleanup and good housekeeping practices.

Condition IV - Destructive winds are possible at Atlantic Field within 72 hours. Normal daily jobsite cleanup and good housekeeping practices. Collect and store in piles or containers, scrap lumber, waste material, and rubbish for removal and disposal at the end of each work day. Maintain the construction site, including storage areas, free of accumulation of debris. Stack form lumber in neat piles less than 4 feet high. Remove all trash debris and other objects which could become missile hazards. Contact client representative for Condition requirements, updates, and completion of required actions.

Condition III - Destructive winds are possible at Atlantic Field within 48 hours. Maintain Condition IV requirements. Begin securing the jobsite for and taking those actions necessary for Condition I, which cannot be completed within 18 hours. Cease all routine activities which might interfere with securing operations. Begin collecting and stowing all gear and portable equipment. Make preparations for securing buildings. Review requirements pertaining to Condition II and continue action as necessary to attain Condition III readiness. Contact the weather station on base for weather and COR updates and completion of required actions.

Condition II - Destructive winds are possible at Atlantic Field within 24 hours. Curtail or cease routine activities until securing operations are complete. Reinforce or remove form work and scaffolding. Secure machinery, tools, equipment and materials, or remove from job site. Expend every effort to clear all missile hazards and loose equipment from the jobsite. Contact client representative for weather and COR updates and completion of required actions.

Condition I - Destructive winds are possible at Atlantic Field within 12 hours. Perform and complete all remaining actions required for lower conditions of readiness. Secure the jobsite and leave the government premises.

Destructive Winds - Generally winds reaching or exceeding the force of a tropical storm (≥ 39 mph or 34 knots). Winds from any storm system (tropical or otherwise) that are determined to have the potential to cause property damage or personal injury which would warrant Atlantic Field to initiate a Condition IV alert.

Hurricane Watch - An announcement for specific areas where a hurricane or an incipient hurricane poses a possible threat to a coastal area, generally within 36 hours.

Hurricane Warning - A warning that sustained winds of 74 MPH (64 knots) or higher, associated with a hurricane are expected in a specified coastal area in 24 hours or less.

Hurricane - A tropical cyclone in which the maximum sustained surface wind is 64 knots (74 MPH) or greater.

Missile Hazard - Any object that may become airborne during high winds.

Severe Weather - Any storm of tropical or non-tropical origin that has the capacity to produce destructive winds

Storm Surge - An abnormal rise in sea level accompanying a hurricane or other intense storm, and whose height is the difference between the observed level of the sea surface and the level that would have occurred in the absence of the storm.

Storm Tide - The actual sea level resulting from the astronomical tide combined with the storm surge. This term is used interchangeably with "Hurricane Tide."

Tropical Depression - A tropical low pressure system in which the maximum sustained surface wind is 33 knots (38 MPH) or less.

Tropical Storm - A tropical low pressure system in which the maximum surface wind ranges from 34 to 63 knots (39 to 73 MPH) inclusive. This is the strength at which the National Hurricane Center applies a name to the storm.

Tropical Storm Watch - Tropical storm conditions pose a threat to a coastal area generally within 36 hours.

Tropical Storm Warning - A warning for tropical storm conditions with sustained winds within the range of 39 to 73 MPH which are expected in a specified coastal area within 24 hours or less.

3.0 RESPONSIBILITIES

Project Manager – Taylor Sword

The Project Manager (PM) is responsible for ensuring that all adequate measures have been taken to prepare for hurricanes and to protect IT site personnel and property in the event of a hurricane. The PM will ensure that ample resources are available to implement this plan and that all personnel are aware of this plan and their responsibilities.

Site Supervisor – Robert Taylor

The Site Supervisor (SS) will communicate all hurricane information to site personnel, and keep the site personnel continually informed of the measures to be taken. The SS is responsible for the coordination and direction of site equipment shut-down and will oversee the preparation of site facilities for any imminent storm. The SS will oversee the coordination of both pre- and post-storm operations and will ensure that the proper material, equipment, and supplies are utilized to implement this procedure.

Site Safety Officer – TBD

The Site Safety Officer (SSO) will monitor weather information, including the National Weather Service probability values for landfall. The SSO will maintain the necessary emergency supplies, and will periodically tour the site to ensure that proper steps are being taken to protect site personnel and property. The SSO will develop the emergency contact list will be maintained in a site dedicated vehicle.

Note: When personnel identified in Section 3.0 leave the site, they are responsible for notifying the Project Manager of a designated back-up person. The back-up person will be instructed in their responsibilities in the event of a hurricane.

4.0 WORK AND SUPPORT AREAS

To prevent migration of contamination from personnel and equipment, work areas will be clearly specified as designated below prior to beginning operations. Each work area will be classified in accordance with NIOSH/OSHA/USCG/EPA'S document *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*. Each work area will be clearly identified using signs or physical barriers. The following work zones will be established according to SOP 5-3.

- Exclusion Zone
- Contamination Reduction Zone
- Support Zone

A log of all personnel visiting, entering or working on the site shall be maintained in a site dedicated vehicle. No visitor will be allowed in the EZ without showing proof of training and medical certification, per 29 CFR 1910.120(e), (f). Visitors will attend a site orientation given by the SSO and sign the HASP.

The following are standard safe work practices that apply to all site personnel and will be discussed in the safety briefing prior to initiating work on the site:

- Eating, drinking, chewing gum or tobacco, smoking is prohibited in the EZ/CRZs.
- Hands and face must be washed upon leaving the EZ and before eating, drinking, chewing gum , tobacco or smoking .
- A buddy system will be used. Hand signals will be established to maintain communication.
- During site operations, each worker will consider himself as a safety backup to his partner. Off-site personnel provide emergency assistance.
- Visual contact will be maintained between buddies on site when performing hazardous duties.
- No personnel will be admitted to the site without the proper safety equipment, training, and medical surveillance certification.
- All personnel must comply with established safety procedures. Any staff member who does not comply with safety policy, as established by the SSO or the SS, will be immediately dismissed from the site.
- Proper decontamination procedures must be followed before leaving the site.
- All employees and visitors must sign in and out of the site.

5.0 EMERGENCY OPERATING PROCEDURES

Condition V - Early Preparedness

The SSO will notify the PM and SS when a tropical storm has been named and/or any severe weather has the potential to produce destructive winds at Atlantic Field within 96 hours. This will initiate Condition of Readiness (COR) Condition V. This phase will continue until:

- The storm or condition is downgraded
- The storm track poses no threat to the site
- Condition IV begins

During Condition V, the progress of the storm will be monitored and tracked. The client will be contacted at least twice daily for Condition Requirements updates and to inform him of completion of required actions for Condition V.

See Appendix A for the Hurricane Preparedness Responsibility Punch List - Condition V.

Condition IV - (Destructive winds are possible within 72 Hours)

This COR starts when IT is notified by the client representative that severe weather is within 72 hours of posing a threat to the project location. The SSO will ensure that the following steps are taken:

- Monitor the storm and inform the PM and SS of its progress
- Check PPE supplies and equipment to determine if any shipments are required or if pending shipments should be advanced or postponed

During Condition IV, the progress of the storm will be continuously monitored and tracked. The SS will instruct site personnel to begin general cleanup of all loose materials which may pose a hazard during high winds or rain. This will include removal of all debris, trash, and other debris that may become missile hazards. All form lumber will be stacked in neat piles less than 4 feet high. The client representative will be contacted at least twice daily for Condition Requirements updates and to inform him of completion of required actions for Condition IV.

The SS will keep all site personnel advised of the status of the storm and site preparation activities. Due to the urgency and amount of work involved in preparing for a threatening storm, all construction operations which might interfere with securing operations, such as starting a major excavation, will cease.

The SS will ensure that the following steps are taken:

Fill fuel tanks in all equipment on-site
Secure stockpiled material on-site.
Review requirements for Condition II with all crew members.
Maintain condition IV requirements.

See Appendix A for the Hurricane Preparedness Responsibility Checklist - Condition IV.

Condition III - Tropical Storm Warning (Destructive winds are possible Within 48 Hours)

This COR starts when severe weather places the project site under a tropical storm warning. Condition III activities will also start if a threatening tropical storm is upgraded to a hurricane, or a severe storm approaching Marine Corps Auxiliary Landing Field has generated destructive winds in other locations. The PM, SS, and SSO will determine when to cease all operations based upon current weather conditions and/or as directed by the client representative. If the storm or Condition is downgraded, the PM, SS, and SSO will meet with the client to decide if a downgrade of the COR is appropriate. Actions for Condition III will be maintained and the following shall also be completed:

Machinery, tools, equipment, and materials will be secured or removed from the site.
Take actions to secure jobsite necessary for Condition I that cannot be completed within 18 hours.

See Appendix A for the Hurricane Preparedness Responsibility Checklist - Condition III.

Condition II - Destructive Winds are anticipated within 24 hours.

Condition II begins when destructive winds are anticipated within 24 hours and/or as directed by the ROICC. The PM, SS, and SSO will determine when to demobilize from the site based upon weather conditions. During this phase:

The SS will:

Secure machinery, tools, equipment and materials or remove them from the jobsite.
Conduct a roll call of personnel on-site and inform the SSO
Notify personnel, on leave, of schedule changes
Personnel needing to leave the project to attend to personal matters will notify their SS immediately.

The SSO will ensure that the following step is taken:

All visitors from the site are evacuated
Make a final site walk-through to determine that the site is secure and clear all missile hazards from the jobsite
Inform the Project Manager that all personnel are being released from the site

Project Foreman will ensure that the following steps are taken:

Heavy equipment will be secured according to the manufacturer's recommendations
All small field equipment will be secured

If the storm or Condition is downgraded, the PM, SS, and SSO will meet to decide if a downgrade of the phase is necessary.

See Appendix A for the Hurricane Preparedness Responsibility Checklist - Condition II.

Condition I - Destructive winds are anticipated within 12 hours.

Complete all remaining actions required for lower conditions of readiness.
Secure jobsite access and evacuate to safe refuge.

See Appendix A for the Hurricane Preparedness Responsibility Checklist - Condition I.

Resume Site Operations

The PM will contact the client representative to determine when site operations will resume. Although the hurricane/severe weather has passed, hazards may still exist because of water damage, other hazardous conditions, dangers from electric shock, poisonous snakes, etc.

The SSO will conduct a damage survey with the PM and SS. Photographs of the storm damage at the site will be taken by the SS. They will develop a prioritized recovery plan from the survey findings. Subsequently, all site personnel will be notified when it is safe to return to work. Required personnel and subcontractor expertise will be mobilized to the site to repair any damaged equipment.

See Appendix A for the Hurricane Preparedness Responsibility Checklist - Resume Site Operations.

6.0 DEBRIEFING

Following the return to work of site personnel, the Site Supervisor will conduct a debriefing with site personnel. The debriefing will accomplish the following objectives:

- Finalize a recovery plan
- Review the Hurricane Plan for effectiveness
- Suggest and agree on improvements to the plan
- Incorporate plan changes

When completed, the PM and SS will meet with site personnel to discuss any corrective actions or changes in this plan.

7.0 REFERENCES

The following references and sources of information may be consulted for additional guidance on hurricane preparedness and response.

Disaster Planning Guide for Business and Industry, Federal Emergency Management Administration (FEMA).

U.S. Department of Commerce; National Oceanic and Atmospheric Administration (NOAA)

ATTACHMENT A

***HURRICANE PREPAREDNESS RESPONSIBILITY
CHECKLISTS***

HURRICANE PREPAREDNESS CHECKLIST

Condition V

Date/Time Entered Condition V: _____

Severe Weather/Tropical Storm: _____

Action Items

- Project Manager Notified
- Track of Storm Poses No Threat
- Storm or Condition is Downgraded
- Upgrade to Condition IV

Storm Location

Date/Time: _____

Date/Time: _____

Location/Coordinates: _____

Location/Coordinates: _____

Date/Time: _____

Date/Time: _____

Location/Coordinates: _____

Location/Coordinates: _____

Condition V Action Items Complete: _____

Date: _____

HURRICANE PREPAREDNESS CHECKLIST

Condition IV (Landfall within 72 hours)

Date/Time Entered Condition IV: _____

Action Items:

- Notify Project Manager
- Notify Project Superintendent
- Notify Site Personnel
- Assemble Shift personnel to begin preparation
- Track storm on hurricane tracking map (Attachment C) (if applicable)

The Project Foremen will ensure the following steps are taken:

- Secure all heavy equipment located at the site in accordance with manufacturer's specifications. All equipment will be moved to a secured site location.
- All equipment fuel tanks will be filled.
- All subcontractors with equipment or supplies on-site will be notified to begin removal procedures

Condition IV Action Items Complete: _____

Date: _____

HURRICANE PREPAREDNESS CHECKLIST

Condition III (Landfall within 48 hours)

Date/Time Entered Condition III: _____

Action Items:

- Provide the status of the storm to site personnel on an hourly basis
- Take actions to secure job-site necessary for Condition I that cannot be accomplished in 18 hours
- Recheck all items on checklist IV to ensure they are complete (ie.: gas tanks are still filled)

See itemized equipment checklist (itemized list of equipment to be secured/removed and COR for action)

Condition III Action Items Complete: _____

Date: _____

HURRICANE PREPAREDNESS CHECKLIST

Condition II

Date/Time Entered Condition II: _____

Action Items:

- Evacuate all visitors from the site
- Conduct a role call of site personnel and inform the SSO
- Check the status all incoming shipments of supplies and equipment
- Remove all unnecessary vehicles from the site
- Secure heavy equipment in accordance with manufacturer's specification
- Secure all valuable records and equipment
- Release personnel from the site
- Recheck all items on checklist IV and III to ensure they are complete (ie: gas tanks are still filled)

Condition II Action Items Complete: _____

Date: _____

HURRICANE PREPAREDNESS CHECKLIST

Condition I

Date/Time Entered Condition I: _____

Action Items:

- Complete all action items for lower conditions of readiness
- Secure job-site access and evacuate to safe refuge

Condition I Action Items Complete: _____

Date: _____

ATTACHMENT B
EMERGENCY PHONE NUMBERS

SEE SECTION 8 OF THE SITE-SPECIFIC HEALTH AND SAFETY PLAN.

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ATTACHMENT C

HURRICANE TRACKING MAP

HURRICANE PREPAREDNESS CHECKLIST

Resume Site Operations

Date/Time Resume Site Operations: _____

Action Items:

- Conduct a damage survey
- Notify all site personnel when to return to work
- Develop a prioritized recovery plan
- Inspect electrical equipment before re-energizing to detect and repair damage
- Provide bottled water for drinking until normal drinking water is deemed safe to drink
- Remove storm debris from site
- Notify client representative of the resumption of site activities

Resume Site Operations Action Items Complete: _____

Date: _____

Appendix B

Field Sampling Plan

**FIELD SAMPLING AND QUALITY ASSURANCE PLAN
FOR
CONTAMINATED SOIL EXCAVATION AND DISPOSAL
ATLANTIC 7012
MCOLE ATLANTIC, NORTH CAROLINA**

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-97-D-5000
Task Order 0059

Prepared by:

OHM Remediation Services Corp.
(A member of The IT Group)

Dorothy S. Small
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July 2000

OHM/IT Project No. 808345

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1.0 INTRODUCTION

This Field Sampling and Quality Assurance Plan (FSQA) presents, in specific terms, the policies, organization, functions, and Quality Assurance/Quality Control (QA/QC) requirements designed to achieve the data quality goals for the soil excavation and disposal at Atlantic 7012, Marine Corps Outlying Landing Field (MCOFL) Atlantic, North Carolina. This work will be performed under Task Order 0059 of Contract Number N62470-97-D-5000 for the Navy Atlantic Division (LANTDIV).

This FSQA integrates the required components of a generic quality assurance project plan (QAPP) and a field-sampling plan (FSP). The Project Manager, Project QC Manager, Field Chemist/Scientist, and Sample Technicians shall implement this document. Any field changes shall be approved by the Navy's Technical Representative (NTR), OHM Project Manager, and OHM Field Chemist. These changes shall be documented by the Field Chemist/Scientist and distributed to the appropriate persons as amendments to the FSQA.

2.0 PROJECT MANAGEMENT

2.1 PROJECT OBJECTIVE AND SCOPE OF WORK

The scope of work for Task Order No. 0059 is to excavate, dispose, sample excavation, and backfill the identified petroleum contaminated area at Atlantic 7012, MCOLF Atlantic, North Carolina. The objectives of the removal action are as follows:

- Remove the contaminated soil an area of 40' by 40' by 3' thick.
- Perform confirmation sampling to assure that the removal action is in accordance with the North Carolina Department of Environmental and Natural Resources (NCDENR).
- Perform disposal sampling of any site-generated wastewater to characterize the water prior to disposal.
- Ensure that Clean Fill meets the guidelines for use on this site

The primary contaminants in the affected soil are No. 2 Fuel Oil (the maximum thickness of product measured in the area is 1.55 feet).

Table 2-1 Cleanup Criteria	
Analyze	Remedial Action Goals (mg/kg)
Petroleum Hydrocarbons	40

2.2 PROJECT TASK DESCRIPTIONS

The following tasks will be performed in support of the remedial actions at Atlantic 7012:

- Sampling and analysis for waste disposal characterization.
- Sampling and off-site analysis to confirm that the cleanup criteria will be met in accordance with NCDENR.
- Establish the proper disposal of site generated wastewater

2.3 PROJECT ORGANIZATION

The project manager is the primary focal point for control of the project activities. The project manager will be supported by the QA Management team, which will provide reviews, guidance, and technical advice on project execution issues. Members of this staff will be on an "as-needed" basis to assist in smooth project execution. The project manager will be supported by the project team consisting of a supervisory, health and safety, technical, and QA/QC staff to ensure that the project is safely executed in compliance with applicable laws, regulations, statutes, and industry codes. Individuals of the project team are responsible for fulfilling appropriate portions of the project QA program, in accordance with assignments made by the project manager. The project manager is responsible for satisfactory completion of the project QA program. The project manager may assign specific responsibilities to the deputy project manager and other members of the project staff.

An organizational chart of the project team is presented in Figure I-1 of the QA/QC Plan.

The responsibilities of the key members in the project organization are:

Project Manager – Taylor Sword

The project manager is responsible for the overall direction of this project executed under his supervision. He provides the managerial administrative skills to ensure that resource allocations, planning, execution, and reporting meet contract requirements. He is ultimately accountable for all work activities undertaken on this project. The global quality-related responsibilities of the project manager can include, but are not limited to, the following:

- Organization of the project staff and assignment of responsibilities.
- Understanding of contract and scope of work for a specific project. Communication to the project staff regarding client requirements and QA practices.
- Identification, documentation, and notification to the client and project staff and QA personnel of changes in the scope of work project documentation and activities.
- Supervision of preparation and approval of project-specific procedures, work plans, and QA project plans.
- Approval of project design bases, design parameters, drawings, and reports.
- Approval of project remedial action/construction methodologies.
- Dissemination of project-related information from the client such as design bases, input parameters, and drawings.

- Liaison for communications with the client and subcontractors. Liaison between the project staff and other internal groups.
- Decision of whether or not drawings require independent review.
- Investigation of nonconformances, notification of QA personnel, and implementation of corrective actions.
- Determination of the effect of nonconformance on the project and the appropriateness for reporting such items to the client, and providing appropriate documentation for reporting.
- Determination that changes, revisions, and rework are subject to the same QC requirements as the original work.
- Serve as final reviewer prior to release of project information.
- Approve and sign outgoing correspondence.
- Custodian of all project related documents.

The project manager may assign some of these responsibilities to the Site Supervisor, who will remain on site throughout the project field activities.

Site Supervisor – Robert Taylor

The site supervisor is responsible for the day-to-day management of this specific delivery order. He will ensure sufficient resource allocations to maintain project schedule and budget. He will provide daily feedback to the project manager on project progress, issues requiring resolution, etc. The quality-related responsibilities of the site supervisor include, but are not limited to, the following:

- Notification to the project manager if the project cannot be completed with regard to quality, schedule, or cost.
- Oversight and control of subcontractor services.
- Liaison for communications with OHM project staff and other internal groups as well as with the NTR and on-site inspector.
- Supervision of day-to-day site activities in accordance with project and program requirements.
- Preparing the Contractor Production Report.
- Preparing the Quality Control Reports.
- Initiating corrective actions for non-conformance identified on-site.

Project Chemical QA Officer and Laboratory Coordinator– Dorothy S. Small

The chemical QA responsibility is to implement the project chemical QA program. The officer is responsible for informing the project manager of any site-specific QA issues. The laboratory coordinating function is responsible for the procurement of a certified laboratory based on the requirements needed for the project. The responsibilities include, but are not limited to, the following:

- Reviewing subcontractor's QA Manuals and/or Laboratory Quality Management Plans (LQMPs) and if possible, performing audits on the labs.
- Certifying the level of QA that has been achieved during the generation of analytical data.
- Initiating and overseeing all audit functions.
- Stopping work if quality objectives are not being met.
- Initiating investigations for nonconformance, identifying appropriate corrective actions, and performing follow-up audits to ensure that the corrective actions were successful.
- Selection of qualified laboratories and control of laboratory services requests.
- Assist coordination of laboratory with field sample shipments.
- Management of laboratory data in conjunction with the field chemist.
- Liaison between the field and the laboratories when changes are required in the FSQA and Purchase Orders.

2.4 DATA QUALITY OBJECTIVES FOR MEASUREMENT DATA

Data generated from those tasks described in Section 2.2 will be used to make the decisions as to the volume of soil to excavate. Project-specific quality objectives are listed in *Appendix A, Table A-2*. These include the quantitation, project action, accuracy, precision, and completeness limits by which the data will be evaluated.

A Naval Facilities Engineering Service Center (NFESC)-certified or US Army Corps of Engineers-Missouri River Division (USACE-MRD)-approved laboratory will be used for all sample analyses. The laboratory will also be North Carolina approved. A copy of the laboratory's QA Manual, statement of qualifications, and appropriate certificates of approval are kept on file in the Virginia Beach office and are available upon request from NCDENR, LANTDIV, or other regulatory agencies. A copy of the approved Sampling and Analysis Plan will be forwarded to the laboratory selected to perform chemical analysis of the samples.

All off-site samples will meet OHM's minimum requirement for the QA/QC as specified in OHM QP-650. A copy of QP-650 is included in *Appendix B*. On-site air measurements will be non-definitive field screening analysis. If disposal analysis is required no duplicates or rinsate blanks will be collected. All sampling and analytical activities will be in accordance with federal, state, and local regulations. A summary of the field QC sampling requirements is shown in *Table A-1*, "Sampling Summary" in *Appendix A*.

Data evaluation will be performed by the Chemical QA officer on all data before it is used. Third party data validation will not be performed on the final data. Data evaluation results will be provided in the project closeout report.

3.0 SAMPLING

3.1 SAMPLING METHODS AND PROCEDURES

The following sections describe sampling locations, frequencies, sample matrices, and measurements of parameters of interest. *Table A-1* "Sampling Summary" in *Appendix A* presents a summary of these items.

3.1.1 Clean-fill Sampling

The clean-fill that will be delivered to the site will be prequalified by requiring the analytical certification for the soil to meet the NCDENR regulation requirements indicated in *Table 3-1*. The vendor supplying the clean-fill will be required to provide the analytical certification for the soil to meet NCDENR regulation requirements. This certification must be provided to the site supervisor at least one week prior to delivery of the clean-fill to the site.

3.1.2 Confirmation Sampling

The sampling of the excavation limits will be performed following the excavation. The excavation limits includes the requirement to excavate to below groundwater level. One discrete soil sample will be collected from each wall of the excavation and floor.

The confirmation sampling must results must be less than 40 mg/kg petroleum hydrocarbons. If the results are greater than 40 mg/kg, contact the Chemical Quality Officer to determine the proper approach.

Soil Sample Collection

- 1) Using a stainless steel spoons, collect a representative soil sample from the wall or floor of the excavation into a stainless steel bowl.
- 2) Using a stainless steel spoon, collect the sample into a 4-oz glass container and fill to the top. Tap the container and fill until there is no headspace in the jar. Cap and label the container immediately.
- 3) Label the sample as indicated in the site specific SOP for grid sampling.

The soil samples collected will be analyzed for TPH (gas range) and TPH (diesel range) by EPA Method 5030/8015 and 3550/8015, respectively. The turnaround time will be requested to be seven-day turnaround.

Table 3-1 Criteria for Clean Fill Soil		
Analyte/Parameter	EPA Method	Level (mg/kg)
TPH (DRO & GRO)	5030/3550/8015	<40 mg/kg

3.1.3 Sampling of Water from the On-site Baker Tank

The liquid waste for this site will be collected and held in a temporary storage tank until samples are analyzed and disposal can be arranged. Liquid waste will consist of water from dewatering activities and decontamination water. At least one sample per storage tank will be collected from the top of the tank using a sludge judge and then filling the sample containers. It is best to collect the sample through the top port of the tank because this method collects a representative composite sample of the tank contents. The SOPs for using a sludge judge and sampling from a tap are included in *Appendix B*.

Table 3-2 Parameters for Wastewater	
Analyte/Parameter	Method
TPH (DRO & GRO)	5035/8015B

3.2 SAMPLE IDENTIFICATION

The samples collected on-site will be provided with a unique sample designation. The number will serve to identify the site, location, and specific sample identification number. The sample designation format will be as follows:

LCXXX-NNN-DD

where:

CP = Cherry Point

XXX = Task Order for the project (0059)

NNN = Sequential number starting at 001

DD = QC identifier

If sample is a field QC sample, the following designations will be added as a suffix

FB = Field Blank

RB = Equipment Rinsate Blank

(Duplicates must not be identified to the laboratory)

Sample location information will be included in the sample description area of the COC. Sample sequential numbers are not to be duplicated. Duplicate samples will be sent to the off-site laboratory blind. The latest OHM COC has been designed so that the cross-reference of the duplicate to the original sample can be included on the last page of the COC that does not go to the laboratory.

3.3 SAMPLE PRESERVATION AND HOLDING TIMES

Samples collected for off-site analyses will be sent to the laboratory within 24 hours after collection to ensure that the most reliable and accurate answers will be obtained as a result of the analysis. The holding time begins from the date and time of collection in the field.

All environmental and treatment system samples, except for aqueous samples for metals, will be preserved to a temperature of $4^{\circ}\pm 2^{\circ}\text{C}$ prior to shipment to the analytical laboratory, using ice or refrigeration. This temperature should be maintained during shipment by placing ice in leak-proof containers, and placing it above and below the sample containers. Other sample preservation requirements and holding times applicable to the sample matrix and analyses are listed in *Appendix A, Table A-1*.

3.4 FIELD QC SAMPLES

The appropriate number of field QC samples, as specified in the NFESC, 1996 document will be collected during this project. These samples will include field blanks, equipment rinsate blanks and field duplicate samples. These samples will be collected at the following frequencies and analyzed for the parameters listed in *Appendix A, Table A-1*:

- **Field Blanks (Ambient Blanks)** - Field blanks, sometimes referred to as ambient blanks, are samples of contaminant-free media (reagent grade water) which are prepared at the site and handled in the field in the same manner as all other field samples. Field blanks are collected during the course of field sampling and, to the extent possible, in the actual sampling locations. Field blanks are collected by placing contaminant-free medium (reagent grade water) in the same type of container as field sample. Field blanks are preserved and stored in the same manner as field samples. At a minimum, one field blank per contiguous site from each sampling event is collected and is analyzed for those interfering contaminants that could potentially be present in ambient air at the sampling site. Approximate number of field blank samples planned is presented in *Appendix A, Table A-1*.

- **Equipment Rinsate Blank** - Equipment rinsate blanks are the final analyte-free water rinse from equipment cleaning collected daily for each matrix sampled. An equipment rinsate blank is collected in the same type of sample containers, and in all other ways is handled in the same manner as other field samples. The equipment rinsate blank must be collected during the sampling event (after collection of at least one field sample) after the sampling equipment has been decontaminated and prior to collection of the next field sample. All equipment that comes into contact with field samples must be decontaminated prior to use. The use of disposable equipment is acceptable, but does not obviate the requirement for decontamination prior to use, or the requirement for collection of equipment rinsate blanks. Equipment rinsate blanks for disposable equipment are collected by passing contaminant-free medium through or over the decontaminated equipment. One equipment rinsate blank is collected per day, per sampling event for each matrix sampled that day. Equipment rinsates are analyzed for the same parameters as the sample collected that day. Approximate number of equipment blank samples planned to be collected is presented in *Table A-1, Appendix A*.
- **Field Duplicate** – Duplicates for soil samples are collected, homogenized, and split. All samples except volatiles are homogenized and split. Volatiles are not mixed, but select segments of soil are taken from the length of the core and placed in 4 oz. glass jars. The duplicates for water samples are collected simultaneously. Field duplicates must be collected at a frequency of one sample per day per matrix or 10% of the field samples per matrix. All the duplicates should be sent to the primary laboratory responsible for analysis, along with the samples. Approximate number of field duplicates planned to be collected is presented in *Table A-1, Appendix A*. Duplicates will be sent to the off-site laboratory blind.
- **Trip Blank** - Trip blanks are defined as samples which originate from analyte-free water taken from the laboratory to the sampling site and returned to the laboratory with the volatile samples. One trip blank should accompany each cooler containing aqueous and non-aqueous volatile samples, should be stored at the laboratory with the samples, and analyzed by the laboratory. Trip blanks are only analyzed for volatile organic compounds and may not be required for this project if disposal samples are not taken. Approximate number of trip blank samples planned to be analyzed is presented in *Table A-1, Appendix A*.

3.5 DECONTAMINATION

All sampling equipment (hand augers, spoons, stainless steel/glass mixing bowls, etc.) will be decontaminated before sampling commences, between each sample location, and prior to leaving the site. The procedures for decontamination of equipment according to NEESA 20.2-047B are as follows.

- 1) Remove gross contamination by scraping or brushing.

- 2) Clean with tap water and phosphate-free laboratory detergent (liquinox), using a stiff brush to remove all surface contaminants.
- 3) Rinse thoroughly with tap water.
- 4) Rinse with 1:1 nitric acid (HNO₃) metals grade (metal samples only).
- 5) Rinse thoroughly with tap water.
- 6) Rinse thoroughly with deionized/distilled water.
- 7) Rinse twice with reagent grade isopropanol or methanol.
- 8) Rinse thoroughly with organic-free water and allow to air dry. (Do not rinse with deionized/distilled water. If organic-free water is not available, allow equipment to air dry.)
- 9) Wrap equipment with aluminum foil prior to storage or transportation to sample locations.

Decontamination fluids will be collected in properly labeled 55-gallon drums, and staged in a secure area until final disposal unless other arrangements are made.

3.6 CROSS-CONTAMINATION MINIMIZATION

Cross-contamination is the introduction of contaminants into the sample through the sampling and/or sample-handling procedures. It can cause an otherwise representative sample to become non-representative. The most important means of minimizing cross-contamination are as follows:

- Sampling expendables, i.e., sample gloves, pipettes, string, dip jars, etc., and must not be reused. Used expendables should be labeled so they are not confused with non-contaminated trash
- Minimum contact should be made between the sampler and the sample medium. For example, a sampler should not touch the sample during while loading the sample in the container.
- Sample collection activities should proceed progressively from the least contaminated area to the most contaminated area.
- Sampling equipment should be constructed of Teflon, stainless steel, or glass that has been properly precleaned for collecting samples. Equipment constructed of plastic or PVC should not be used to collect samples for trace organic analyses.
- Any tools used in sampling must be carefully decontaminated prior to first use and after each use.
- Activities that could contaminate samples are prohibited in the sample handling and preparation area. These activities and the possible contaminants include:

Activity	Possible Contaminants
Smoking	Poly Aromatic Hydrocarbons
Spraying for insects	Pesticides, oils, solvents
Spraying for weeds	Herbicides, oils, solvents
Refueling	BTEX, hydrocarbons
Painting and paint stripping	Solvents

3.7 SAMPLE LOG BOOK

It is necessary for the sampling crew to maintain daily field notes. Items that must be included are sampling protocol, any changes to the procedures, meetings, instructions, safety precautions, personnel protection, and activities pertaining to the samples. The person taking notes must be knowledgeable enough about these activities to know which details are important.

Repetition of information recorded in other permanent logs should be avoided, but enough should be recorded to present a clear and accurate picture of technical activities. At a later date, should a question arise concerning a specific event or a procedure used, it will be answered from these notes. The following information should be logged into the logbooks and/or database:

- Date and time of sampling
- Sample number, locations, type, matrices, volumes, sample ID and descriptions, type and number of sample containers, names and signatures of individuals performing sampling tasks, Chain-Of-Custody (COC) and air bill numbers, preservatives, and date samples were sent
- Name of laboratories and contacts to which the samples were sent, turn around time (TAT) requested, and data results, when possible
- Termination of a sample point or parameter and reasons
- Unusual appearance or odor of a sample
- Measurements, volume of flow, temperature, and weather conditions
- Additional samples and reasons for collecting them
- Levels of protection used (with justification)
- Meetings and telephone conversations held with LANTDIV, NTR, regulatory agencies, project manager, or supervisor
- Details concerning any samples split with another agency
- Details of QC samples collected

These notes must be dated and signed (each page) for validity. All logbooks will be bound and pre-numbered. All log book entries will be made with indelible ink and legibly written. The language will be factual and objective. No erasures will be permitted. If an incorrect entry is made, the error will be crossed out with a single strike mark, initialed, and dated. When audits are performed, the auditor's remarks and decisions must also appear in these notes. These audits should be followed up by written report submitted by the auditor, including opinions and conclusions. A copy of this report should be placed in the project file and one copy kept in the sampling file for easy reference. This information will also be entered in to the data base program that been prepared for the site. It will be entered daily by the field chemist or sample technician. This person will be the point of contact for all sampling and analytical information. Report outputs from the database are an acceptable substitute for the sample logbook.

3.8 SAMPLE LABELS

A sample label will identify any samples placed into a sample container. Sample label will identify the following information:

- (1) PROJECT NUMBER
- (2) DATE- Month, day, year
- (3) TIME- Military time
- (4) SAMPLE NUMBER- See Section 3.2 for designations
- (5) SAMPLE DESCRIPTION
- (6) SAMPLER- Sampler's name
- (7) PRESERVATIVES
- (8) ANALYSIS REQUIRED- See *Appendix A, Table A-1*

The information described above should be printed neatly using an indelible marker. After the sample is taken and the label is securely attached, the sample is logged into the sample logbook. An example of a sample label is presented in *Appendix C*.

3.9 CUSTODY SEALS

Custody seals are narrow strips of adhesive tape of glass fiber used to demonstrate that no tampering has occurred. They may be used on sampling equipment, sample transport containers, and individual sample containers. They should be signed and dated by the sampler and placed from one side, across the top, and to the other side of the sample container or across the openings of the sample transport containers. An example custody seal is presented in *Appendix C*.

3.10 CHAIN-OF-CUSTODY PROCEDURES

In order to generate legally defensible data of the samples collected throughout the project, the possession of samples must be traceable from the time the samples are collected until they are introduced as evidence in legal proceedings. To maintain and document sample possession, chain-of-custody procedures are followed as described below:

A sample is under your custody if:

- (1) It is in your actual possession, or
- (2) It is in your view, after being in your physical possession, or
- (3) It was in your physical possession and then you locked it up to prevent tampering, or
- (4) It is in a designated secure area

An example of a COC form is presented in *Appendix C*. The following information is required on the COC:

- (1) Project Name
- (2) Project Location - City and State in which the project site is located
- (3) Project Number
- (4) Project Contact - OHM employee responsible for overseeing the sampling operation. This person should be the individual to whom questions are to be directed or verbal results are given (Project Manager, Site supervisor, or Project Chemist)
- (5) Site Telephone Number - The telephone number of on-site office trailer or number where person responsible for samples can be contacted.
- (6) Sample Date - Month, Day, Year
- (7) Sample Time - Military time
- (8) Sample Identification - Sample number and location
- (9) Sample Type - Designation of sample as grab or composite
- (10) Sample Description - Sample matrix, and a brief description of the sampling location
- (11) Sample Preservation - Preservatives used

- (12) Analytical Parameters Requested - Analytical parameter, method numbers, and specific compounds of interest, if applicable.
- (13) Air bill Number
- (14) Laboratory - Laboratory where samples are to be sent
- (15) Laboratory Phone - Telephone number of laboratory
- (16) Laboratory Contact - Contact person for laboratory
- (17) Relinquished By - Signature of sender (OHM)
- (18) Date Relinquished - Date samples were relinquished
- (19) Accepted By - Signature of acceptor
- (20) Date Received - Date samples were accepted
- (21) Turnaround Time - Turnaround times requested or date the results are required from the lab
- (22) Sampler's Signature - Signature of sampler

The COC will be sealed in a ziploc bag and taped in place on the underside of the top of the sample transport container (cooler).

3.11 PACKAGING, HANDLING, AND SHIPMENT OF SAMPLES

Samples will be packaged as to minimize shifting of the samples during shipment. An absorbent, such as vermiculite or kitty litter, will be placed at the bottom of the shipment container in order to absorb any liquids in the event of sample breakage. All samples will be individually placed into appropriately sized ziploc bags and sealed.

Samples, which must be kept at $4^{\circ}\pm 2^{\circ}\text{C}$, will be shipped on ice in insulated containers. Ice will be placed in a container such as a ziploc bag and sealed so that water will not fill the shipping container as the ice melts. The ice will be double bagged to insure the ice does not leak. Aqueous samples for metals analysis, except hexavalent chromium, shall not be shipped or stored under refrigeration.

Samples will be shipped via an overnight shipping agency to the appropriate laboratory. IATA regulations will be followed, as they are more applicable to OHM's method of sample shipment. Instructions for filling out shipment documentation are included in *Appendix C*. These instructions are for shipping samples with unknown or limited hazards. All information will be entered as directed. No changes or substitutions to the instructions will be made irrespective of their significance. A copy of the OHM sample-shipping label is included in *Appendix C*.

4.0 DATA ACQUISITION

4.1 ANALYTICAL METHOD REQUIREMENTS

Analytical requirements for this project are listed in *Appendix A, Table A-1*. All samples will be analyzed according to USEPA SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods whenever possible. Alternative methods of analysis from other sources (ASTM, NIOSH, Standard Methods, etc.) may also be used.

4.2 QUALITY CONTROL REQUIREMENTS

Project Quality Control (QC) requirements for precision, accuracy, completeness, and quantitation limits are listed in *Appendix A, Table A-2*. QC procedures and acceptance limits must be met as specified in the individual methods. In addition, the laboratory must meet the specification and requirements as described in the NFESC, 1996 document.

4.3 INSTRUMENT TESTING, INSPECTION, AND MAINTENANCE

Proper maintenance is critical to the performance of minimization of downtime of all equipment, whether it is for measurement or support. Inspection will be performed, at a minimum, prior to use of the instruments. Preventive maintenance will be performed as recommended by the manufacturer of the respective equipment. All routine maintenance and major repairs performed on field screening or analytical equipment will be recorded in bound maintenance logbooks that have been specifically designated for that instrument. Equipment that fails calibration or becomes inoperable during use will be removed from service and segregated to prevent inadvertent use, or will be tagged to indicate that it is out of calibration. Such equipment will be repaired and recalibrated or completely replaced.

4.4 INSTRUMENT CALIBRATION

All calibrations on field instruments will be performed, as a minimum, on a daily basis. Every calibration will be recorded in the maintenance logbook for each instrument. Quality control check standards from a separate source will be used to check initial calibration, and acceptance and rejection criteria. Off-site analytical instruments will be calibrated according to the method specifications and the laboratory's QA Manual.

5.0 DATA MANAGEMENT

Data management is the system by which data is reduced, reviewed, validated, reported, distributed, and finally archived. The criteria in this system are designed to meet the project objectives.

5.1 LABORATORY DATA REDUCTION

Data reduction includes the identifications and calculations necessary to convert the raw instrument readings to the final reported compounds and their respective concentrations.

Responsibilities of Analyst

Each analyst is responsible for converting raw data into reportable values. These specific duties include:

- Proper identification of the analyte
- Generation of calculations
- Checking associated calibrations to ensure support of data
- Associated QA/QC checks are supportive of data
- Associated documentation is complete and accurate in respective log books
- Associated chromatograms and strip chart recordings are labeled with data, instrument number, run parameters and analyst

5.2 LABORATORY DATA VALIDATION

All data generated for the project within the laboratory will be extensively checked for accuracy and completeness. The data validation process consists of data generation, reduction, and three levels of review.

The analyst who generates the raw data has the prime responsibility for the correctness and completeness of the data. All data generated and reduced will follow protocols specified in the laboratory SOP. Each analyst reviews the quality of his work based on an established set of guidelines. The guidelines are:

- Sample preparation information is correct and complete
- Analysis information is correct and complete
- The appropriate Standard Operating Procedures have been followed

- Analytical results are correct and complete
- Analysis is performed within prescribed holding times.
- QC samples are within established control limits
- Blanks are within appropriate QC limits
- Special sample preparation and analytical requirements have been met
- Documentation is complete

The next level of review is performed by the section supervisor or data review specialist. The review is structured to ensure that:

- Calibration data are scientifically sound, appropriate to method, and completely documented.
- QC results are within established limits.
- Reporting units are consistent with the method and the matrix.
- Quantitative results are correct.
- Data results are consistent with information on the COC.
- Documentation is complete.
- The data is ready for incorporation into a final report.
- The data package is complete and ready for data archive.

The second level of review is structured to ensure all calibration data and QC sample results are reviewed and all of the analytical results from 10 percent of the samples are checked back to the bench sheet. If no problems are found with the data package, the review is complete. If problems exist, an additional 10 percent is reviewed, the process continues until no errors are found or the package has been reviewed in its entirety.

The final level of review by the laboratory comes from the program administrator or laboratory QA Officer. He/she reviews the report to ensure that the data meets the overall objectives of the project.

Once the data has been validated, it is ready for report production. The report will contain:

- Description of sample types
- Tests performed, problems encountered during testing

- Dates sampled
- Date received
- Date extracted
- Date analyzed
- Analytical results
- Reportable limits
- QC information: percent recovery, relative percent difference, control limits, blanks analyses, matrix spikes, and other additional special QC information
- Qualifiers for data falling outside of QC limits
- Methodology
- Name of the analyst
- Signature of laboratory representative
- Dual column confirmation results
- Calibrations (when requested)
- Instrument performance checks (when requested)
- QC Batch number

The report from the laboratory will be paginated and will also include a copy of the original COC for the samples analyzed.

5.3 PROJECT DATA REVIEW

Field Chemist Data Review Responsibilities

The project chemist is responsible for initial review of the data from the laboratory. This review includes:

- Verifying that all requested data are reported
- Verifying that samples are analyzed according to the contract specified method
- Verifying that all analytes requested are reported
- Verifying that holding times are not exceeded
- Verifying that matrix spike, matrix spike duplicate, and surrogate recoveries fall within the laboratory's acceptable criteria
- Reviewing blank data for contamination
- Reviewing field quality control results for inconsistencies

- Verifying that the data generated meet the project Data Quality Objectives.

The field chemist is responsible for informing the Project Manager and Project Chemical QA/QC Officer of any laboratory and/or sampling deficiencies or issues. These issues and subsequent decisions will be documented on the data evaluation report produced by the Project Chemical QA/QC Officer for each data package.

Project QC Engineer Data Review Responsibilities

The Project QC Engineer is responsible for interfacing with the project chemist, project manager, and the laboratory's QA Officer to resolve any QA/QC issues affecting the data. He/she is also responsible for finalizing any QA/QC issues with the laboratory and/or the field chemist. This includes obtaining a corrective action from the parties involved.

5.4 DATA REPORTING

The preliminary data will be faxed to the project chemist. This data may or may not have undergone the full laboratory review process and may contain errors and discrepancies. Prior to the use of data results for any decisions, the data will be reviewed by the project chemist and assessed against the project goals and data quality objectives. A copy of the preliminary data, including review comments from the project chemist will be submitted to the site and/or the project manager.

The hard and final copy data will be evaluated by the project chemist and assessed against the project goals and data quality objectives. Any errors, discrepancies, and nonconformances will be brought to the laboratory's and project manager's attention.

When QA issues have been satisfactorily settled and data evaluation has been completed, the project manager may release the data to the client and/or regulating agencies.

5.5 DATA STORAGE AND ARCHIVE

After OHM has completed its work for the project, all documents generated will be assembled in the project file. Individuals may retain clean (no handwritten comments) copies of documents for their personal files but only after personally verifying that the original or similar copy is in the project file. The project manager/supervisor is responsible for ensuring the collection, assembly, and inventory of all documents relative to the project at the time the objectives are met. The file then becomes accountable. Any records leaving the file must be signed out.

When a contractor has completed the project objectives, all file documents are reviewed and submitted to the central file. The project file contains the following document classes:

- A. Project logbooks
- B. Drum logs and other forms
- C. Sample identification documents
- D. Chain-of-custody records
- E. Analytical logbooks, laboratory data, calculations, graphs, etc.
- F. Correspondence
 - Inter-office
 - Client
 - Regulating agencies
 - Record of confidential material
- G. Report notes, calculations, drafts
- H. References, literature
- I. Sample (on-hand) inventory
- J. Check-out logs
- K. Litigation documents
- L. Miscellaneous – photographs, maps, drawings, etc.

Once deposited in the file, documents must be checked out. The final report is usually generated by use of computer. A back-up copy of the report on diskette is filed along with the project file. The original report remains in the hard drive of the computer until such a time is required to download it on a diskette. This diskette is also archived. All information under the corresponding project number is maintained in the archive system for five years. All archives are accessed by the archive file master list, which is maintained in a separate location from the archives.

6.0 DATA ASSESSMENT PROCEDURES

Reliability in analytical determination is maintained through strict adherence to quality control procedures. Procedures are designed to control both the accuracy and precision of analytical results. For the validation of the data, a known method spike is routinely analyzed to ensure the accuracy of results. The procedure is to run the standard QA/QC and sample analysis with each lot of samples sent to the laboratory. If more than ten individual analyses are made, additional standards will be analyzed at a rate of one standard per ten analyses. Some procedures call for the use of either a surrogate spike or the standard addition of a known quantity of the analyte to a split of the sample being analyzed.

Control charts will be prepared using an estimate of the spike recovery obtained from the literature or determined by repeated analyses run in the laboratory. Each time the analyst runs a method spike, the results is entered on the control table. If a standard addition technique is used, a plot of instrument response versus added analyte concentration is made in order to determine analyte concentration in the original sample. These are further explained in the laboratory's QAM.

Replicate analyses will be performed on at least 10 percent of the samples processed by the laboratory. A record of the precision of most analyses is kept by calculating and plotting the industrial statistic I (which is equivalent to the coefficient of variation). Blanks are also run with each batch of samples or individual sample analyzed regardless of the level of certification of the data.

The purpose of spikes, blanks, and replicates is to provide a sound scientific basis from which the degree of certification of the resultant data can be objectively concluded. These are not management decisions, but follow naturally from the results of the above QC procedures.

6.1 ACCURACY

Data accuracy is a reflection of the efficiency of the analytical procedure. It is determined by use of spiked samples and standard reference materials or laboratory control samples performed at the rate of one set every 20 samples. A control chart is generated using historical laboratory data where warning and control limits are established to assess data accuracy.

The accuracy (check standards) samples will have concentration values of the mid-standard. During analysis, a minimum of 10 percent of samples are accuracy samples. The accuracy

samples are staggered through the analysis, not placed one after another. After a minimum of seven accuracy samples are analyzed, the percent recovery is calculated for each sample.

The accuracy criteria is determined by calculating the standard deviation of seven or more percent recovery values and setting the upper and lower control limits using the following equations:

$$\text{Upper control limit} = p + 3 \text{ SD}$$

$$\text{Lower control limit} = p - 3\text{SD}$$

Where:

p = Average percent recovery

SD = Standard deviation

After the standard deviation, for the seven or more samples has been calculated, the accuracy control limits are generated and are then used to determine if the analysis is out of control. This is done by checking the results against the control limits. If any values are above the upper control limit or below the lower control limit, all sample results after the last qualifying accuracy sample must be repeated or discarded. If seven consecutive values fall below the lower control limit, new limits are calculated using the new accuracy check values. If the values fall between the upper and lower limits, then conditions are reported as “within limits”.

6.1.1 Recovery Control

Recovery control is necessary to determine if the sample matrix is interfering with the constituent being analyzed. A minimum 5 percent of samples will be recovery check samples (matrix spikes). Samples involving different types of matrices will have at least one recovery check sample for each matrix.

Control limits will be determined for each matrix, determining the deviation for seven or more percent recovery values.

6.2 PRECISION

Duplicate and replicate samples analyzed by the laboratory assess the precision of the sampling effort. Control limits for duplicate/replicate RPDs are listed in *Appendix A, Table A-2*. Once a sufficient amount of replicate data becomes available, field precision control charts are constructed similar to the laboratory precision charts. For any given concentration, the mean and the standard deviation(s) of the replicates are calculated. Data from each sample set are pooled

with the previous sample sets to generate control and warning limits for the next set. Control and warning limits for water samples are set at $\pm 2s$ and $\pm 3s$, respectively. Control limits for solid samples are more liberally established due to matrix heterogeneity. Data outside any control limit are subject to QA review.

Precision is based upon the results of the relative percent differences as calculated from the percent recoveries of the matrix spike and duplicate samples. The control limits for precision is based on historical laboratory data.

MS and MSD samples on a per batch or a minimum frequency of 5 percent are analyzed to assess precision. Duplicate results are compared and the relative percent difference (RPD) is then determined. The RPD will be entered into the laboratory's data system and will be used to define the precision of the analysis. Minimum limits are listed in *Appendix A, Table A-2*.

6.3 COMPLETENESS

The field supervisor must ensure all sites are sampled for all the specified analyses, that sufficient sample volume has been provided to complete those analyses, and that all of the QA samples have been included with each sample set. The goal for completeness for each sample set shipped to the laboratory is 100 percent. Minimum limits are listed in *Appendix A, Table A-2*.

Completeness is expressed as the percentage of the amount of valid data obtained to the amount of data expected. For a set of data to be considered complete, it must include all QC data verifying its accuracy and precision.

If samples analyzed do not meet all QC requirements in terms of accuracy and precision for any specific parameter, the sample preparation and analysis will be repeated pending adequate volume.

6.4 CRITERIA FOR REJECTION OF OUTLYING MEASUREMENTS

There are many statistical tests for rejection of outlying data points obtained from a set of measurements from a single population. A test recommended in "Statistical Manual of the Associate of Official Analytical Chemists," 2nd Edition, W. J. Youden and E. H. Steiner, 1975, pg. 86, is the Dixon Test. This test is not dependent on the distribution of the data and can be used for as few as three measurements. A more complete description for this broadly applicable test can be found in the referenced text.

Another reference is the USEPA National Functional Guidelines for Data Validation of Organics and Inorganics. Also, specific programs may have quality objectives with criteria for rejection of outlying measurements.

6.5 METHOD DETECTION LIMITS AND PRACTICAL QUANTITATION LIMITS

The laboratory must establish Method detection limits (MDLs). This should, at a minimum, be established on a yearly basis. MDL is the minimum concentration of a substance that can be identified, measured, and reported with 99% confidence that the analyte concentration is greater than zero.

Practical quantitation limit (PQL) is the lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions. The PQL's are generally 5-10 times the MDL. The PQL is the most applicable limit of reporting for this program.

6.6 LABORATORY AND FIELD CONTAMINATION

It is not unusual to find the following analytes at trace levels in the samples:

- Methylene chloride
- Acetone
- Freon (1,1,2-trichlorotrifluorethane)
- Bis(2-ethylhexyl)phthalate
- Hexane
- Isopropanol
- 2-Butanone

These are common solvents used in the field and in the laboratory.

In order to fully evaluate data containing trace levels of these contaminants, one must have data from trip blanks, field blanks, equipment blanks, and all applicable laboratory blanks for that batch of samples.

The determination on the use of the data will be made during the Data Validation process.

7.0 PERFORMANCE AND SYSTEM AUDITS

Audit is defined as systematic check to determine the quality of operation of field and laboratory activities. It is comprised of the following:

- Performance audit
- System audits

These include a detailed review of each operating component of the network. Auditing will ultimately assist in determining if each element within a system is functioning appropriately per the QA program requirements.

7.1 FIELD PERFORMANCE AUDITS

Field performance audits are performed on an ongoing basis during the project as field data is generated, reduced, and analyzed. All numerical analyses, including manual calculations are documented. All records of numerical analysis are legible, of reproduction quality, and supporting to complete permit logical reconstruction by a qualified individual other than the originator.

Other indicators of the level of field performance are the analytical results of the blank, duplicate, and replicate samples. Each blank analysis is an indirect audit of effectiveness of measures taken in the field to ensure sample integrity. The results of the field duplicate and replicate analysis is an indirect audit of the ability of each field team to collect representative sample portions of each matrix type.

7.2 FIELD SYSTEM AUDITS

System audits of site activities are accomplished by an inspection of all field activities by the Project Chemical QC Officer. This audit is composed of comparisons between current field practices and standard procedures. The following is a list of criteria to be used in the evaluation of field activities:

- Overall level of organization and professionalism
- All activities conducted in accordance with work plan
- All procedures and analyses conducted according to procedures outlined in this document
- Sample collection techniques versus the site sampling and analysis plan

- Level of activity and sample documentation
- Working order of instruments and equipment
- Level of QC conducted by each field team
- Contingency plans in case of equipment failure or other event preventing the planned activity from proceeding
- Decontamination procedures
- Level of efficiency which each team conducts planned activities at the site
- Sample packaging and shipment

After the audit, any deficiencies are discussed with the field staff, and corrections are identified. If any of these deficiencies might affect the integrity of the samples being collected, the QA Officer informs the field staff immediately, so corrections can be made. The field performance audit will be conducted at the start of the project, one before the end of the project, and as directed by the project manager. OHM will also submit to all requests by regulatory agencies, or other clients for external field systems audits.

7.3 LABORATORY PERFORMANCE AUDIT

The laboratory performance audit verifies the ability of the laboratory to correctly identify and quantitate compounds in blind check samples submitted by an auditing agency. If the laboratory participates in Performance Evaluation (PE) programs such as USEPA WS/WP studies, AIHA, PAT studies, etc., results from these studies will be generally acceptable by OHM. However, during the course of the project, it may be necessary for the Project QA/QC Officer to send PE samples to the laboratory to evaluate specific parameters.

The contracted laboratories will undergo performance audits throughout the project consisting of field QC samples. Occasionally PE samples will be supplied by the client or external organizations, which will be spiked with the same analytical parameters that are being investigated on site. External laboratory performance audits by auditing agencies such as the USEPA, USACE-RD, DOD, NFESC, etc. are not routinely scheduled. However OHM and its subcontracted laboratories will submit to any external audit upon request by the USEPA or the client.

7.4 LABORATORY SYSTEM AUDITS

The laboratory system audit is a review of analytical laboratory operations to verify that the facility has the necessary equipment, staff, and procedures in place to generate acceptable data.

It is also to determine that each element within an activity is functioning appropriately and within the guidelines of applicable methodology, approved procedures, and the site QAPP. An on-site inspection is routinely performed by the laboratory's QA Manager and may also be frequently performed by the OHM Project Chemical QA/QC Officer. If the laboratory participates in certification programs, audits performed by the certifying agencies may satisfy the criteria of systems audits for the project.

If the laboratory is in question, a system audit can be directed by the client and performed by OHM or the client's representative. Any recommendations made will be considered for implementation and any corrective actions will be taken to correct any deficiencies found. Project-specific audit reports will be placed in the project files and laboratory audit reports will be kept by the laboratory for future reference.

8.0 CORRECTIVE ACTION

Corrective actions may be necessary as a result of the following QA activities:

- Field and laboratory performance audits
- Field and laboratory system audits
- Inter-laboratory comparison studies
- Calibration data fall out of specified limits
- Failure to adhere to the CQMP
- Failure to adhere to the site
- Failure to adhere to standard operating procedures and methods
- Data completeness below required limits
- Control limits are exceeded for QC samples

If, during system and performance audits, deficiencies or problems are discovered, corrective action will be initiated immediately. The appropriate field and laboratory personnel will be notified immediately and an investigative process will be implemented immediately to find solutions to these issues. The investigative process will consist, but is not limited to, the following:

- Determining when the problem occurred
- Determining which systems were affected by the problem
- Determining the cause of the problem
- Determining a corrective action to eliminate the problem
- Assigning the responsibility for implementing the corrective action
- Implementing the corrective action
- Evaluating the effectiveness of the corrective action
- Investigating alternative corrective actions if the original action was not sufficient in eliminating the problem
- Documenting that the corrective action has eliminated the problem

The Project Chemical QC Officer has the authority to require that all site activities threatened by the problem be stopped or limited until the corrective action has been implemented and satisfactorily verified to eliminate the problem.

Corrective actions may include, but is not limited to:

- Modifications to procedures
- Recalibration of instruments
- Replacement of solvents, reagents, and/or standards
- Additional training of personnel
- Reassignment of personnel

8.1 CORRECTIVE ACTION REPORT

A Corrective Action Report (CAR) is necessary documentation of the investigative process. Depending on the issues, the CAR may be generated by the laboratory or the field personnel. Copies of the CAR will be given to the Project QC Officer and Project Manager, who will distribute it to the client. A copy of the CAR will be placed in the project files for future reference.

The CAR should include, but is not limited to:

- A description of the problem, deficiency, or issue
- Proposed resolutions
- Resulting actions
- Effectiveness of the resolutions
- Personnel responsible for implementation of the corrective actions
- Personnel responsible for monitoring the effectiveness of the actions.

8.2 QUALITY ASSURANCE REPORT

The Project Manager, Project QC Officer, and Project Chemist will converse on a regular basis to review possible and potential problem areas and to ensure that all QA/QC procedures are being carried out. It is important that all data abnormalities be investigated to ensure that they are not a result of operator or instrument deviation but are a true reflection of the methodology or task function. The project final report will contain a separate section that covers the data quality and validity. At a minimum, the following information will be included in the report:

- Assessment of measurement data precision, accuracy, and completeness
- System and performance audit results

- Significant QA problems and corrective actions implemented
- Copies of documentation such as memos, reports, etc.

The Project QC Officer will be responsible for preparing this report weekly or daily, as well as monthly written QA reports to OHM QA management. The Regional QA/QC Director will be responsible for reviewing and approving these monthly reports. Verbal reports will be made on a more frequent basis. All reports will be made available to the Project Manager, client, and regulating agencies. If no project audits were performed and no significant QA/QC problems occurred, a letter stating these facts will be submitted to the referenced parties in lieu of a QA Report.

Appendix A

Table A-1 Sampling Summary

Table A-2 Project Quality Control Objectives

TABLE -1
SAMPLING AND ANALYTICAL SUMMARY

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT ¹	QC Level	Required Analysis	Analytical Method	Holding Time	Sample Preservtn ³	Containers
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Soil Sampling

Precharacterization Soil Sampling	Within the impacted area	Soil	Once	2	Hand Auger	Auger, ss spoons	21 days	OHM Minimum	TPH (gas range)	5030/8015	14 days	Cool to 4°C	(2) 4 oz glass jar
Precharacterization Soil Sampling	Within the impacted area	Soil	Once	2	Hand Auger	Auger, ss spoons	21 days	OHM Minimum	TPH (diesel range)	3550/8015	14 days	Cool to 4°C	(2) 4 oz glass jar
Precharacterization Soil Sampling	Within the impacted area	Soil	Once	1	Hand Auger	Auger, ss spoons	21 days	OHM Minimum	Ignitability	1030	None	None	(2) 4 oz glass jar
Confirmation Soil Sampling	Excavation walls & floor	Soil	Once	5	Hand Auger	Auger, ss spoons	1 day	OHM Minimum	TPH (gas range)	5030/8015	14 days	Cool to 4°C	(2) 4 oz glass jar
Confirmation Soil Sampling	Excavation walls & floor	Soil	Once	5	Hand Auger	Auger, ss spoons	1 day	OHM Minimum	TPH (diesel range)	3550/8015	14 days	Cool to 4°C	(2) 4 oz glass jar

Disposal Sampling

Dewater Excavation	Storage Tank	water	Once	1	Holding/Storage Tank	Direct Fill from Tap or Spigot	21 days	OHM Minimum	Volatiles & Xylenes	EPA 602	14 days	HCl pH< 2; Cool to 4°C	(2) 40 ml vial
Decon Fluids	Decon Fluids	water	Once	1	Holding/storage tank	Direct Fill from Tap or Spigot	21 days	OHM Minimum	Volatiles & Xylenes	EPA 602	14 days	HCl pH< 2; Cool to 4°C	(2) 40 ml vial

Notes:

1) Cal days prelim; fin data due 7 cal days from TAT

TABLE 1
SAMPLING AND ANALYTICAL SUMMARY

Task	Location	Activity	Frequency	Parameter	Method	QC Level	QC Requirements
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On-Site Soil Vapor Extraction/Air Sparging System Measurement and Sampling Activities

Sampling and pH measurement	Frac Tank	Measurement	Grab sample at collection of sample for analytical methods	pH	pH meter	method 9045C	2 point calibration
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TABLE A-2
PROJECT QUALITY CONTROL OBJECTIVES

Method No	Analyte / Component	Project Action Limits		Minimum PQL		Accuracy Limits MS/MSD Recoveries		Precision Limits MS/MSD Deviation		Accuracy Limits LCS Recoveries		Precision Limits Field Dup Deviation		Completeness Limits	
		Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil
PETR HYDROCARBONS BY GC															
		mg/L	mg/kg	mg/L	mg/kg	%	%	%	%	%	%	%	%	%	%
5030A/ 8015A (mod)	TPH-Gasoline	NS	NS	0.1	1	50-150	30-170	<30	<50	67-136	67-136	<50	<75	95	90
5030A/ 8015A (mod)	Chlorobenzene (Surr)					74-138	64-148								
3550A/ 8015A (mod)	TPH-Diesel	NS	NS	1	10	50-150	30-170	<30	<50	61-143	61-143	<50	<75	95	90
3550A/ 8015A (mod)	Octacosane (Surr)					26-152	25-162								
3550A/ 8015A (mod)	Ortho-Terphenyl (Surr)					57-132	47-142								
3550A/ 8015A (mod)	Fluorobenzene (Surr)					75-125	65-135								
3550A/ 8015A (mod)	Tricontane (Surr)					40-140	30-150								
Characteristics		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
1030	Ignitability of Solids	N/A	< 60 C or <140°F	N/A	40 C or 100°F	N/A	N/A	N/A	<50	N/A	N/A	N/A	<50	N/A	90

Notes:
 1) SW-846 Methods unless otherwise noted
 2) Includes Sediments, Waste, Solids

NS = Not Specified
 NA = Not Applicable

Appendix B

SOPs

OHM Corporation

**QUALITY POLICY AND
PROCEDURE APPROVAL AND
REVISION RECORD**

Document # QP-650

Title : Standard Analytical Data Deliverable Requirements

APPROVAL

Name	Title	Signature	Date
Guy Gallelo	Midwest Region FAS Manger		
Emma Popek	Western Region FAS Manager		
Mike Quinlan	Eastern Region FAS Manager		
Terry Whitt	Southern FAS Manager		

REVISION RECORD

Ltr.	Date	Change Description	Initials						
1	8/4/94	issue	-	-	-	-	-	-	-
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									

OHM Corporation

STANDARD OPERATING PROCEDURE

Title : Standard Analytical Data Deliverable Requirements **Document #:** QP-650

1.0 PURPOSE

The purpose of this procedure is to set forth guidelines for the standardization of hard copy analytical data packages provided to OHM by Analytical Laboratories. This procedure defines the specific deliverable requirement to be included when a minimum data packages, standard data packages and maximum data packages is requested by OHM employees.

2.0 SCOPE

These procedures applies to all purchases of analytical services and the analytical data packages provided to OHM by all analytical laboratories.

3.0 RELATED DOCUMENTS

HAZWRAP, July 1990. Quality Control Requirements for Field Methods DOE/HWP69/R1.

HAZWRAP, July 1988. Requirements for Quality Assurance of Analytical Data, DOE/HWP-65, Rev. 0, July 1988.

USEPA , Test Methods for Evaluating Solid Waste Physical/Chemical Methods SW-846

United States Environmental Protection Agency, 1984. User's Guide to the Contract Laboratory Program, Office of Emergency and Remedial Response, Washington, D.C.

4.0 GENERAL INFORMATION

In the past OHM has experienced that Each analytical laboratory has a different report format that they call their standard deliverable package. Many times the laboratory's standard deliverable package does not include all of the information required to meet our client's expectations in performing data assessment and data validation of the analytical deliverable. When the additional information has been requested from the laboratories often additional charges are levied. In order to better service our client and to assure each and every laboratory bidding on a given set of samples understands precisely what is required to be included within each analytical report, the following procedures have been developed.

5.0 DEFINITIONS

Accuracy - A measure of how close a measured value is to a known true value.

Aliquot - A measured portion of a sample taken for analysis.

Analytical Batch - Batch size is determined the analytical method and project specific quality assurance requirements. Batch size is usually set at 20 or less samples of the same matrix being analyzed for the same parameters at the same time. All samples in a batch are prepared and analyzed together with a basic set of QC samples. Specific project requirements are listed in the Quality Assurance Project Plan (QAPP).

Background Correction - A technique usually employed relative to metals analysis which compensates for variable background contribution to the instrument signal in the determination of trace elements

Blank - An artificial sample designed to monitor the introduction of artifacts into the measurement process.

Calibration - The systematic determination of the relationship of the response of the measurement system to the concentration of a analyte of interest

Chain-of-Custody - A form used to track the custody of the samples from the time they are taken until the time they are analyzed.

Continuing Calibration - Subsequent checks on the instrument calibration performed throughout the analysis of samples.

Data Assessment - A systematic review of the analytical data to assure all method specific requirement were performed.

Data Quality Objectives - The established quality of the data required to support specific decisions or regulatory actions. DQOs must take into account sampling considerations as well as analytical protocols.

Data Validation - A systematic effort to review data for identification of errors for the purpose of flagging suspected values to assure the validity of the data for the user.

Deliverables - Analytical Report Package provide by the analytical laboratory which includes the analytical data and a specified set of supporting documentation.

Hold Times - The time stipulated in the method or regulations which is allowed to elapse from the time of sampling to the time of extraction and/or analysis. Samples analyzed after the hold times are of questionable usefulness.

ICP - Inductively coupled argon plasma (also referred to ICAP). An instrument used for metals analysis.

Internal Standard - A compound added to every standard, blank, matrix spike, matrix spike duplicate, sample and/or sample extract at a known concentration, prior to analysis. Internal standards are used as the basis for quantification of the target compounds.

Initial Calibration - Instrument calibration performed before any samples are analyzed.

Laboratory Control Sample - An artificial sample usually prepared in the laboratory, which either contains all or some of the compounds of interest. The sample is processed through the entire procedure including sample preparation and analysis. This sample is used to verify that the method is being performed properly. One laboratory control sample should be analyzed with each analytical batch.

Matrix Spike - An Aliquot of a sample that has been spiked with a known quantity of specified compounds of interest. The matrix spike is used to measure the accuracy of the analytical system.

Matrix Spike Duplicate - A second aliquot of the same sample used for the matrix spike spiked the same way as the matrix spike. The matrix spike duplicate is used to measure the precision of the analytical system..

Maximum Deliverable Package - Specific requirement set forth in this document to be provided to OHM by the Analytical Laboratory when a Maximum Deliverable Package is requested.

Minimum Deliverable Package - Specific requirement set forth in this document to be provided to OHM by the Analytical Laboratory when a Minimum Deliverable Package is requested.

Precision - a measure of the analytical method's ability to reproduce analytical results.

Preparation Logs - An official laboratory record of the sample preparation procedures used in processing a sample prior to analysis.

Standard Deliverable Package - Specific requirement set forth in this document to be provided to OHM by the Analytical Laboratory when a Standard Deliverable Package is requested.

Surrogate - An organic compound that is similar to the analytes of interest in chemical composition, extraction and chromatography, but are not normally found in environmental samples. These compounds are spiked into quality control samples, calibration and check standards and samples prior to analysis.

Tentatively Identified Compounds (TICs) - Compounds detected in samples that are not target compounds. Usually TICs consist of up to 30 peaks identified that are greater than 10 percent of the peak areas or heights of the nearest internal standard are subjected to mass spectral library searches for tentative identification.

Tuning - A technique used in gas chromatography/mass spectrometry procedures to verify that the instrument is properly calibrated to produce reliable mass spectral information.

6.0 RESPONSIBILITIES

Regional Field Analytical Manager - Responsible for the management of the Regional Field Analytical Department. Responsible for distributing these requirements to all subcontract laboratories used within there region.

7.0 PROCEDURE

- 7.1 All laboratories providing analytical services to OHM will be provided with a copy of these specification for minimum, standard and maximum data deliverable packages.

- 7.2 The desired data deliverable package will be selected at the time of procuring the analytical services. All price quotations must include providing OHM with the requested deliverable package.
- 7.3 All Data packages received must meet the requested requirements as specified in the Data Deliverables Package Requirements.

8.0 ATTACHMENTS

**ATTACHMENT 8.1
DATA DELIVERABLE PACKAGE REQUIREMENTS TABLE**

Method	Deliverable Requirement	Equivalent EPA Form	OHM Minimum Level	OHM Standard Level	OHM Maximum Level
Metals	Case Narrative		X	X	X
	Corrective Action Report		X	X	X
	Cross-reference of OHM Sample Numbers, Lab IDs, and analytical QC batches		X	X	X
	Chain-of-Custody Form, Cooler Receipt form		X	X	X
	Data Summary for Each Sample (See Note 1)	I-IN	X	X	X
	Blank Spike or Lab Control Sample (LCS) results (including concentration spiked, percent recovered, percent recovery acceptance limits)	VII-IN	X	X	X
	Matrix Spike (MS) Report (including concentration spiked, percent recovered, percent recovery acceptance limits)	V (PART 1)IN	X	X	X
	Post-digestion Spike Recovery for ICP	V (PART 2)IN	X	X	X
	Duplicate Sample Report		X	X	X
	Blank Results	III-IN	X	X	X
	Initial Calibration Data	III-IN		X	X
	Continuing Calibration Data	II (PART I)-IN		X	X
	ICP Interference Check Sample Report	II (PART I)-IN		X	X
	Standard Addition Results	IV-IN		X	X
	ICP Serial Dilution Results	VIII-IN			X
	Copies of Preparation Logs	IX-IN			X
	Copies of Analysis Run Logs	XIII-IN		X	X
	Copies of Standard Preparation Logs	XIV-IN			X
	Raw Data and Instrument Printouts				X
	Percent Moisture			X	X
PH					X (Note 2)
Organics by GC or HPLC	Case Narrative		X	X	X
	Corrective Action Report		X	X	X
	Cross-reference of OHM Sample Numbers, Lab IDs, and analytical QC batches	IV	X	X	X
	Chain-of-Custody Form, Cooler Receipt form		X	X	X
	Data Summary for each blank and sample (See Note 1)	I	X	X	X
	Blank Spike or Lab Control Sample (LCS) results (including concentration spiked, percent recovered, percent recovery)		X	X	X

Method	Deliverable Requirement	Equivalent EPA Form	OHM Minimum Level	OHM Standard Level	OHM Maximum Level
	acceptance limits)				
	Surrogate Recovery Report (including concentration spiked, percent recovered, and percent recovery acceptance limits)	II	X	X	X
	Matrix Spike/Matrix Spike Duplicate (MS/MSD) Report (including concentration spiked, percent recovered, percent recovery acceptance limits, relative percent difference (RPD), and RPD acceptance limits)	III	X	X	X
	Initial Calibration Data for each column (indicate which column was used for quantitation)	VI		X	X
	Continuing Calibration Data (indicate which column was used for quantitation)	VII		X	X
	Chromatograms for each sample (and reruns), confirmation runs, blank, spike, duplicate, and standards			X (Note 4)	X
	Raw Quantitation Report (area vs. retention time)				X
	Copies of Sample Preparation Bench Sheets			X	X
	Copies of Standard Preparation Logs				X
	Copies of Run Logs	VIII			X
Organics	Case Narrative		X		X
by GC/MS	Corrective Action Report		X		X
	Cross-reference of OHM sample numbers, Lab IDs, and analytical QC batches	IV			X
	Chain-of-Custody Form, Cooler Receipt Form		X		X
	Data Summary for each blank and sample (See Note 1)	I	X		X
	Tentatively Identified Compounds (TICs) for each sample (ten peaks)	I, TIC			X
	Blank Spike or Lab Control Sample (LCS) results (including concentration spiked, percent recovered, percent recovery acceptance limits)		X		X
	Surrogate Recovery Report (including concentration spiked, percent recovered, and percent recovery acceptance limits)	II	X		X
	Matrix Spike/Matrix Spike Duplicate (MS/MSD) Report (including concentration spiked, percent recovered, percent recovery acceptance limits, relative percent difference (RPD), and RPD acceptance limits)	III	X		X
	Instrument Performance Check (Tuning) Report	V			X
	Initial Calibration Data (including acceptance limits)	VI			X
	Continuing Calibration Data (including acceptance limits)	VII			X
	Internal Standard Areas and Retention Times Reports (including acceptance limits and out-of-control flags)	VIII			X
	Reconstructed Ion Chromatogram for each sample and rerun, blank, spike, duplicate,				

Method	Deliverable Requirement	Equivalent EPA Form	OHM Minimum Level	OHM Standard Level	OHM Maximum Level
	and standard				
	Raw Quantitation Report				
	Raw and background subtracted mass spectra for each target analyte found				
	Mass spectra of TICs with library spectra of 5 best-fit matches				
	Copies of Sample Preparation Bench Sheets				X
	Copies of Standard Preparation Logs				
	Copies of Run Logs				
	Percent Moisture		X		X
	PH				X (See Note 3)
Inorganic Chemistry	Corrective Action Report		X	X	X
(Note 2)	Cross-reference of OHM sample numbers, Lab IDs, and analytical QC batches		X	X	X
	Chain-of-Custody Form, Cooler Receipt form		X	X	X
	Data Summary for each blank and sample (See Note 1)		X	X	X
	Blank Spike or Lab Control Sample (LCS) results (including concentration spiked, percent recovered, percent recovery acceptance limits)		X	X	X
	Matrix Spike/Matrix Spike Duplicate (MS/MSD) Report (including concentration spiked, percent recovered, percent recovery acceptance limits)		X	X	X
	Duplicate Sample Report		X	X	X
	Calibration Reports Initial and Continuing			X	X
	Copies of Sample Preparation logs				X
	Raw Data and Instrument Printouts				X
	Percent Moisture		X	X	X

Notes:

1. Must include: OHM sample ID, Lab ID, date/time sampled, date received, extracted/analyzed, Practical Quantitation Limit, Method Detection Limit, Dilution Factor, comments, approval signature/date.
2. For water samples only.
3. Must include: OHM sample ID, Lab ID, date/time sampled, date received, extracted/analyzed, Practical Quantitation Limit, Method Detection Limit, Dilution Factor, comments, approval signature/date.
4. For petroleum fuels analyses chromatograms for samples with positive results only.

Appendix C

Custody Seal

Chain-of-Custody Record

OHM Shipping Label

Shipping Instruction for Sending Samples to the Laboratory

Client _____
Sample ID _____
Location _____
Analysis _____
Preservative _____
Collection Date/Time _____
Collected By _____

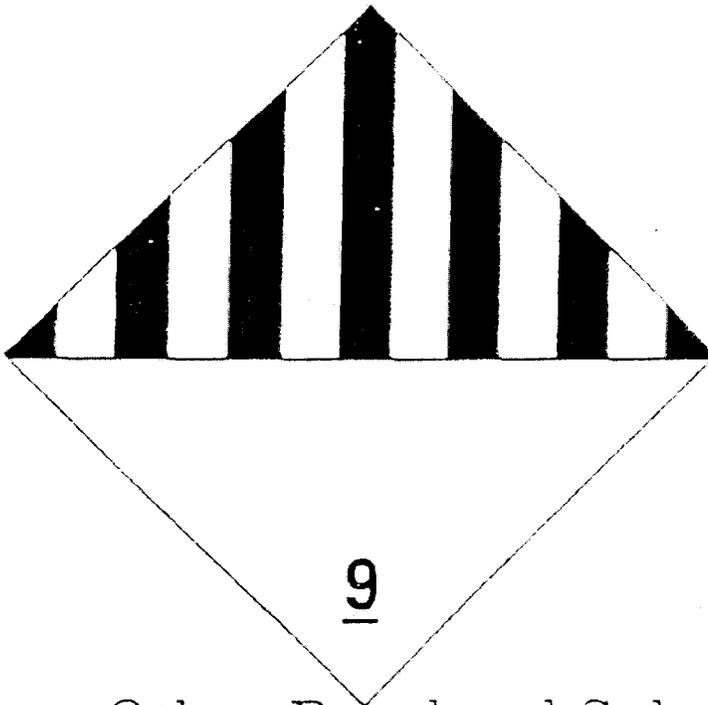
CUSTODY SEAL

Person Collecting Sample _____ (signature) Sample No. _____
Date Collected _____ Time Collected _____

Custody Seal
Sample Label



**OHM Remediation
Services Corp.**



OHM Corporation



From _____

Phone _____

To _____

Phone _____

Other Regulated Substances, ID# 8027

Class 9 Shipping Label



OHM Remediation
Services Corp.

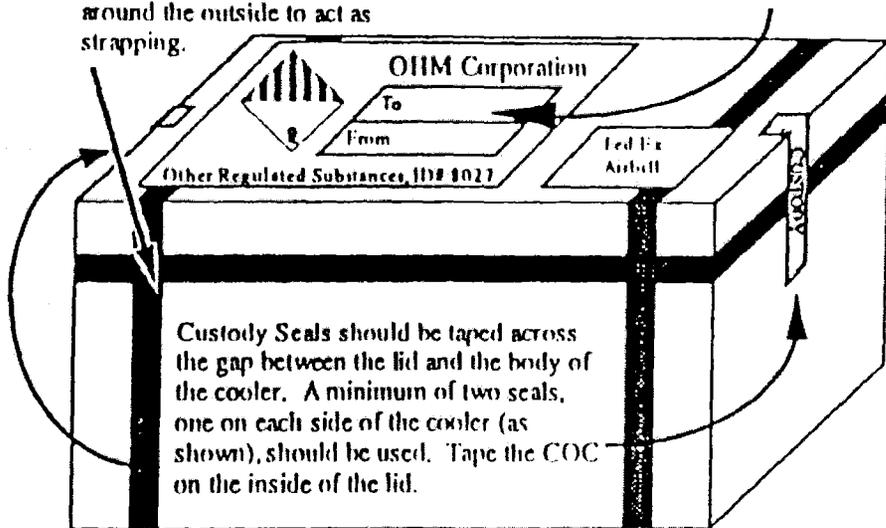


Shipping Instructions Sending Samples to the Lab

NOTE: These procedures are ONLY for shipping unknown environmental samples such as sludge, soil, or water samples for laboratory analysis and identification. Materials which are known to be explosive, compressed gases, flammable, oxidizers, poisons, radio active, or corrosive SHOULD be shipped by this method. Call the Regional T&D Coordinator for help in that case. Drum or tank materials must be shipped as per the Regional T&D Coordinator's instructions.

Cooler lid is taped closed and additional tape should be used around the outside to act as strapping.

OHM custom sample shipping label



Custody Seals should be taped across the gap between the lid and the body of the cooler. A minimum of two seals, one on each side of the cooler (as shown), should be used. Tape the COC on the inside of the lid.

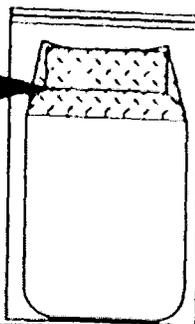
- 1) Samples must be shipped in "Strong outer packaging". Fed Ex stated that a rigid plastic cooler like we are currently using would be acceptable.
- 2) Use one of OHM's custom sample shipping labels. The To/from address portion of the label should be filled out completely including phone numbers. This label should be placed on top and cannot be covered by tape, the Fed-Ex airbill or anything else. This label should go on the TOP of the cooler.
- 3) Inner packages cannot exceed 1 gallon each, and the entire shipment (cooler & samples) cannot exceed 66 lb.
- 4) Coolers must be packed with absorbent material (vermiculite or kitty litter) which will absorb any spills or leaks, not react with the sample contents, and which will minimize the chance that inner containers will break. The coolers should also be fastened shut securely using tape or strapping. See the SAI for special instructions.
- 5) Inner containers should have their lids securely closed and packed in a ziplock baggie to prevent leaks.
- 6) The materials must be shipped using a Federal Express Hazardous Materials Airbill. Use the example above or call the Hazardous Materials group at Federal Express at (800) GO-FEDEX for more instructions on filling out this form.
- 7) The COC must be filled out completely, placed in a gallon zip-lock baggie, and taped to the inside lid of the cooler. A copy of the COC should be placed behind the airbill in the pouch on the outside of the cooler.

Lower Portion of Fed Ex
DANGEROUS GOODS airbill

The form is a 'DANGEROUS GOODS AIRBILL' with handwritten information. It includes a tracking number '0792772120', a 'TRANSPORT DETAILS' section with a signature, and a table for 'NATURE AND QUANTITY OF DANGEROUS GOODS'. The table lists 'Other Regulated Substances' with Class ID 9 and ID# 8027, packed in a 'Plastic Box Containing 4 kg inner containers'. There are also handwritten notes and a signature at the bottom.

Don't forget to sign and include the 24-hr Emergency Response Phone number. Check with the Regional T&D Coordinator for this number.

Lids are taped to prevent leaks or loosening. Entire jar is sealed in a zip lock baggie.



Fill in the blank with the number of containers

- ... x 1 kg for quart jars
- ... x 500 g for 8 oz jars
- ... x 40 g for VOA vials

Fill in the Additional Handling space with:

"Samples from OHM Job # _____ see attached chain of custody. In case of emergency refer to ICAO Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods ICAO."

READ THE DIRECTIONS ON THE AIRBILL, SO YOU UNDERSTAND WHAT YOU ARE FILLING OUT. Fill out the Fed-Ex airbill completely. Don't forget to sign the bottom and include the Emergency Response phone number. Changing even one thing from the example above may mean that Fed-Ex will refuse to accept the shipment. This procedure has been checked out with Fed-Ex several times. If a driver refuses to pick it up make sure you have filled out the airbill right and followed ALL the instructions before you complain.

Appendix C

Erosion Sediment and Control Plan

EROSION AND SEDIMENTATION CONTROL PLAN

This plan describes erosion and sedimentation controls to be implemented during remedial activities at the Atlantic 7012 site, Marine Corps Outlying Landing Field (MCOFLF) Atlantic, North Carolina.

1.0 PROJECT ACTIVITIES

This section contains information about remedial activities that will require erosion and sedimentation control. Descriptions of all remediation activities can be found in the Work Plan. Construction activities that may impact runoff requiring erosion and sedimentation controls include the following:

- Site preparation
- Soil staging
- Site restoration

1.1 Site Preparation

The first task associated with site preparation is the installation of silt fence around the proposed excavation. Silt fence will also be placed as necessary to accommodate site conditions at the direction of the site supervisor and/or project manager. The silt fence will be maintained throughout the course of the project.

1.2 Soil Staging

Dry soil this is not contaminated will be staged on and covered by plastic sheeting for reuse as backfill material. The plastic sheeting will be secured with sandbags and ropes to keep the sheeting in place and prevent erosion of the stockpiled soil.

Dry soil that is contaminated will be directly loaded into trucks for offsite disposal. The loading will be done on existing paved areas which will be swept clean at the end of each day. This will prevent dust, tracking, and runoff during storm events.

Wet soil from 6 feet to 8 feet below ground surface will be staged within the excavation above the water table to allow dewatering. Following dewatering, the soil will be loaded directly into trucks for offsite disposal. There will be no soil staged outside of the excavation, therefore, no additional erosion control measures are required on paved areas.

1.3 Site Restoration

Upon completion of remedial tasks associated with this project, the site will be restored to its original conditions. Disturbed areas will be revegetated and paved as necessary to establish pre-construction conditions. Removal of the silt fence will be the final task associated with restoration activities and will only be done after vegetative cover is reestablished.

2.0 MAINTENANCE PROGRAM

This section describes the maintenance programs for the erosion and sedimentation control measures at the site. Maintenance of the erosion and sedimentation controls during the project will be performed by OHM. All controls will be inspected daily, as well as after each storm event, and any breaches will be corrected immediately.

Appendix D

Construction Quality Control Plan

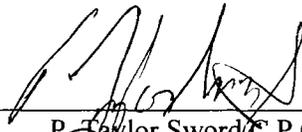
**QUALITY CONTROL PLAN
FOR
SOIL EXCAVATION AND DISPOSAL
ATLANTIC 7012
MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA**

Prepared for:

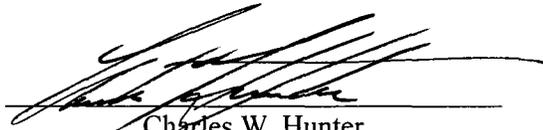
DEPARTMENT OF THE NAVY
Contract No. N62470-97-D-5000
Task Order No. 0059

Prepared by:

IT/OHM Remediation Services Corp.
Trenton, New Jersey



P. Taylor Sword C.P.G.
Project Manager



Charles W. Hunter
Program QC Manager

Roland Moreau, P.E.
Program Manager



**OHM Remediation
Services Corp.**
A Subsidiary of The IT Group

June 2000
IT/OHM Project No. 808345 QC

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FIGURES

I-1	QC ORGANIZATIONAL CHART
II-1	SITE QC MANAGER / REPRESENTATIVE – RESUME
III-1	SITE QC MANAGER / REPRESENTATIVE – LETTER OF APPOINTMENT

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IV-1	APPROVED CONSULTANT AND SUBCONTRACTOR LIST
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VIII-1	PERSONNEL MATRIX

STATEMENT OF PROGRAM

IT/OHM Remediation Services Corporation (IT/OHM), a subsidiary of IT Corporation, will provide and maintain an effective Quality Control (QC) Program. This program will be performed in accordance with the approved Program Quality Control Plan (PQCP) developed specifically to be responsive to the contract specification, Contract NO. N62470-97-D-5000, Atlantic Division, Naval Facilities Engineering Command and to the Task Order (TO) specification(s) made applicable to each project, task or work activity. IT/OHM will perform the inspections and tests required to ensure that materials, workmanship, and construction conform to drawings, specifications, and contract requirements.

Note to Employees

Quality Control should not be considered a person or an organization of personnel, but a concept to perform in such a manner that the end product of our efforts meet established criterion, the customer's needs. The Quality Control individual or group cannot inspect quality into the final product, but only inspect and document the results of our efforts. The only person that can build quality into the product are the individuals performing the task of producing the end product.

It should be noted by all employees that the documentation requirements of IT/OHM procedures, plans, and the task order specifications are considered equally as important as the end product itself. When it is stated that the documentation will be approved prior to the start of work, this is exactly what is intended. To eliminate problems in this area requires careful planning and execution by everyone.

We would do well to remember that our livelihood depends on how well we satisfy our customer. To accomplish this requires teamwork and attention to detail by all employees and contractors.

I. QUALITY CONTROL ORGANIZATION

The QC organization is depicted in the Organizational Chart, Figure I-1.

II. IDENTIFICATION OF PERSONNEL ASSIGNED TO THE QC ORGANIZATION

Figure II-1 provides the resume of the Site QC Manager / Representative. The resumes of any additional QC staff members will be submitted to the CO for approval prior to assignment. This action will be performed in accordance with the contract specification Section C, Part 6.5.

III. APPOINTMENT LETTERS

The Site QC Manager / Representative appointment letter is provided as Figure III-1. Similar letters will be provided when necessary to describe the duties and authorities of personnel assigned to the position of Alternate or Assistant QC Manager.

IV. OUTSIDE ORGANIZATIONS

A list for identifying outside organizations such as architectural and consulting engineering firms, and subcontractors employed by IT/OHM for work under this task order is provided in Exhibit IV-1. This list will provide each firm's name and address and a description of the services each firm.. This list will be completed, maintained current and will be available for review.

V. INITIAL SUBMITTAL REGISTER & REVIEWER

V.1 Submittal Register

A sample Submittal Register is provided as Exhibit V-1. Submittal Registers will be prepared as necessary based on project size and complexity, or as required by individual TO.

V.2 Personnel Authorized to Review and Certify Submittals

Personnel authorized to review and certify submittals other than the Site QC Manager / Representative are identified on Exhibit V-2. Any additional personnel assigned to perform submittal review and certification, must be approved by the CO, prior to assignment.

VI. TESTING LABORATORY ACCREDITATION

Testing laboratory accreditation requirements are addressed in the contract specification Section C Part 6.12.

VII. TESTING PLAN & LOG PREPARATION

A Testing Plan and Log, Exhibit VI-1, will be prepared for this TO and shall be maintained current..

VIII. QUALITY CONTROL INSPECTION PLAN

The Quality Control Inspection Plan, Exhibit VII-1, lists each specification section and definable feature of work with provisions for recording the corresponding checklist/report for each phase of

the three phase control process. As each control phase is satisfactorily preformed, the Site QC Manager/ Representative will record the corresponding checklist/report number.

Note: A definable feature of work is a task which is separate and district from other tasks and requires separate control procedures.

This list has been prepared and maintained in accordance with the contract specification Section C, Part 6.7 and will be agreed upon during the Coordination and Mutual Understanding Meeting. The list will be keyed to the construction schedule. Each preparatory, initial and follow-up phase checklist/report will reflect the construction activity number derived from the construction schedule, and will reference the procedures followed for each control phase.

IX. PERSONNEL MATRIX

The Site QC Manager/Representative will prepare and maintain the personnel matrix, Exhibit VIII- I, showing each section of the TO specification with identification of who will review and approve submittals, who will perform and document the three phases of control, and who will perform and document testing. This matrix should be completed as much as possible prior to and during site mobilization. The matrix will be maintained current by the Site QC Manager / Representative and will be available for review.

Figure I-1

IT/OHM Remediation Services Corporation
Task order No. 0059
QC Organizational Chart

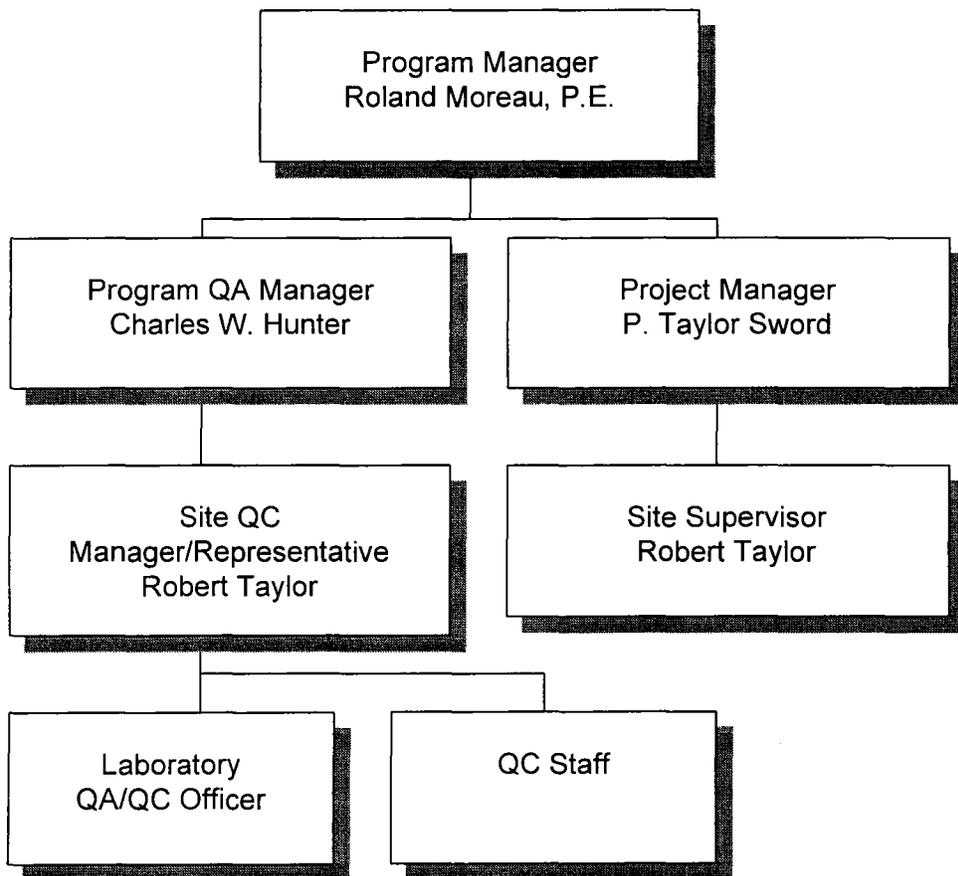


Figure II-1 Site QC Manager/Representative Resume

Robert Taylor

Professional Qualifications

Mr. Taylor is a Superintendent and has 12 years of related experience.

Education

Specialized Training:

- CFR 1910.11120 40-Hour OSHA Training
- 8-Hour OSHA Refresher
- 16-Hour Supervisor Workshop
- Competent Person Excavation Training
- Confined Space Entry Supervisor Training
- Computer Literate

Experience and Background

February 1992 – Present

The IT Group, City, ST

October 1999 – Present

Field Supervisor, Storm Sewer Rehabilitation Project, Washington Navy Yard, Washington, D.C.

- Replace and/or rehabilitate the existing storm water system for the Washington Navy Yard, which includes installing new ductile and SDR pipe, catch basins, manholes, and site restoration.
- Supervise and plan the daily activities for the crews. Equipment maintenance tracking, Time Reporting Tracking, tracking and ordering materials and supplies for the day-to-day operations, scheduling and managing subcontractors for site restoration activities (asphalt and concrete placement), submitting daily progress reports.
- The Washington Navy Yard is a very small but heavily staffed facility. This project received the “Biannual Safety Stand Down Award” on February 2, 2000 from the ROICC Office for having the “safest and cleanest jobsite”.

April 1995 – October 1999

Operations Superintendent, Drake Chemical Superfund Site, Lock Haven, PA

- Excavate and thermally treat the Drake Chemical Superfund Site.
- Supervising the excavation, debris separation, feed preparation, ash handling and backfill activities for a 24-hour/day, 7-day/week operation. Duties included equipment maintenance, tracking and scheduling, personnel scheduling and crewing, supporting subcontractors and managing the materials and supplies for daily operations.

- The Drake Site was 9.62 acres, which had to be excavated to a predetermined depth, which averaged 12 feet below the existing grade. There was approximately 300,000 tons of material that was excavated, sized to a 2 inch minus product to be incinerated then backfilled onsite. During the construction phase of this project, I was responsible for the construction of the concrete infrastructure for the incinerator and supporting activities. This involved the placement of 3,300 cubic yards of 4,000 psi concrete, managing the Re-bar subcontractor and anchor bolt placement. This activity started two weeks behind schedule, due to engineering conflicts, but it was completed on schedule. I also supervised the erection of two Sprung buildings and dismantling of three Sprung buildings.
- As mentioned, the operations phase of the project was a 24-hour/day, 7-day/week operation. The objective concerning my responsibilities was to produce 1,000 tons of 2 inch minus material with a consistent moisture content on a daily basis, to be introduced into the High Temperature Incinerator. To achieve this throughput rate, blending of site soils with fluctuating moisture contents and the addition of "Quick Lime" was necessary to facilitate the desired material throughput.
- The average daily cost of this project was \$60,000 to \$70,000 per day. With this in mind, it was imperative to have a consistent "feed supply" available for thermal treatment at all times. I am pleased to say that due to the pure commitment and sound initiative of the field crews at this site, feed material was unavailable for only a few hours, two hours of which, were electrical issues that were out of our control.

April 1993 –December 1994

Field Supervisor, Brio, Houston, TX

- Excavate and thermally treat the affected areas of the Brio site.
- Supervised the daily field activities associated with the construction of infrastructures to support the operation of a High Temperature Incinerator. This included grading the site to promote storm water drainage, the construction of several thousand feet of haul roads, constructing suitable building foundations per compaction requirements and specifications, erecting three 75' x 300' Clamshell portable buildings, constructing a water treatment plant and portable equipment decontamination pads, installing air handling units and associated duct work.
- After the construction phase of the Brio Site, the project was halted while the clients pursued optional remediation technologies. Incineration is a very effective but politically sensitive remedy. The client elected to eliminate incineration as a potential remedy, which required our company to demobilize our equipment from the site.

October 1992 – April 1993

Equipment Officer, Old Midland Superfund Site, Ola, Arkansas

- Evaluate and thermally treat the affected soils.
- Backfill the thermally treated soil in uniform lifts while maintaining the specified compaction requirements. Maintained the site drainage and haul roads. Placed a 12" clay cap and 6" of topsoil over the entire site.

1988 – 1992

Heavy Equipment Operator, White Construction, Hiawasse, GA

- Earth moving contractor.
- Operated dozers, rubber tire and track loaders, dump trucks, Euclid 15-yard pans and excavators.

- Involved with the construction of several miles of private roads throughout the North Georgia mountains, constructed a dike system for a recreational lake along with several cut and fill projects for commercial building sites.

July 6, 2000

Mr. Robert Taylor
IT/OHM Remediation Services Corporation
5700 Thurston Avenue, Suite 116B
Virginia Beach, VA 23455-3302

RE: Site QC Manager
Contract N62470-97-D-5000
Task Order 0059

Dear Robert:

This letter will serve as your appointment as the Site Quality Control Manager on the referenced project and will also clarify your duties and authority in this position. In this position, you will be authorized to use available resources to satisfy all applicable requirements of the Program and Task Order Quality Control Plan.

This authorization specifically gives you the authority to direct removal and replacement or correction of nonconforming materials or work and stop work authority when continuation would be unsafe to personnel, harmful to the environment, or result in a significant degradation of quality.

You will be expected to work closely with the Project Manager and other project personnel, but you will not be directly responsible to anyone but myself for resolution of quality issues when working in the capacity of Quality Control Manager.

If you have any question in this matter, please call me at (609) 584-6840.

Sincerely,



Charles W. Hunter
Program QC Manager
LANTDIV RAC Program

EXHIBIT IV-1

APPROVED CONSULTANT & SUBCONTRACTOR LIST

COMPANY NAME & ADDRESS:	DESCRIPTION OF SERVICES PROVIDED:
TBD	TBD

EXHIBIT V-2

LIST OF PERSONNEL AUTHORIZED TO REVIEW & CERTIFY SUBMITTALS

SPECIFICATION SECTION:	SUBMITTAL TYPE:	AUTHORIZED PERONNEL:
N/A	All Analytical/Test Data	P. Taylor Sword Dorothy Small

EXHIBIT VI-1

TESTING PLAN AND LOG

CONTRACT NUMBER N62470-97-D-5000		PROJECT TITLE AND LOCATION Soil Excavation and Disposal, Atlantic 7012 Marine Corps Air Station, Cherry Point, NC							CONTRACTOR IT/OHM			
SPECIFICATION SECTION AND PARAGRAPH NUMBER	ITEM OF WORK	TEST REQUIRED	ACCREDITED/ APPROVED LAB		SAMPLED BY	TESTED BY	LOCATION OF TEST		FREQUENCY	DATE COMPLETE	DATE FORWARDED TO CONTR. OFF.	REMARKS
			YES	NO			ON SITE	OFF SITE				

EXHIBIT VII-1
QUALITY CONTROL INSPECTION PLAN
Atlantic 7012
Marine Corps Air Station, Cherry Point, NC
Task Order No. 0059

Specification Section	Definable Feature of Work	Activity Number*	Control Check Verification		
			Preparatory Phase Checklist/Report No.	Initial Phase Checklist/Report No.	Follow-up Phase Checklist/Report No.
N/A	<p>Site Preparation</p> <ul style="list-style-type: none"> • Establish temporary facilities • Delineate work areas • Install fencing • Establish E & S features • Utility clearance • Spill prevention measures • Establish decontamination measures <p>Well Abandonment</p> <ul style="list-style-type: none"> • Methods & Materials <p>Excavate contaminated soils</p> <ul style="list-style-type: none"> • Screen & headspace readings • Load, remove & de-water <p>Characterization & Confirmatory sampling</p> <ul style="list-style-type: none"> • FSP <p>Backfill</p> <ul style="list-style-type: none"> • Place clean fill material • Compaction • Seed <p>T & D</p> <ul style="list-style-type: none"> • Manifests, labels & LDR <p>Site Restoration</p> <ul style="list-style-type: none"> • Vegetate and restore to original condition • Repair any damage 				

* Include schedule date if a CPM network is invoked.

EXHIBIT VIII-1

PERSONNEL MATRIX

SPECIFICATION SECTION:	SUBMITTAL REVIEWED BY:	THREE PHASE PERFORMED BY:	TESTING PERFORMING BY:
N/A	Site QC Manager	Site QC Manager	TBD

Appendix E

Project Schedule
