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NWS EARLE
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SITE INVESTIGATION REPORTS FOR THE CLOSURE OF THREE UNDERGROUND
STORAGE TANKS NWS EARLE NJ
10/1/1994
ROY F. WESTON, INC.

**SITE INVESTIGATION REPORT FOR THE CLOSURE
OF THREE UNDERGROUND STORAGE TANKS
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY**

October 1994

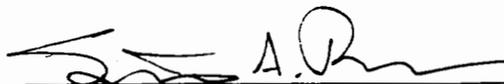
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OF THREE UNDERGROUND STORAGE TANKS
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY**

October 1994

Prepared for:

DEPARTMENT OF THE NAVY
Officer in Charge
NAVFAC Contracts
Naval Weapons Station Earle
Tanks C-29/1, C-29/2, and C-3/1
Colts Neck, New Jersey 07722-5000

W.O. # 10240-001-001



Steven A. Rock
Principal Project Manager



Richard M. Leuser, P.E.
Project Director
New Jersey P.E. Registration No. 23275
NJDEP UST Certification No. E0000457

Prepared by:
ROY F. WESTON, INC.
One Weston Way
West Chester, Pennsylvania 19380

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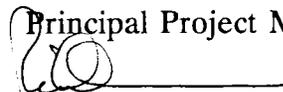
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	- Tank C-29/2
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EXECUTIVE SUMMARY

In August 1994, the United States Navy closed Underground Storage Tanks (USTs) C-3/1, C-29/1, and C-29/2 at the Naval Weapons Station Earle, in Colts Neck, New Jersey. The tanks were closed in-place as per the New Jersey Department of Environmental Protection (NJDEP) Closure Approval (TMS) Nos. C94-0921, C93-5120, and C93-5121, respectively.

Tank C-3/1 was a 10,000 gallon UST, Tank C-29/1 was a 15,000 gallon UST, and Tank C-29/2 was a 1,000 gallon UST. Tank C-29/2 had been registered as a 1,500 gallon tank; however, upon removal of the tank overburden, Tank C-29/2 was discovered to have a capacity of 1,000 gallons. Each tank consisted of single-walled steel construction and formerly contained No. 2 fuel oil.

Closure of the tanks were performed by removing overburden material if present, emptying the tanks and piping, entering the tanks in order to clean them, and cutting and removing the piping to the buildings, where possible. No staining, odors, or elevated field instrument readings were noted in the overburden soils. Groundwater was not encountered in the excavations. Visual examination of the tanks and appurtenant piping indicated that the tanks and piping were intact with no holes. Closure of the tanks was completed by filling the tanks with concrete, replacing the overburden material, and the restoring the sites to original condition.

No post-excavation or soil boring sampling was performed. All three tanks had successfully passed tightness testing less than one year prior to UST closure. As stated by the NJDEP, no post-excavation or soil boring sampling is required if the tanks are closed within one year of passing tightness testing.

Based on the results of the site investigations and tank tightness testing results, no further action is recommended for Tanks C-3/1, C-29/1, and C-29/2.

SECTION 1

INTRODUCTION

1.1 PROJECT DESCRIPTION

The United States Navy has closed three underground storage tanks (USTs) at Naval Weapons Station Earle (NWS Earle), located in Colts Neck, New Jersey. One tank, designated as Tank C-3/1, was located adjacent to Building C-3, while two tanks, designated as Tanks C-29/1 and C-29/2, were located adjacent to Building C-29. The tank closures were conducted as part of a station-wide program to convert existing fuel oil heating processes to natural gas. This effort is expected to last several years.

The tanks were registered with the New Jersey Department of Environmental Protection (NJDEP) under Facility Registration No. UST 0151003. The NJDEP Bureau of Underground Storage Tanks (BUST) issued Closure Approval (TMS) No. C94-0921 for Tank C-3/1 on 12 May 1994. Closure Approval Nos. C93-5120 and C93-5121 were issued for Tanks C-29/1 and C-29/2, respectively, on 10 December 1993. Copies of the closure approval certificates are presented in Appendix A.

Roy F. Weston, Inc. (WESTON) closed the tanks under contract to the Navy in August 1994. The following Site Investigation Report has been prepared in accordance with the NJDEP's regulations Technical Requirements for Site Remediation (N.J.A.C. 7:26E) and Underground Storage Tanks (N.J.A.C. 7:14B). This report includes a description of the site, a discussion of tightness testing performed on the tanks, technical overviews of the tank closures, and conclusions based on the findings of this investigation.

1.2 SITE DESCRIPTION AND HISTORY

The NWS Earle consists of two geographical areas. The main section (referred to as the Inland Area), of NWS Earle is located in Colts Neck, New Jersey and encompasses an area of approximately 9 square miles (Figure 1-1). The other section of NWS Earle is located adjacent to Leonardo, New Jersey and is referred to as the Waterfront Area (Figure 1-2). Both sections of NWS Earle are connected by a government road approximately 13 miles in length. The tanks addressed in this summary (C-3/1, C-29/1, and C-29/2) are located at the Inland Area facility. The Hockhockson Swamp is located approximately 1/2 mile northeast of the Inland Area.

1.3 REGIONAL GEOLOGY

The NWS Earle sites are located in Monmouth County, New Jersey. Monmouth County lies within the New Jersey Coastal Plain province. The NWS Earle sites are located in the Outer Coastal Plain subprovince, or the Outer Lowlands.

In general, the sediments of the New Jersey, or "Atlantic" Coastal Plain consist of a seaward-dipping wedge of unconsolidated deposits of sand with some clay, silt and gravel. These sediments, predominantly derived from deltaic, shallow marine, and continental shelf environments, date from Cretaceous through the Quaternary Periods. The formations record several major transgressive/regressive cycles and contain units which are generally thicker to the southeast and reflect a deeper water environment. The mineralogy ranges from nearly all quartz to nearly all glauconite. The general hydrogeologic framework reflects that the transgressive deposits act as confining units while most of the aquifers have formed in the regressive deposits.

The tanks were located in a sand fill. All three tanks were abandoned in place; therefore, measurements of depth to groundwater were not obtained during closure activities. The groundwater flow direction was not determined at the UST sites.

SECTION 2

TANK CLOSURE ACTIVITIES

2.1 TANK SYSTEM DESCRIPTION

Tank C-3/1 was a 10,000 gallon UST located in a courtyard on the west side of Building C-3. Tank C-29/1 was a 15,000 gallon UST and Tank C-29/2 was a 1,000 gallon UST. Both tanks were located on the east side of Building C-29. Tank C-29/2 had been registered as a 1,500 gallon tank; however, upon removal of the tank overburden, Tank C-29/2 was discovered to have a capacity of 1,000 gallons. All tanks consisted of single-walled steel construction. Figure 2-1 depicts the Tank C-3/1 site. Figure 2-2 depicts the Tank C-29/1 and C-29/2 sites. Figures 2-3, 2-4, and 2-5 present the cross-sectional profiles for Tanks C-3/1, C-29/1 and C-29/2, respectively.

All three tanks contained No. 2 fuel oil, and were registered with the NJDEP under UST Facility Registration No. 0151003. A summary of the tank information is presented in Table 2-1.

2.2 TANK CLOSURE ACTIVITIES

The closure of Tanks C-3/1, C-29/1, and C-29/2 were performed under contract to the Department of the Navy. All work was performed by WESTON (Closure Certification No. E0000457). Prior to beginning work, the occupants of the Buildings C-3 and C-29 were notified of the planned removal activities. Underground and overhead utilities were surveyed and marked prior to excavation at each tank site.

Tank closure activities were photodocumented. Copies of photographs documenting the closure of Tanks C-3/1, C-29/1, and C-29/2 are presented in Appendix B.

2.2.1 Tank C-3/1

Prior to excavation activities, the tank fluid level was measured. Approximately 2,250 gallons of No. 2 fuel oil was removed from the tank by vacuum truck and shipped off-site. All oil in the tank was removed by Lionetti Oil Recovery Company (LORCO), Old Bridge, New Jersey. Caution tape was placed around the closure site, excavation permits were obtained, and overburden soil was excavated with hand shovels in order to access the tank's manway.

On 24 August 1994, WESTON subcontracted Casie Protank to clean the tank. The manway was reopened to act as an access point for tank entry. Confined space entry permits were drafted, read, and signed by all personnel who would enter the tank in Level B personal

protection for cleaning. The tank was cleaned by first scraping the interior walls of the tank, cleaning the interior with a degreaser, and pressure washing the interior with water. After cleaning, residual sludge and wash water were removed, and the tank interior was dried. The oily water liquid waste was transported off-site by Casie Protank for proper disposal.

After cleaning Tank C-3/1, the tank interior and piping were closely inspected. The tank and piping appeared to be intact with no holes.

Closure of Tank C-3/1 was completed on 25 August 1994. Fill and vent piping was cut at the building, disconnected from the tank, and removed from the excavation. Scrap metal pipe was transported at a later date to Jacob Goldberg and Son, Inc. (Goldberg), a scrap metal recycling facility. The tank was then filled with a flowable fill material, the manway cover was replaced, overburden soil was returned to the excavation, and a layer of topsoil was placed to grade. Seed and mulch were placed on the disturbed area to re-establish vegetation consistent with the surrounding area.

2.2.2 Tank C-29/1

Prior to excavation activities, the tank fluid level was measured. Approximately 130 gallons of No. 2 fuel oil was removed from the tank by vacuum truck and shipped off-site. All oil in the tank was removed by Lionetti Oil Recovery Company (LORCO), Old Bridge, New Jersey. Caution tape was placed around the closure site, excavation permits were obtained, asphaltic pavement was removed with a hydraulic excavator, and overburden soil was excavated with hand shovels in order to access the tank's manway.

On 24 August 1994, WESTON subcontracted Casie Protank to clean the tank. The manway was reopened to act as an access point for tank entry. Confined space entry permits were drafted, read, and signed by all personnel who would enter the tank in Level B personal protection for cleaning. The tank was cleaned by first scraping the interior walls of the tank, cleaning the interior with a degreaser, and pressure washing the interior with water. After cleaning, residual sludge and wash water were removed, and the tank interior was dried. The oily water liquid waste was transported off-site by Casie Protank for proper disposal.

After cleaning Tank C-29/1, the tank interior and piping were closely inspected. The tank and piping appeared to be intact with no holes.

Closure of Tank C-29/1 was completed on 25 August 1994. Fill and vent piping was cut at the building, disconnected from the tank, and removed from the excavation. Scrap metal pipe was transported at a later date to Goldberg for recycling. The tank was then filled with a flowable fill material, the manway cover was replaced, and overburden soil was returned to the excavation to three to four inches below grade. The surface area was subsequently asphalted to match conditions prior to excavation.

2.2.3 Tank C-29/2

Prior to excavation activities, the tank fluid level was measured. Approximately 420 gallons of No. 2 fuel oil was removed from the tank by vacuum truck and shipped off-site. All oil in the tank was removed by Lionetti Oil Recovery Company (LORCO), Old Bridge, New Jersey. Caution tape was placed around the closure site, and the metal cover over the manway was removed. Before opening the manway to the tank, rainwater that had accumulated in the manway chamber had to be bailed. The manway cover was then removed to access the tank interior.

On 24 August 1994, WESTON subcontracted Casie Protank to clean the tank. The manway was reopened to act as an access point for tank entry. Confined space entry permits were drafted, read, and signed by all personnel who would enter the tank in Level B personal protection for cleaning. The tank was cleaned by first scraping the interior walls of the tank, cleaning the interior with a degreaser, and pressure washing the interior with water. After cleaning, residual sludge and wash water were removed, and the tank interior was dried. The oily water liquid waste was transported off-site by Casie Protank for proper disposal.

After cleaning Tank C-29/2, the tank interior and piping were closely inspected. The tank and piping appeared to be intact with no holes.

Closure of Tank C-29/2 was completed on 25 August 1994. Fill and vent piping was cut at the building, disconnected from the tank, and removed from the excavation. Scrap metal pipe was transported at a later date to Goldberg for recycling. The tank and manway chamber were then filled with a flowable fill material to three to four inches below grade. The surface area was subsequently asphalted to match conditions prior to excavation.

2.3 WASTE MATERIAL MANAGEMENT

2.3.1 Tank and Piping

Since the type of UST closure for each tank was abandonment-in-place, the only metal scrap generated from the tank closures was small sections of piping from the fill, vent lines and supply and return lines. All accessible piping connected to the tank and all aboveground sections of the vent lines were removed. The metal scrap was transported at a later date to Jacob Goldberg and Son, Inc., a scrap metal recycling facility. No receipts from the metal recycler are available.

2.3.2 Excavated Soil

During tank closure, excavated overburden soils above Tanks C-3/1 and C-29/1 were examined for evidence of staining (no soils were excavated from above Tank C-29/2). The soils were also screened with either a Thermo Environmental Systems, Inc. Organic Vapor

Meter (OVM) or an HNu Photoionization Detector (HNu PID) for volatile organic vapors. No staining, odors, or elevated field instrument readings were noted; therefore, the soils were considered to be acceptable for later use as backfill.

2.3.3 Tank Fluids

Prior to cleaning the tanks, the remaining No. 2 fuel oil was removed from the tanks by LORCO and transported to LORCO's treatment, storage, and disposal (TSD) facility in Old Bridge, New Jersey for recycling. A total of 2,800 gallons of No. 2 fuel oil was removed and shipped off site. A copy of the manifest is presented in Appendix C.

During cleaning of the tanks, the remaining fuel oil and water was removed from the tanks with a vacuum truck by Casie Protank. After tank cleaning, the wash water introduced into the tanks was removed by Casie Protank. Approximately 5400 gallons of wash water (oily water) from the tanks was transported off-site for proper disposal. A copy of the manifest is presented in Appendix C.

2.4 SITE ASSESSMENT OBSERVATIONS AND SAMPLING

Field screening with either an OVM or an HNu PID was performed on the overburden soils removed from the Tank C-3/1 and C-29/1 excavations. Approximately 2.0 to 2.5 feet of overburden soil were excavated from above each tank in order to access the tank manways. No readings above background level were obtained, and no evidence of staining was noted. Groundwater was not encountered in the excavations. No excavation was required for Tank C-29/2 since the manway was directly accessed from the ground surface.

Since the type of UST closure for each tank was abandonment-in-place, no post-excavation soil samples were collected.

According to NJDEP's regulations Technical Requirements for Site Remediation (N.J.A.C. 7:26E), soil borings within two feet of the tank are normally required for tanks that are abandoned in place. However, in order to verify the integrity of the tanks, each of the three tanks were tightness-tested less than one year prior to tank closure. All tanks successfully passed tightness testing. According to the NJDEP, soil boring, sampling, and analysis are not required for abandoned USTs if the tanks are closed within one year of passing tightness testing. Tightness testing of the tanks is discussed in Section 3 of this report.

SECTION 3

ANALYTICAL RESULTS

3.1 SOIL SAMPLING RESULTS

As indicated in Section 2.4 of this report, since the tanks were abandoned in place, no post-excavation soil samples were collected. Soil borings were also not performed around the abandoned tanks, since each of the tanks successfully passed tightness testing less than one year prior to tank closure. Tank tightness testing results are presented in Appendix D. According to the NJDEP, soil boring, sampling, and analysis are not required for abandoned USTs if the tanks are closed within one year of passing tightness testing. A copy of the NJDEP correspondence documenting this exemption is presented in Appendix E.

Since no soil sampling was performed as part of these UST closures, discussions on reliability of analytical data, sampling methods, sample handling and preservation, sample handling times, quality assurance samples, and method detection limits are not required.

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

In August 1994, the United States Navy closed Tanks C-3/1, C-29/1, and C-29/2 at the Naval Weapons Station Earle in Colts Neck, New Jersey. The tanks were removed as per the New Jersey Department of Environmental Protection (NJDEP) Closure Approval (TMS) Nos. C94-0921, C93-5120, and C93-5121, respectively.

In-place closure of the tanks were performed by removing overburden material if present, emptying the tanks and piping, entering the tanks in order to clean them, and cutting and removing the piping. No staining, odors, or elevated field instrument readings were noted in the overburden soils. Visual examination of the tanks and appurtenant piping indicated that the tanks and piping were intact with no holes. Closure of the tanks was completed by filling the tanks with concrete, and replacing the overburden material.

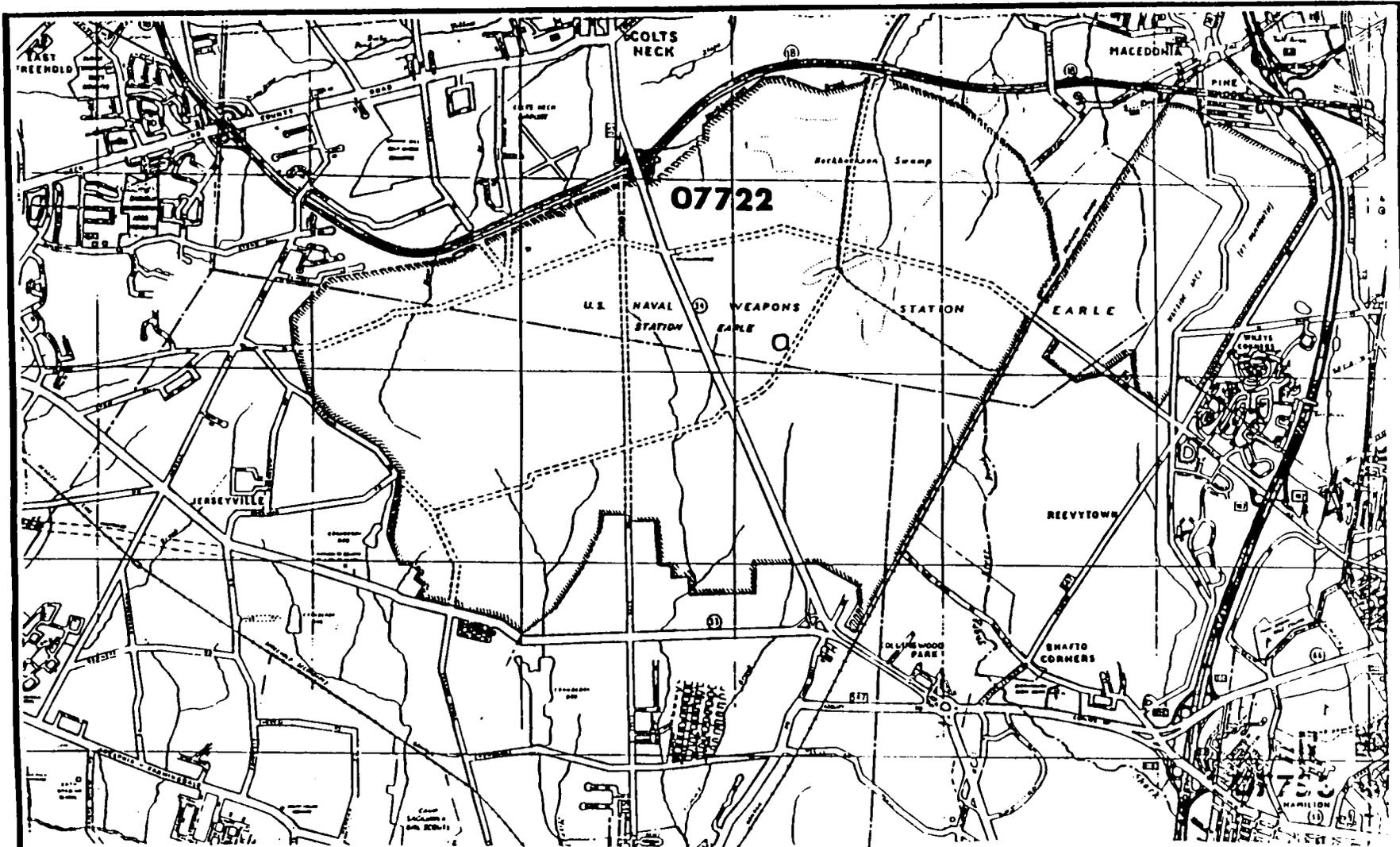
No post-excavation or soil boring sampling was performed. All three tanks had successfully passed tightness testing less than one year prior to UST closure. As stated by the NJDEP, no post-excavation or soil boring sampling is required if the tanks are closed within one year of passing tightness testing.

4.2 RECOMMENDATIONS

Based on the findings of the site investigations, the following recommendations are made:

- Tank C-3/1 - No further action.
- Tank C-29/1 - No further action.
- Tank C-29/2 - No further action.

FIGURES



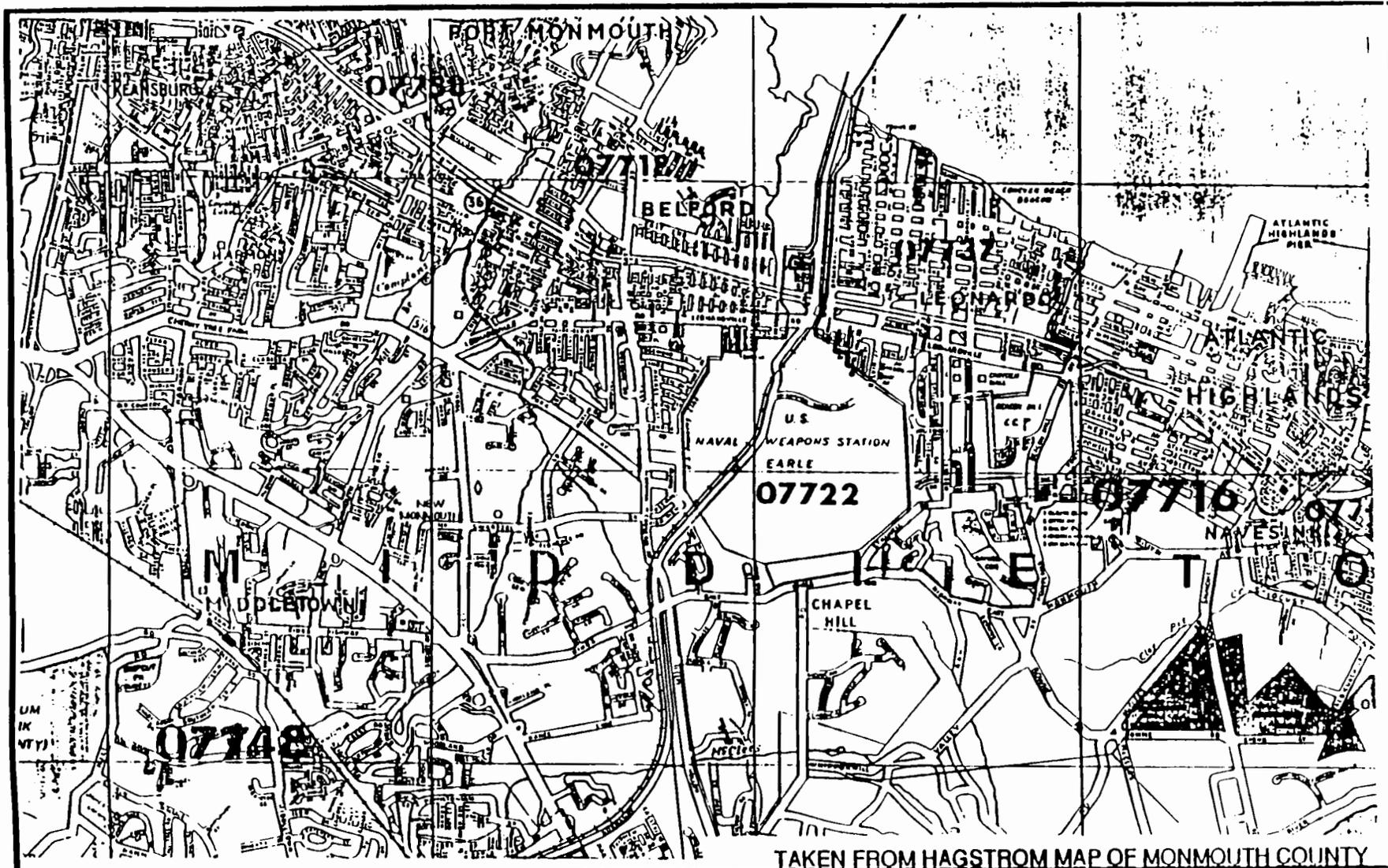
TAKEN FROM HAGSTROM MAP OF MOUNTAIN COUNTY

FIGURE 1-1

SITE LOCATION MAP
INLAND AREA - COLTS NECK, NEW JERSEY



NAVAL WEAPONS STATION EARLE



TAKEN FROM HAGSTROM MAP OF MONMOUTH COUNTY

FIGURE 1-2

SITE LOCATION MAP

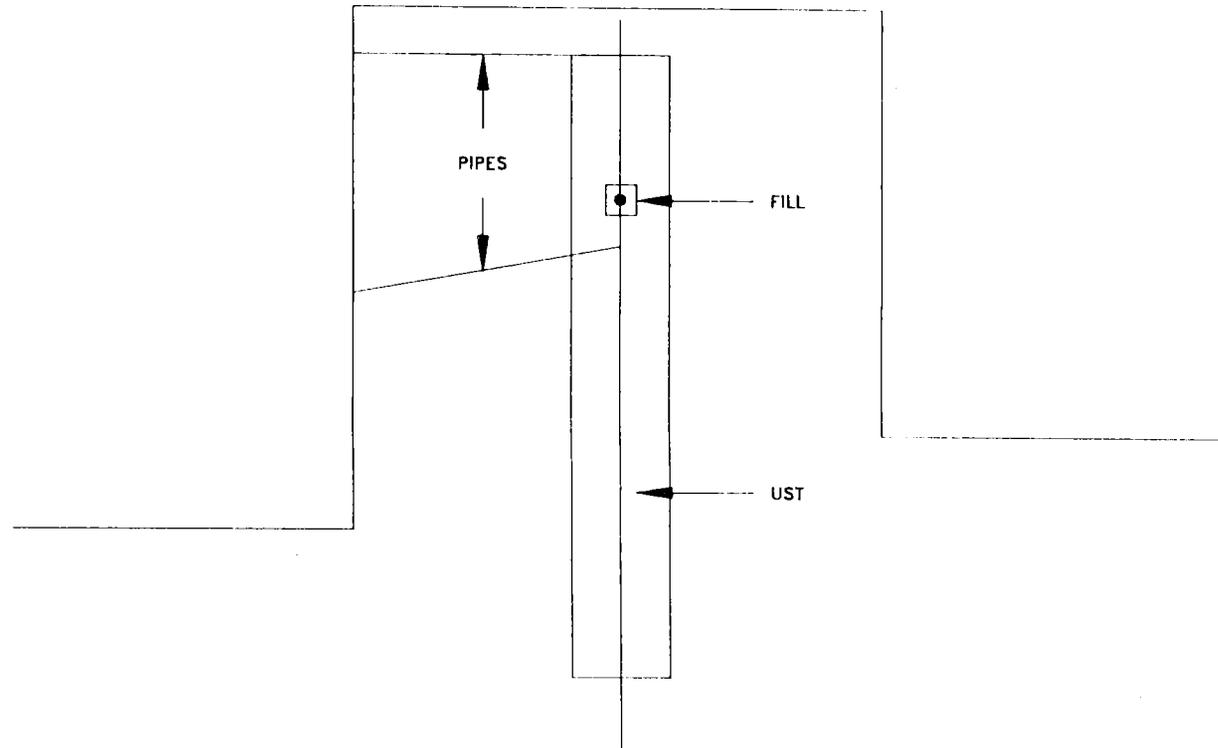
WATERFRONT AREA - LEONARDO, NEW JERSEY

NAVAL WEAPONS STATION EARLE

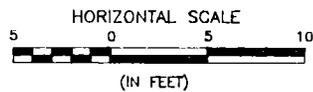




BUILDING C-3



REVISION #:
DATE: 9/27/94
FILE NAME: SUBSURF.DWG DRAWN BY: B. MAC



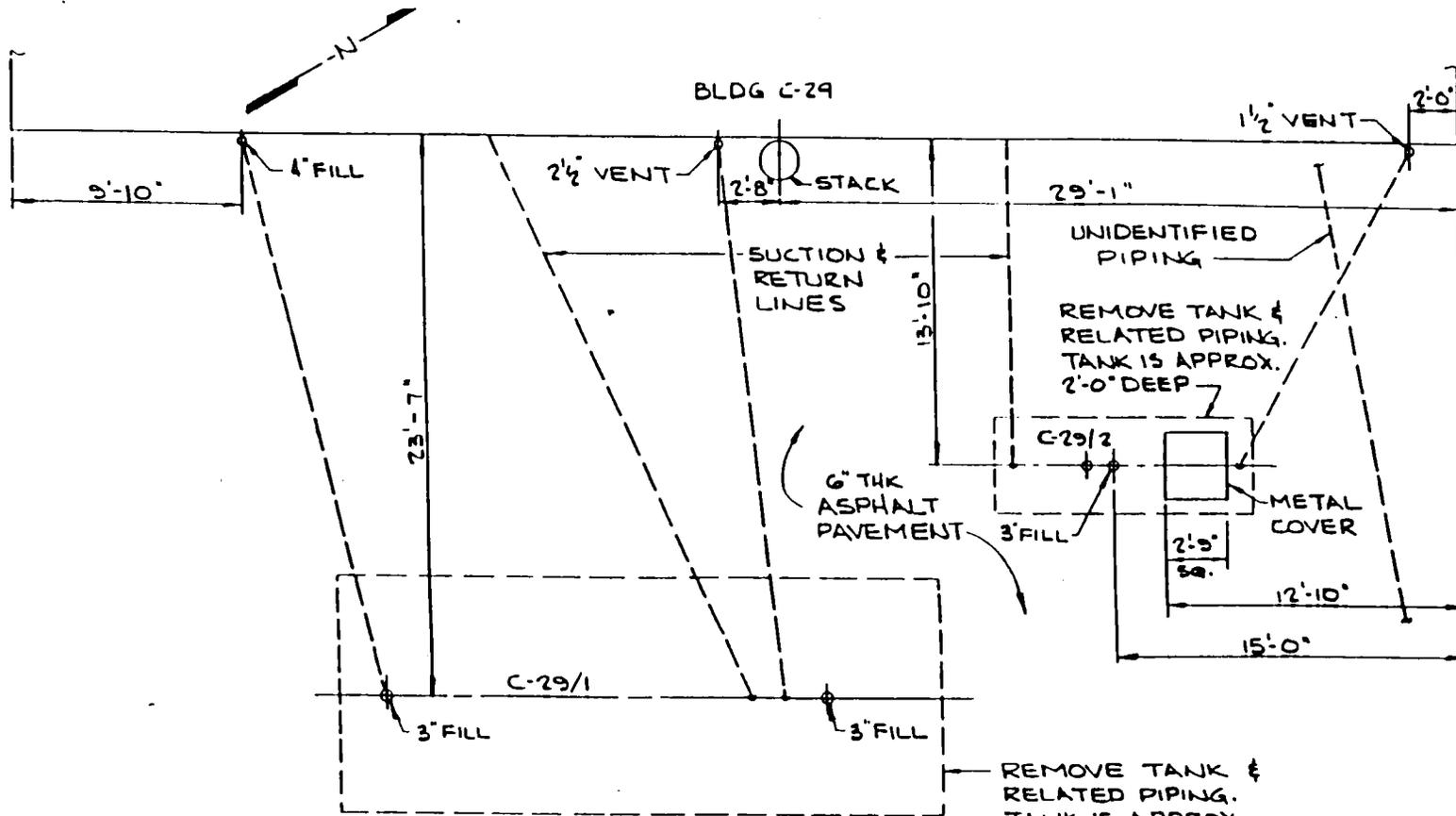
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UNDERGROUND STORAGE TANK CLOSURES
NAVAL WEAPON STATION EARLE
COLTS NECK, NEW JERSEY
COLTS NECK, NEW JERSEY
CLIENT NAME: DEPARTMENT OF THE NAVY
NAVFAC CONTRACTS

SITE LOCATION MAP
TANK C-3/1

DATE:
29 SEPTEMBER 1994

FIGURE #:

2-1



PLAN - BUILDING C-29/1 & 2
 SCALE: 1/4" = 1'-0"
 FUEL OIL TANK REMOVAL
 1,000 + 15,000 GAL

REVISION # DATE 9/27/94
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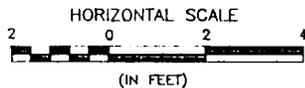
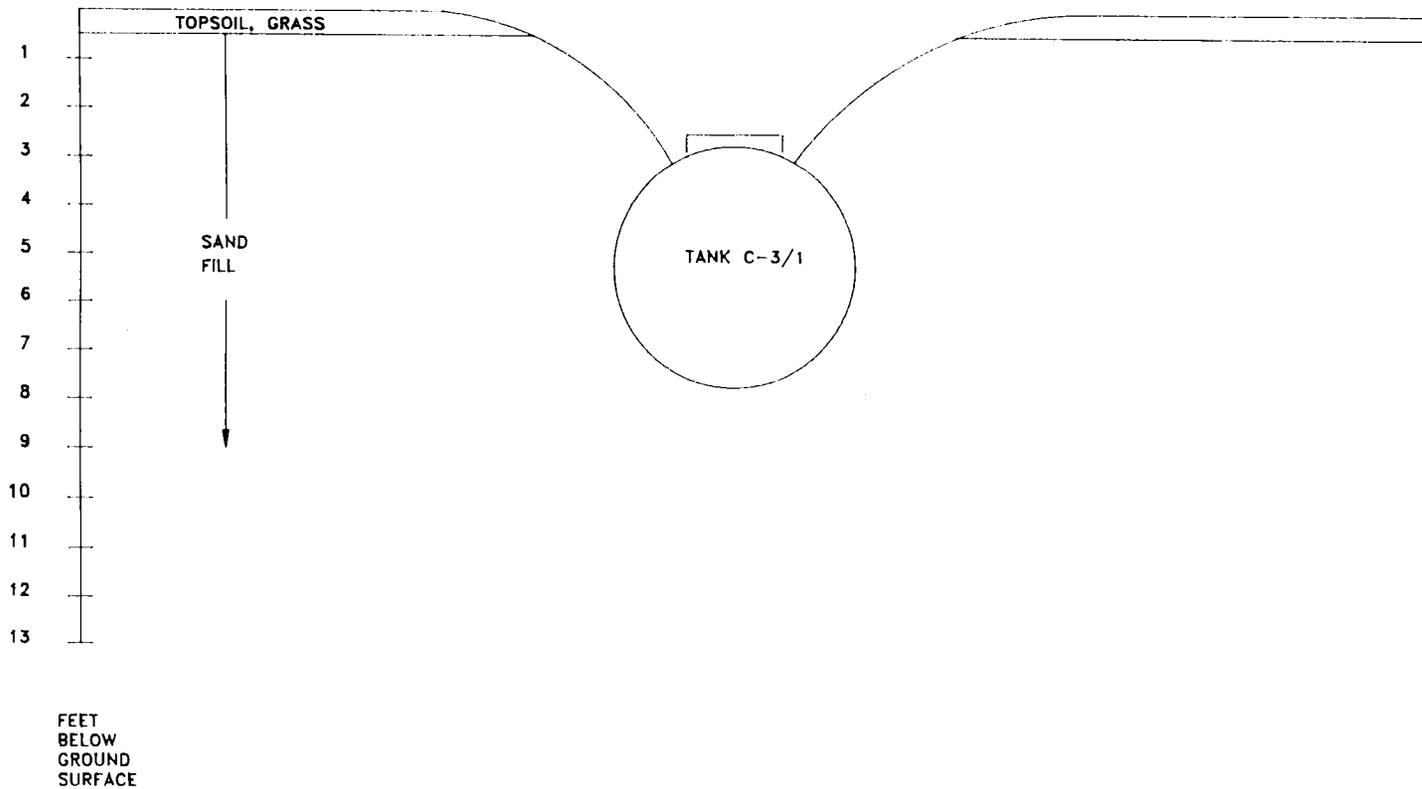
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 CLIENT NAME: DEPARTMENT OF THE NAVY
 NAVFAC CONTRACTS

SITE LOCATION MAP
 TANKS C-29/1 AND C-29/2

DATE:
 29 SEPTEMBER 1994

FIGURE #:
 2-2

REVISION #:
DATE: 9/27/94
FILE NAME: ASSUBSURF.DWG DRAWN BY: B. MAC



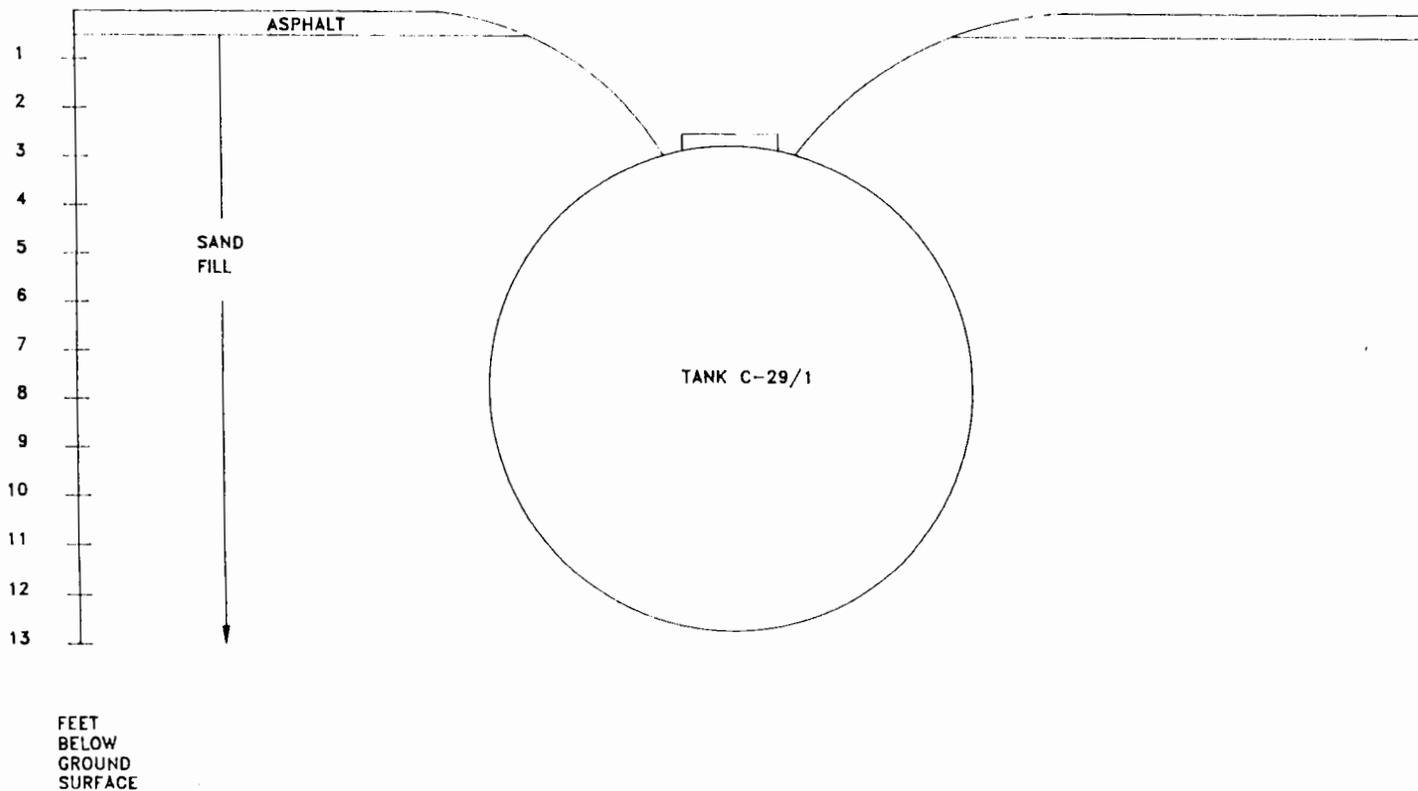
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CLIENT NAME: DEPARTMENT OF THE NAVY
NAVFAC CONTRACTS

SUBSURFACE CROSS SECTION
TANK C-3/1

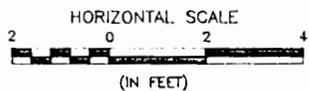
DATE:
29 SEPTEMBER 1994

FIGURE #:

2-3



REVISION # DATE: 9/27/94
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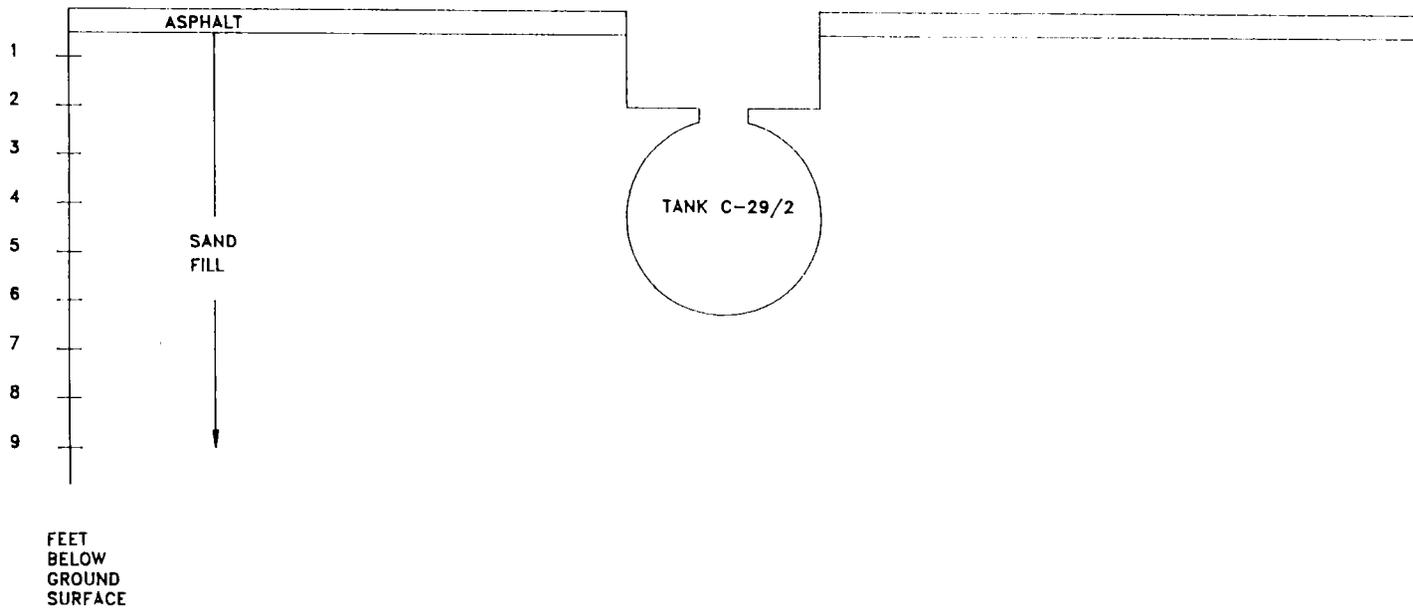


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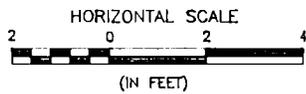
SUBSURFACE CROSS SECTION
 TANK C-29/1

DATE:
 29 SEPTEMBER 1994

FIGURE #:
 2-4



REVISION # DATE 9/27/94
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PROJECT NAME:
UNDERGROUND STORAGE TANK CLOSURES
NAVAL WEAPON STATION EARLE
COLTS NECK, NEW JERSEY
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CLIENT NAME: DEPARTMENT OF THE NAVY
NAVFAC CONTRACTS

SUBSURFACE CROSS SECTION
TANK C-29/2

DATE:
29 SEPTEMBER 1994

FIGURE #:
2-5

TABLES

TABLE 2-1

TANK INFORMATION SUMMARY

Tank Number	Closure Approval Number	Dimensions and Volume	Tank Content	Material of Construction
C-3/1	C94-0921	26'8" long by 8' diameter; 10,000 gallons	No. 2 Fuel Oil	Single-walled Steel
C-29/1	C93-5120	25.7' long by 10' diameter; 15,000 gallons	No. 2 Fuel Oil	Single-walled Steel
C-29/2	C93-5121	11.3' long by 4' diameter; 1,000 gallons	No. 2 Fuel Oil	Single-walled Steel

APPENDIX A

NJDEPE UST CLOSURE APPROVAL FORMS

**UNDERGROUND STORAGE TANK SYSTEM
CLOSURE APPROVAL**

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY

**DIVISION OF RESPONSIBLE PARTY SITE REMEDIATION
BUREAU OF APPLICABILITY AND COMPLIANCE
CN-028, TRENTON, NJ 08625-0028**

TMS #

C94-0921

UST #

0151003

NAVAL WEAPONS STATION - EARLE

COLTS NECK

MONMOUTH County

**THE ABOVE LISTED FACILITY IS HEREBY GRANTED APPROVAL TO PERFORM
THE FOLLOWING ACTIVITY IN ACCORDANCE WITH N.J.A.C. 7:14b-1 et. seq:**

REMOVAL OF: three-10,000 gallon #2 fuel oil USTs, four -15,000 gallon #2 fuel oil USTs, one-2,000 gallon #2 fuel oil UST, three-5,000 gallon #2 fuel oil USTs. one-1,000 gallon #2 fuel oil UST, two-2,000 gallon #2 fuel oil UST and appurtenant piping.

SITE ASSESSMENT: Soil samples will be taken every five (5) feet along the center line of each tank and one (1) soil sample for every 15 feet along all appurtenant piping. Two (2) additional samples will be taken per excavation and biased to the areas of highest field screened readings. Samples will be analyzed for TPHC. Analyze 25% of the samples over 1,000 ppm for V0+10.

ON-SITE MANAGER:

GEORGE WEISS

TELEPHONE:

610-701-3186

EFFECTIVE DATE: 05/12/94

**THIS FORM MUST BE DISPLAYED AT THE SITE DURING THE APPROVED
ACTIVITY AND MUST BE MADE AVAILABLE FOR INSPECTIONS AT ALL TIMES.**


**BARBARA MURRAY, CHIEF
BUREAU OF APPLICABILITY AND COMPLIANCE**

C-29/01

UNDERGROUND STORAGE TANK SYSTEM CLOSURE APPROVAL

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL
PROTECTION AND ENERGY
DIVISION OF RESPONSIBLE PARTY SITE REMEDIATION
BUREAU OF UNDERGROUND STORAGE TANKS
CN-029, TRENTON, NJ 08625-0029

TMS # C93-5120

UST # 0151003

The United States Navy
Naval Weapons Station Earle
Colts Neck, NJ
(Monmouth)

THE ABOVE LISTED FACILITY IS HEREBY GRANTED APPROVAL TO PERFORM
THE FOLLOWING ACTIVITY IN ACCORDANCE WITH N.J.A.C. 7:14B-1 et seq.:

REMOVAL OF: one 15,000 gallon #2 fuel oil/ Heating Oil UST(s);
and appurtenant piping.

SITE ASSESSMENT: Soil samples will be taken every five (5) feet
along the center line of each tank and one (1) soil sample for
every 15 feet along all associated piping. Two (2) additional
samples will be taken per excavation and biased to the areas of
highest field screened readings. Samples will be analyzed for
TPHC. Analyze 25% of the samples over 1,000 ppm PHC for VO+10.

ON-SITE MANAGER:

John Pawlus

OWNER:

TELEPHONE:

908-866-2674

TELEPHONE:

EFFECTIVE DATE:

DEC 10 1993

THIS FORM MUST BE DISPLAYED AT THE SITE DURING THE APPROVED
ACTIVITY AND MUST BE MADE AVAILABLE FOR INSPECTION AT ALL TIMES.



KEVIN F. KRATINA, BUREAU CHIEF
BUREAU OF UNDERGROUND STORAGE TANKS

C - 29/02

UNDERGROUND STORAGE TANK SYSTEM CLOSURE APPROVAL

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL
PROTECTION AND ENERGY

DIVISION OF RESPONSIBLE PARTY SITE REMEDIATION
BUREAU OF UNDERGROUND STORAGE TANKS
CN-029, TRENTON, NJ 08625-0029

TMS # C93-5121

UST # 0151003

The United States Navy
Naval Weapons Station Earle
Colts Neck, NJ
(Monmouth)

THE ABOVE LISTED FACILITY IS HEREBY GRANTED APPROVAL TO PERFORM
THE FOLLOWING ACTIVITY IN ACCORDANCE WITH N.J.A.C. 7:14B-1 et seq.:

REMOVAL OF: one 1,500 gallon #2 fuel oil/ Heating Oil UST(s);
and appurtenant piping.

SITE ASSESSMENT: Soil samples will be taken every five (5) feet
along the center line of each tank and one (1) soil sample for
every 15 feet along all associated piping. Two (2) additional
samples will be taken per excavation and biased to the areas of
highest field screened readings. Samples will be analyzed for
TPHC. Analyze 25% of the samples over 1,000 ppm PHC for VO+10.

ON-SITE MANAGER:

John Pawlus

OWNER:

TELEPHONE:

908-866-2674

TELEPHONE:

EFFECTIVE DATE:

DEC 10 1993

THIS FORM MUST BE DISPLAYED AT THE SITE DURING THE APPROVED
ACTIVITY AND MUST BE MADE AVAILABLE FOR INSPECTION AT ALL TIMES.


KEVIN F. KRATINA, BUREAU CHIEF
BUREAU OF UNDERGROUND STORAGE TANKS

APPENDIX B
PHOTOGRAPHS



Photograph No. 1: Tank C-3/1 site with vacuum truck preparing to remove remaining fuel oil.



Photograph No. 2: Casie-Protank workers preparing to enter Tank C-3/1 in Level B for cleaning.



Photograph No. 3: Filling of Tank C-29/1 with concrete.

APPENDIX C
DISPOSAL DOCUMENTATION
Tank Fluid Manifest



State of New Jersey
Department of Environmental Protection and Energy
Hazardous Waste Regulation Program
Manifest Section

CN 421, Trenton, NJ 08625-0421

Please type or print in block letters. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-003

In case of an emergency or spill immediately call the state the emergency occurred in and the N.J. Dept. of Environmental Protection and Energy, (609) 292-7172

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. NJ000170221701291		Manifest No. 1291		2. Page of 1		Information in the s of is not required by			
3. Generator's Name and Mailing Address NWS - EARLE CODE 096 RT 34 COLTS NECK NJ 07722						A. State Manifest Document Number NJA 1889					
4. Generator's Phone 908 577-2000						B. State Generator's ID (Gen. Site) SAME					
5. Transporter 1 Company Name Lionetti Oil Recovery				6. US EPA ID Number NJ0084044064		C. State Trans. ID-NUDEPE					
7. Transporter 2 Company Name				8. US EPA ID Number		D. Trans. ID (Transporter's Phone) 908					
9. Designated Facility Name and Site Address Lionetti Oil Recovery RUYAN + CHERSEQUAKU RDS. OLD BRIDGE NJ						10. US EPA ID Number NJ0084044064					
11. US DOT Description (Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group) HM						12. Containers		13. Total		14. Unit	
						No.		Quantity		Wt/Vol	
a. Petroleum oil PG 111											
x COMBUSTIBLE LIQUID UN1270001TX2800 G											
b.											
c.											
d.											
Additional Descriptions for Materials Listed Above T/L PETROLEUM OIL 99% WATER 1%						K. Handling Codes for Wastes Lis TO4-FILTRAT					
15. Special Handling Instructions and Additional Information NOT EPA REGULATED, REGULATED AS HAZARDOUS W IN NEW JERSEY 24 HR EMERG 908 721-0900 DEYSIC KH - 5											
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping classification, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimize future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation the best waste management method that is available to me and that I can afford.											
Printed/Typed Name LCOR C. S. SMITH						Signature <i>[Signature]</i>					
17. Transporter 1 Acknowledgement of Receipt of Materials											
Printed/Typed Name ROBERT ZUBRZYCKI						Signature <i>[Signature]</i>					
18. Transporter 2 Acknowledgement of Receipt of Materials											
Printed/Typed Name						Signature					
19. Discrepancy Indication Space:											
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.											
Printed/Typed Name											



State of New Jersey Department of Environmental Protection and Energy Hazardous Waste Regulation Program Manifest Section

CN 421, Trenton, NJ 08625-0421

Please type or print in block letters. (Form designed for use on elite (12-pitch) typewriter.) Form Approved OMB No. 2050-0039 Expires 9-30-85

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. 0953		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address Route 34 Colts Neck NJ 07722		4. Generator's Phone (Area Code) 517-2020		5. Transporter 1 Company Name Uni Salvage, Inc		6. State Manifest Document Number NJ 188933	
7. Designated Facility Name and Site Address Castle Technology, Inc 3009 N. Mill Rd Vineland, NJ 08360		8. Transporter 2 Company Name		9. State Generator ID Code 0953		10. State Generator Site Address	
11. US DOT Description (Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group) HM Combustible Liquid, n.o.s. (fuel oil) Combustible Liquid, n.o.s.		12. Containers		13. State Department Code 553103		14. State Department Code	
a. Combustible Liquid, n.o.s. (fuel oil)		12. Containers No. 1		13. State Department Code 553103		14. State Department Code	
b. Combustible Liquid, n.o.s.		12. Containers Type DRUM		13. State Department Code 553103		14. State Department Code	
c. Combustible Liquid, n.o.s.		12. Containers Total Quantity 1539.8		13. State Department Code 553103		14. State Department Code	
15. Special Handling Instructions and Additional Information 24 hr emergency response 609-695-4401 609-627-0175		16. Handling Codes for Wastes Listed Above		17. Transporter 1 Acknowledgement of Receipt of Materials		18. Transporter 2 Acknowledgement of Receipt of Materials	
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.		17. Transporter 1 Acknowledgement of Receipt of Materials		18. Transporter 2 Acknowledgement of Receipt of Materials		19. Discrepancy Indication Space	
17. Transporter 1 Acknowledgement of Receipt of Materials		18. Transporter 2 Acknowledgement of Receipt of Materials		19. Discrepancy Indication Space		20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest, except as noted in Item 19.	
18. Transporter 2 Acknowledgement of Receipt of Materials		19. Discrepancy Indication Space		20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest, except as noted in Item 19.		Signature	
19. Discrepancy Indication Space		20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest, except as noted in Item 19.		Signature		Month Day Year	
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest, except as noted in Item 19.		Signature		Month Day Year		Signature and Information MUST BE LEGIBLE ON ALL COPIES	

202-...-energ) ...ectlo. ...ener. ...d the ...cum. ...he st. ...date. ...or sp. ...me ...

APPENDIX D

TANK TIGHTNESS TESTING RESULTS

Tank C-3/1

Tank C-29/1

Tank C-29/2



VECTRE
CORPORATION

Environmental Integrity with Efficiency

P.O. Box 930
Lafayette, New Jersey 07848-0930
(201) 383-2500
Fax: (201) 579-0025

December 7, 1993

Mr. Rick Gorrell
Halliburton NUS Corporation
993 Old Eagle School Road, Suite 415
Wayne, PA 19087-1710

Re: Precision Tank Test Report

Dear Mr. Gorrell:

Thank you for the opportunity to be of service to Halliburton NUS Corporation. The following is a report on the results of the Precision Tank Tests performed at the Naval Weapons Station (NWS) Earle, Colts Neck, NJ.

Information included in this report is as follows:

1. Test Criteria
2. Test Results
3. Closing Statement

Appendix A - Tank Test Methodology

TEST CRITERIA

The National Fire Protection Association (NFPA) has established criterion for precision tank testing. In 1987, the NFPA published its tank testing criterion in its NFPA 329 National Standard entitled, "Underground Leakage of Flammable and Combustible Liquids".

The NFPA 329 standard states in paragraph 4-3.11.3, in reference to precision tank testing, "If the net change exceeds 0.05 gals. (190 ml.) per hour or equivalent criterion established for the technology employed, a leak is likely to exist, and appropriate corrective action is necessary."

2. TEST RESULTS

The following is a computerized print out of the tank test data report as received from the field during the precision tank tests performed by Vectre Corporation.

TABLE 1: Tanks That Passed the Initial Precision Test

NAVAL WEAPONS STATION COLTS NECK, NJ	TANK I.D. NUMBER	CAPACITY	VECTRE TEST # NUMBER	OBSERVED NET GAIN (+) OR LOSS (-) GPH	Passed Failed
TEST DATE					
9/8/93	C3-1	10,000	9309-006	-0144	Passed
9/8/93	C3-2	10,000	9309-007	-0123	Passed
9/8/93	C4-1	5,000	9309-009	-0148	Passed
9/14/93	C29-1	15,000	9309-035	-0179	Passed
9/16/93	R3-1	5,000	9309-033	-0349	Passed
10/4/93	R23-1	2,000	9309-041	-0026	Passed
9/9/93	C2-1	5,000	9309-014	+0287	Passed
10/1/93	C16-1	15,000	9309-042	-0425	Passed
9/3/93	C21-1	2,000	9309-003	+0049	Passed
9/14/93	500-1	10,000	9309-031	+0519	Passed



Table 1 (Continued)

NAVAL WEAPONS STATION COLTS NECK, NJ	TANK I.D. NUMBER	CAPACITY	VECTRE TEST # NUMBER	OBSERVED NET GAIN (+) OR LOSS (-) GPH	Passed Failed
TEST DATE					
9/13/93	C2-2	550	9309-013	-.0252	Passed
9/13/93	C8-1	550	9309-012	-.0293	Passed
9/20/93	FA2-1	1,000	9309-027	-.0032	Passed
10/5/93	567-1	2,000	9309-040	-.0178	Passed
9/10/93	C29B1	1,500	9309-016	-.0035	Passed
9/14/93	C52-1	5,000	9309-011	+ .0126	Passed
9/16/93	R1-1	1,500	9309-034	-.0058	Passed
9/16/93	R2-1	5,000	9309-017	+ .0065	Passed
9/16/93	R10-1	5,000	9309-018	-.0122	Passed
9/3/93	C23-1	1,000	9309-004	-.0299	Passed

NAVAL WEAPONS STATION COLTS NECK, NJ	TANK I.D. NUMBER	CAPACITY	VECTRE TEST NUMBER	OBSERVED NET GAIN (+) OR LOSS (-) GPH	PASSED/ FAILED
9/2/93	C54-1	6,000	9309-001	+ .0027	Passed
10/4/93	R22-1	15,000	9309-047	+ .0122	Passed
9/23/93	S464	5,000	9309-021	-.0238	Passed
9/24/93	MPL-2	550	9309-019	+ .0054	Passed
9/17/93	554-1	550	9309-029	+ .0030	Passed
9/22/93	MA-1	550	9309-025	-.0045	Passed
9/23/93	D1A1	1,000	9309-023	-.0035	Passed
9/23/93	D5-1	5,000	9309-036	-.0158	Passed
9/20/93	GB1-1	5,000	9309-028	-.0143	Passed
9/8/93	C38-1	5,000	9309-008	-.0217	Passed



VECTRE CORPORATION
P.O. Box 930
Lafayette, NJ 07848

COMPUTERIZED PRECISION TANK TEST (EZY-CHEK)

Nominal Capacity	10000	Test Date	09/08/93	Vectre Test No.	9309-006
Chart Capacity	10152	Ambient Temp.	75	Client	HNUS
Capacity Chart Used	6	Product Temp	68.7		NWS
Test Level	0	Observed Api			Colts Neck, NJ
Grade to Standpipe	0	Gravity	34.4	Material of	
Tank Bottom to Grade	123	Technician	DFM	Construction	Steel
Tank Top to Grade	27	Tec. Cert. No.	NJ0005	Age of Tank	Unknown
Tank Diameter	96	Tank ID No.	C3-1	Fills & Sizes	1-4
Groundwater Level	120	Tank Contents	#2 H.O.		

Coeff. of Expansion 0.0004513
 Calibration Volume 0.05291

Calibration

Reading	Start	End	Diff.
1	15	47	32
2	15	47	32
3	17	53	36
4	16	49	33

Factor 'A': 0.00159
 Factor 'B': 4.5816

Average: 33.25

READING NUMBER	TIME 24 Hour	LIQUID LEVEL			Factor 'A'	Observed Vol.Chng.	TEMPERATURE			Factor 'B'	Temp. Vol.Chng.	Net Volume Change
		Start	End	Diff.			Start	End	Diff.			
1	1130	---	87	---	---	---	70.349	---	---	---	---	---
2	1135	82	85	3	0.00159	0.0048	70.349	70.349	0.000	4.58160	0.0000	0.0048
3	1140	85	85	0	0.00159	0.0000	70.349	70.349	0.000	4.58160	0.0000	0.0000
4	1145	85	85	0	0.00159	0.0000	70.349	70.349	0.000	4.58160	0.0000	0.0000
5	1150	85	84	-1	0.00159	-0.0016	70.350	70.349	-0.001	4.58160	-0.0046	0.0030
6	1155	83	82	-1	0.00159	-0.0016	70.349	70.349	0.000	4.58160	0.0000	-0.0016
7	1200	82	81	-1	0.00159	-0.0016	70.349	70.349	0.000	4.58160	0.0000	-0.0016
8	1205	81	80	-1	0.00159	-0.0016	70.349	70.349	0.000	4.58160	0.0000	-0.0016
9	1210	80	79	-1	0.00159	-0.0016	70.349	70.349	0.000	4.58160	0.0000	-0.0016
10	1215	79	78	-1	0.00159	-0.0016	70.349	70.349	0.000	4.58160	0.0000	-0.0016
11	1220	78	77	-1	0.00159	-0.0016	70.349	70.349	0.000	4.58160	0.0000	-0.0016
12	1525	77	76	-1	0.00159	-0.0016	70.349	70.349	0.000	4.58160	0.0000	-0.0016
13	1230	76	76	0	0.00159	0.0000	70.349	70.349	0.000	4.58160	0.0000	0.0000
14	1235	76	75	-1	0.00159	-0.0016	70.349	70.349	0.000	4.58160	0.0000	-0.0016
15	1240	75	74	-1	0.00159	-0.0016	70.349	70.349	0.000	4.58160	0.0000	-0.0016
16	1245	74	74	0	0.00159	0.0000	70.349	70.349	0.000	4.58160	0.0000	0.0000
17	1250	74	73	-1	0.00159	-0.0016	70.349	70.349	0.000	4.58160	0.0000	-0.0016
18	1255	73	73	0	0.00159	0.0000	70.349	70.349	0.000	4.58160	0.0000	0.0000
19	1300	73	72	-1	0.00159	-0.0016	70.349	70.349	0.000	4.58160	0.0000	-0.0016

Calculated Net Change in Gallons per Hour = -0.0144
 (Sum of last ten Net Changes)

Vectre Corporation hereby acknowledges that this computerized report represents the results of a Horner Ezy-Chek Precision Tank Test that was performed on the tank identified above and that the data was reviewed by:

Date Signed: 09/08/93

Reviewer's Signature: [Signature]

VECTRE CORPORATION
P.O. BOX 930
Lafayette, NJ 07848

COMPUTERIZED PRECISION TANK TEST (EZY-CHEK)

Nominal Capacity	1500	Test Date	09/10/93	Vectre Test No.	9309-016
Chart Capacity	1504	Ambient Temp.	75	Client	HNUS
Capacity Chart Used	6	Product Temp	76		NWS
Test Level	120	Observed Api			Colts Neck, NJ
Grade to Standpipe	44	Gravity	34.8	Material of	
Tank Bottom to Grade	104	Technician	DFM	Construction	Steel
Tank Top to Grade	39	Tec. Cert. No.	NJ-0028	Age of Tank	12 yrs.
Tank Diameter	64	Tank ID No.	029B1	Fills & Sizes	1-3
Groundwater Level	120	Tank Contents #2	Heating		

Coeff. of Expansion 0.0004504
 Calibration Volume 0.053

Initial Calibration

Reading	Start	End	Diff.
1	25	62	37
2	62	100	38
3	5	42	37
4	42	80	38

Factor 'A': 0.00141
 Factor 'B': 0.6774

Average: 37.5

READING NUMBER	TIME 24 Hour	LIQUID LEVEL			Factor 'A'	Observed Vol.Chng.	TEMPERATURE			Factor 'B'	Temp. Vol.Chng.	Net Volume Change
		Start	End	Diff.			Start	End	Diff.			
1	1120	--	84	---	-----	-----		76.007	----	-----	-----	-----
2	1125	84	84	0	0.00141	0.0000	76.007	76.008	0.001	0.67740	0.0007	-0.0007
3	1130	84	84	0	0.00141	0.0000	76.008	76.008	0.000	0.67740	0.0000	0.0000
4	1135	84	84	0	0.00141	0.0000	76.008	76.009	0.001	0.67740	0.0007	-0.0007
5	1140	84	83	-1	0.00141	-0.0014	76.009	76.009	0.000	0.67740	0.0000	-0.0014
6	1145	83	83	0	0.00141	0.0000	76.009	76.010	0.001	0.67740	0.0007	-0.0007
7	1150	83	83	0	0.00141	0.0000	76.010	76.011	0.001	0.67740	0.0007	-0.0007
8	1155	83	82	-1	0.00141	-0.0014	76.011	76.011	0.000	0.67740	0.0000	-0.0014
9	1200	82	82	0	0.00141	0.0000	76.011	76.012	0.001	0.67740	0.0007	-0.0007
10	1205	82	82	0	0.00141	0.0000	76.012	76.012	0.000	0.67740	0.0000	0.0000
11	1210	82	81	-1	0.00141	-0.0014	76.012	76.012	0.000	0.67740	0.0000	-0.0014
12	1215	81	81	0	0.00141	0.0000	76.012	76.012	0.000	0.67740	0.0000	0.0000
13	1220	81	81	0	0.00141	0.0000	76.012	76.012	0.000	0.67740	0.0000	0.0000
14	1225	81	80	-1	0.00141	-0.0014	76.012	76.011	-0.001	0.67740	-0.0007	-0.0007
15	1230	80	80	0	0.00141	0.0000	76.011	76.011	0.000	0.67740	0.0000	0.0000
16	1235	80	81	1	0.00141	0.0014	76.011	76.012	0.001	0.67740	0.0007	0.0007
17	1240	81	81	0	0.00141	0.0000	76.012	76.012	0.000	0.67740	0.0000	0.0000
18	1245	81	82	1	0.00141	0.0014	76.012	76.013	0.001	0.67740	0.0007	0.0007
19	1250	82	82	0	0.00141	0.0000	76.013	76.014	0.001	0.67740	0.0007	-0.0007

Calculated Net Change in Gallons per Hour = -0.0035
 (Sum of last ten Net Changes)

Vectre Corporation hereby acknowledges that this computerized report represents the results of a horner Ezy-Chek Precision Tank Test that was performed on the tank identified above and that the data was reviewed by:

Date Signed: 11/2/93

Reviewer's Signature: [Signature]

VECTRE CORPORATION
P.O. BOX 930
Lafayette, NJ 07848

COMPUTERIZED PRECISION TANK TEST (EZY-CHEK)

Nominal Capacity	15000	Test Date	09/14/93	Vectre Test No.	9309-035
Chart Capacity	15275	Ambient Temp.	85	Client	HNUS
Capacity Chart Used	4	Product Temp	34		NWS
Test Level	182	Observed Api			Colts Neck, NJ
Grade to Standpipe	72	Gravity	37	Material of	
Tank Bottom to Grade	146	Technician	DFM	Construction	Steel
Tank Top to Grade	26	Tec. Cert. No.	NJ0028	Age of Tank	Unknown
Tank Diameter	120	Tank ID No.	C29-1	Fills & Sizes	1-4
Groundwater Level	120	Tank Contents #2	Heating		

Coeff. of Expansion .00046390
 Calibration Volume 0.053

Initial Calibration

Reading	Start	End	Diff.
1	30	67	37
2	30	56	26
3	29	55	26
4	32	74	42

Factor 'A': 0.00157
 Factor 'B': 7.08607

Average: 32.75

READING NUMBER	TIME 24 Hour	LIQUID LEVEL			Factor 'A'	Observed Vol.Chng.	TEMPERATURE			Factor 'B'	Temp. Vol.Chng.	Net Volume Change
		Start	End	Diff.			Start	End	Diff.			
1	1415	--	30	---	-----	-----	-----	76.952	-----	-----	-----	
2	1420	90	88	-2	0.00157	-0.0031	76.952	76.952	0.000	7.08607	0.0000	-0.0031
3	1425	88	85	-3	0.00157	-0.0047	76.952	76.951	-0.001	7.08607	-0.0071	0.0024
4	1430	85	80	-5	0.00157	-0.0079	76.951	76.950	-0.001	7.08607	-0.0071	-0.0008
5	1435	80	76	-4	0.00157	-0.0063	76.950	76.949	-0.001	7.08607	-0.0071	0.0008
6	1440	76	73	-3	0.00157	-0.0047	76.949	76.949	0.000	7.08607	0.0000	-0.0047
7	1445	73	68	-5	0.00157	-0.0079	76.949	76.948	-0.001	7.08607	-0.0071	-0.0008
8	1450	68	64	-4	0.00157	-0.0063	76.948	76.947	-0.001	7.08607	-0.0071	0.0008
9	1455	64	58	-6	0.00157	-0.0094	76.947	76.946	-0.001	7.08607	-0.0071	-0.0023
10	1500	58	53	-5	0.00157	-0.0079	76.946	76.946	0.000	7.08607	0.0000	-0.0079
11	1505	53	50	-3	0.00157	-0.0047	76.946	76.946	0.000	7.08607	0.0000	-0.0047
12	1510	50	46	-4	0.00157	-0.0063	76.946	76.945	-0.001	7.08607	-0.0071	0.0008
13	1515	46	40	-6	0.00157	-0.0094	76.945	76.944	-0.001	7.08607	-0.0071	-0.0023
14	1520	40	37	-3	0.00157	-0.0047	76.944	76.944	0.000	7.08607	0.0000	-0.0047
15	1525	37	33	-4	0.00157	-0.0063	76.944	76.943	-0.001	7.08607	-0.0071	0.0008
16	1530	33	29	-4	0.00157	-0.0063	76.943	76.942	-0.001	7.08607	-0.0071	0.0008
17	1535	29	25	-4	0.00157	-0.0063	76.942	76.941	-0.001	7.08607	-0.0071	0.0008
18	1540	25	21	-4	0.00157	-0.0063	76.941	76.940	-0.001	7.08607	-0.0071	0.0008
19	1545	21	17	-4	0.00157	-0.0063	76.940	76.938	-0.002	7.08607	-0.0071	-0.0008

Calculated Net Change in Gallons per Hour = -0.0179
 (Sum of last ten Net Changes)

Vectre Corporation hereby acknowledges that this computerized report represents the results of a horner Ezy-Chek Precision Tank Test that was performed on the tank identified above and that the data was reviewed by:

Date Signed: 9/15/93

Reviewer's Signature: [Signature]

APPENDIX E

**NJDEP CORRESPONDENCE CONCERNING
TANK TIGHTNESS TESTING**



DEPARTMENT OF THE NAVY

OFFICER IN CHARGE
NAVFAC CONTRACTS, BLDG. C-23
NAVAL WEAPONS STATION EARLE
201 HIGHWAY 34 SOUTH
COLTS NECK, NJ 07722-5025

IN REPLY REFER TO

F110:09A1TD:ted
3 October 1994
ustgccip.ltr

Roy F. Weston, Inc.
1 Weston Way
West Chester, PA 19380

Att: Mr. Steve Rock

RE: CONTRACT N62472-92-C-0415, UNDERGROUND
STORAGE TANK REMOVAL (GAS CONVERSION),
WPNSTA EARLE, COLTS NECK, NJ 07722-5025

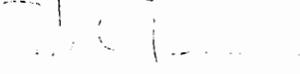
Gentlemen:

Enclosed herewith are copies of the **TANK TIGHTNESS REPORTS** and the NWS Earle Memo concerning the closure of two tanks at Building C-29 and the tank at the northwest corner of Building C-3.

I have discussed this previously with Mr. Robert Marcolina, N.J.D.E.P.E. Case Manager. He indicated that closure in place is permissible and that soil sample tests will not be required if the tank tightness test is current and shows that the tank is sound with no evidence of a discharge.

If there are any questions, please contact me at (908) 866-2048.

Sincerely,


T.E. Dunn
Project Manager, By Direction of the
Officer in Charge, NAVFAC Contracts



DEPARTMENT OF THE NAVY

NAVAL WEAPONS STATION EARLE
201 HWY 34 SOUTH
COLTS NECK, NEW JERSEY 07722-5001

IN REPLY REFER TO

29 JUN 1994

In accordance with N.J.A.C. 7:14B-9.1(d)2, I hereby certify that the following underground storage tanks are inaccessible due to the presence of underground utilities:

<u>Naval Weapons Station Earle Location</u>	<u>Tank Size</u>
Bldg. C-3 (Northwest corner)	10,000 gal.
Bldg. C-29 (Rear)	15,000 gal.
Bldg. C-29 (Rear)	1,500 gal.

These tanks have successfully passed a tightness test. The tanks will be cleaned of all oil and residue, filled with an inert material, and will be abandoned in place.


GREGORY J. GOEPFERT
Professional Engineer
State of NJ License #GE34731

Report of Results of Precision Testing

for

54 Underground Storage Tank (UST) Systems Naval Weapons Station Earle Colts Neck, New Jersey



Northern Division Naval Facilities Engineering Command

Contract No. N62472-90-D-1298

Contract Task Order 0122

December 1993

REPORT OF RESULTS OF PRECISION TESTING
FOR
54 UNDERGROUND STORAGE TANK SYSTEMS
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) PROGRAM

Submitted to:
Northern Division
Environmental Branch, Code 18
Naval Facilities Engineering Command
10 Industrial Highway Mail Stop No. 82
Lester, Pennsylvania 19113-2090

Submitted by:
Halliburton NUS Corporation
993 Old Eagle School Road, Suite 415
Wayne, Pennsylvania 19087-1710

Contract No. N62472-90-D-1298
Contract Task Order 0122

December 1993

PREPARED BY:


RICHARD J. GORRELL
PROJECT MANAGER
HALLIBURTON NUS CORPORATION
WAYNE, PENNSYLVANIA

APPROVED BY:

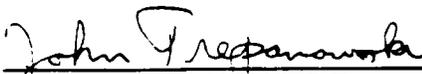

JOHN TREPANOWSKI, P.E.
PROGRAM MANAGER
HALLIBURTON NUS CORPORATION
WAYNE, PENNSYLVANIA

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EXECUTIVE SUMMARY

Precision leak testing was conducted on 54 underground storage tank (UST) systems located at the Naval Weapons Station Earle (NWS Earle), Colts Neck, New Jersey. The work was completed by Halliburton NUS Corporation (HNUS) under the terms of the Comprehensive Long-Term Environmental Action-Navy (CLEAN) Program, Contract Number N62472-90-D-1298. The work was fully executed in accordance with Contract Task Order (CTO), 122.

The UST systems are located at the Main Base and waterfront areas of NWS Earle. The objective of the project was to perform precision testing on the specified tanks (and piping) in accordance with United States Environmental Protection Agency (EPA) regulations, 40 CFR 280.

The precision testing was conducted by Vectre Corporation under contract to HNUS. The precision test technology used for all USTs was the Horner EZY-Chek method.

The testing was conducted between September 2 and October 15, 1993. The results of the testing are summarized below:

**Table ES-1
Precision Test Results Summary
Naval Weapons Station Earle
Colts Neck, New Jersey**

GENERAL CATEGORY	TOTAL NUMBER OF USTS
Passed Initial Test	35
Failed Initial Test, Minor Modifications to System, Passed Second Test	7
Failed Initial Test, Navy stopped all work on these systems under this CTO	7
Failed Initial Test, Failed Second Test, UST Taken out of Service	4
Failed Initial Test, Minor Modifications, Failed Second Test, Retested, and Passed Third Test	1
TOTAL	54

2.0 BACKGROUND INFORMATION

2.1 SUMMARY OF EXISTING UNDERGROUND STORAGE TANK SYSTEMS

The Navy requested precision testing of 54 UST systems. All the UST systems are operational and are located outside and/or near operational facilities. Table 2-1 provides a descriptive summary of each UST system. It should be noted that each UST system is identified and named based on the building number it services. For example, UST C3/01 is located at Building C3. Section 4 of this report provides additional descriptive information regarding UST locations and system configurations.

2.2 NAVY REQUEST FOR SERVICES, CTO 122 - STATEMENT OF WORK

The Navy's objective in completing the project was to perform precision testing on the specified UST systems (tanks and piping) in accordance with EPA regulations, 40 CFR 280.

The precision testing included provisions for minor UST system plumbing modifications and removal of product if a leaking tank were identified. The precision test method(s) used were to be capable of detecting a 0.1-gallon-per-hour leak rate from any portion of the tank and piping that routinely contains product, while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the groundwater table. The test methods were to meet the requirements and guidelines of 40 CFR 280. At the discretion of the Navy, UST systems that failed the initial testing were to be re-tested by isolating the piping from the tanks and testing each component separately.

Upon completion of the field testing, a report of results was to be provided that contained a description of the test method(s) used, a description of field activities and conditions encountered, the results of the test in tabular format, and copies of all field notes and calculations.

2.3 HNUS SCOPE OF WORK

In response to the Navy's request for services, HNUS proposed and implemented five tasks, as described below:

Task 1 - Site Visits and Background Information Collection and Review

In order to identify existing site conditions and UST system configurations, HNUS obtained and reviewed available UST system engineering drawings and inspected each UST site. In addition, HNUS checked groundwater levels at available groundwater monitoring wells. The purpose of Task 1 was to identify site conditions and UST system features that would limit or prohibit the use of specific precision testing technologies.

TABLE 2-1
 UST SYSTEM SUMMARY
 PRECISION UST TESTING
 NAVAL WEAPONS STATION EARLE
 COLTS NECK, NEW JERSEY

UST LOCATION	SIZE (GAL)	CONTENT	MATERIAL OF CONSTRUCTION	USE
C3/01	10,000	NO.2 FO (1)	STEEL	HEATING
C3/02	10,000	NO.2 FO	STEEL	HEATING
C4/01	5,000	NO.2 FO	STEEL	HEATING
C29/1	15,000	NO.2 FO	STEEL	HEATING
C53/1	3000	NO.2 FO	STEEL	HEATING
R3/01	5,000	NO.2 FO	STEEL	HEATING
R15/1	3000	NO.2 FO	STEEL	HEATING
R23/1	2,000	NO.2 FO	STEEL	HEATING
C33/2	1000	NO.2 FO	STEEL	HEATING
C2/01	5,000	NO.2 FO	STEEL	HEATING
C31/1	15,000	NO.2 FO	STEEL	HEATING
C16/1	15,000	NO.2 FO	STEEL	HEATING
C21/1	2,000	NO.2 FO	STEEL	HEATING
500/1	10,000	NO.2 FO	STEEL	HEATING
C2/02	550	DIESEL	STEEL	EMERGENCY GENERATOR
C8/01	550	DIESEL	STEEL	EMERGENCY GENERATOR
S53/1	1,000	NO.2 FO	STEEL	HEATING
FA2/1	1,000	NO.2 FO	STEEL	HEATING
567/1	2,000	DIESEL	STEEL	EMERGENCY GENERATOR
C29B1	1,000	NO.2 FO	STEEL	HEATING
C52/1	5,000	NO.2 FO	STEEL	HEATING
R1/01	225	NO.2 FO	STEEL	HEATING
R2/01	5,000	NO.2 FO	STEEL	HEATING
R4A/1	5000	NO.2 FO	STEEL	HEATING
R5/01	1000	NO.2 FO	STEEL	HEATING
R10/1	5,000	NO.2 FO	STEEL	HEATING
R12/1	2000	NO.2 FO	STEEL	HEATING
R15/2	3000	NO.2 FO	STEEL	HEATING
C23/1	1,000	NO.2 FO	STEEL	HEATING
C38/1	5,000	NO.2 FO	STEEL	HEATING
C46/1	5000	NO.2 FO	STEEL	HEATING
C54/1	6,000	NO.2 FO	STEEL	HEATING
R4B	5000	NO.2 FO	STEEL	HEATING
R22/1	15,000	NO.2 FO	STEEL	HEATING
S464	5000	NO.2 FO	STEEL	HEATING
MA2/1	8,350	NO.2 FO	STEEL	HEATING
MPL/1	550	DIESEL	STEEL	EMERGENCY GENERATOR
MPL/2	550	DIESEL	STEEL	EMERGENCY GENERATOR
513/1	2,000	NO.2 FO	STEEL	HEATING
554/1	500	DIESEL	STEEL	EMERGENCY GENERATOR
555/1	550	DIESEL	STEEL	EMERGENCY GENERATOR
MA1	550	DIESEL	STEEL	HEATING
C34/1	1000	NO.2 FO	STEEL	HEATING
D1A1	1,000	NO.2 FO	STEEL	HEATING
D2/01	10,000	NO.2 FO	STEEL	HEATING
D5/01	5,000	NO.2 FO	STEEL	HEATING
E13/1	5,000	NO.2 FO	STEEL	HEATING
GB1/1	5000	NO.2 FO	STEEL	HEATING
C19/1	5,000	NO.2 FO	STEEL	HEATING
QH-8	750	NO.2 FO	STEEL	HEATING
S457	1,000	NO.2 FO	STEEL	HEATING
589/1	15,000	NO.2 FO	STEEL	HEATING
E14/N	5,000	NO.2 FO	FIBERGLASS	HEATING
C9	15,000	NO.2 FO	STEEL	HEATING

NOTES: 1. FO - Fuel Oil

3.0 UST SYSTEM PRECISION TESTING

3.1 PROJECT ORGANIZATION AND MANAGEMENT

HNUS was the lead technical firm associated with the completion of this project. As indicated, Vectre completed all tank testing services and determinations of UST system integrity. A summary of key project participants is provided below:

- **Navy Personnel**

Brian Helland, remedial project manager, United States Department of the Navy, Northern Division, Naval Facilities Engineering Command, 215-595-0567.

John Pawlus, environmental engineer, Naval Weapons Station Earle Shipyard, 908-866-2674.

- **HNUS Personnel**

Richard J. Gorrell, project manager, 215-971-0900.

Charles W. Meyer, Field Operations Leader, September 1, 1993 through September 24, 1993.

Eric E. Huss, Field Operations Leader, September 27, 1993 through December 10, 1993.

- **Vectre Corporation Personnel:**

Russel Hendershot, tank testing project manager, 201-383-2500

3.2 PRECISION TEST METHODOLOGY

3.2.1 Summary of Regulatory and Industry Standards

In general, regulatory standards require that precision tank testing methods must be capable of detecting a 0.1-gallon-per-hour leak rate with a 95 percent probability of detection and a five percent probability of false alarms. (However, a more conservative leak detection rate of 0.05 gallon per hour is often desirable and is available under the current industry standards.) Independent third-party evaluation of a test technology to confirm conformance with these requirements is also a regulatory requirement and an industry standard.

In general requirements, the tank testing method must meet the following criteria:

Test all components of the UST system, including the piping, that routinely contain product.

Account for the presence of vapor pockets and adjust the test procedure so that results are not masked by the vapor pockets.

Adjust for the thermal expansion, product evaporation, and tank structural deflection.

Include procedures to allow for temperature equilibrium of product.

Compensate for leak masking due to differences between the hydraulic head of the product in the tank and that of the groundwater that may exist around the tank.

Testing and/or tank handling regulatory requirements may exist under state and local codes.

Engineering determinations were made regarding compliance with New Jersey Department of Environmental Protection and Energy (NJ DEPE) requirements for completion of this project:

Precision testing of regulated tanks must be completed by an NJ DEPE-certified tank tester (Note: certification is required for both the individual tank tester and the individual's company).

Plumbing modifications on regulated tanks must be completed by an NJ DEPE-certified tank installer (Note: certification is required for both the individual tank tester and the individual's company).

Tanks with a capacity of 2,000 gallons or less that are used to store heating oil for on-site use in a nonresidential building are not regulated under the New Jersey Underground Storage of Hazardous Substances Act.

Vectre Corporation's Precision Tank and Line Test Methodology

Vectre Corporation and its field technicians who completed the precision testing for this project are NJ DEPE-certified for both tank testing and tank installation. Vectre used the Horner EZY-Chek Method for precision testing. (Refer to Appendix A for additional technical information on the Horner EZY-Chek

The EZY-Chek method tests all components of the UST system that routinely contain product, including the vent pipe. The sequence of events necessary to complete the precision test on all UST system components depends on whether a leak is encountered and where the leak is. An initial test is conducted to determine the integrity of the entire UST system. If the initial test indicates leakage, the tank and piping are subsequently tested separately to determine if the leak is in the tank or the piping.

Under the Navy's scope of work, minor UST modifications (such as tightening loose pipe connections, sealing manway gaskets, or similar minor types of repairs) were completed as a component of the precision testing. A second round of testing was subsequently conducted at UST systems that required the minor modifications.

TABLE 4-1
 PRECISION TEST RESULTS
 NAVAL WEAPONS STATION EARLE
 COLTS NECK, NEW JERSEY
 OCTOBER, 1993

UST LOCATION	SIZE (GAL)	CONTENT	TEST RESULTS (1)	LEAK LOCATION	LEAK RATE (GPH)	NOTES
C3/01	10,000	NO.2 FO	PASS			
C3/02	10,000	NO.2 FO	PASS			
C4/01	5,000	NO.2 FO	PASS			
C29/1	15,000	NO.2 FO	PASS			
C53/1	3000	NO.2 FO	FAIL/PASS	MANWAY GASKET	NOT DETERMINED	2,12
R3/01	5,000	NO.2 FO	PASS			
R15/1	3000	NO.2 FO	FAIL/PASS	SUCTION PIPE	NOT DETERMINED	3,11
R23/1	2,000	NO.2 FO	PASS			
C33/2	1000	NO.2 FO	FAIL	TANK TOP	0.1022	4
C2/01	5,000	NO.2 FO	PASS			
C31/1	15,000	NO.2 FO	FAIL/FAIL/PASS			5
C16/1	15,000	NO.2 FO	PASS			
C21/1	2,000	NO.2 FO	PASS			
500/1	10,000	NO.2 FO	PASS			
C2/02	550	DIESEL	PASS			
C8/01	550	DIESEL	PASS			
S53/1	1,000	NO.2 FO	FAIL	PIPING	NOT DETERMINED	6,11,1
FA2/1	1,000	NO.2 FO	PASS			
567/1	2,000	DIESEL	PASS			
C29B1	1,000	NO.2 FO	PASS			
C52/1	5,000	NO.2 FO	PASS			
R1/01	225	NO.2 FO	PASS			
R2/01	5,000	NO.2 FO	PASS			
R4A/1	5000	NO.2 FO	FAIL	TANK	NOT DETERMINED	7,12
R5/01	1000	NO.2 FO	FAIL	TANK TOP	NOT DETERMINED	8,12
R10/1	5,000	NO.2 FO	PASS			
R12/1	2000	NO.2 FO	FAIL/PASS	LOOSE VENT PIPE	NOT DETERMINED	8,12
R15/2	3000	NO.2 FO	FAIL/PASS	REMOTE FILL PIPE	NOT DETERMINED	9,12
C23/1	1,000	NO.2 FO	PASS			
C38/1	5,000	NO.2 FO	PASS			
C46/1	5000	NO.2 FO	FAIL/PASS	LOOSE VENT PIPE	NOT DETERMINED	8,12
C54/1	6,000	NO.2 FO	PASS			
R4B	5000	NO.2 FO	FAIL	TANK	0.0871	7
R22/1	15,000	NO.2 FO	PASS			
S464	5000	NO.2 FO	PASS			
MA2/1	8,350	NO.2 FO	FAIL	MANWAY GASKET	NOT DETERMINED	10,11,12
MPL/1	550	DIESEL	FAIL	NOT DETERMINED	NOT DETERMINED	11,12
MPL/2	550	DIESEL	PASS			
5j3/1	2,000	NO.2 FO	FAIL	NOT DETERMINED	NOT DETERMINED	11,12
554/1	500	DIESEL	PASS			
555/1	550	DIESEL	FAIL	NOT DETERMINED	NOT DETERMINED	11,12
MA1	550	DIESEL	PASS			
C34/1	1000	NO.2 FO	FAIL/PASS	LOOSE VENT PIPE	0.184	8
D1A1	1,000	NO.2 FO	PASS			
D2/01	10,000	NO.2 FO	FAIL	FILL PIPE	NOT DETERMINED	11,12
D5/01	5,000	NO.2 FO	PASS			
E13/1	5,000	NO.2 FO	FAIL	NOT DETERMINED	0.0795	11
GB1/1	5000	NO.2 FO	PASS			
C19/1	5,000	NO.2 FO	PASS			
QH-8	750	NO.2 FO	FAIL/PASS	LOOSE VENT PIPE	0.3547	8
S457	1,000	NO.2 FO	PASS			
589/1	15,000	NO.2 FO	PASS			
E14/N	5,000	NO.2 FO	PASS			
C9	15,000	NO.2 FO	PASS			

NOTES: 1. The precision test method used for all UST systems was the Horner EZY-Chek method.

2. Repaired gasket, retested entire system, system passed

3. Tank passed, suction line repaired, full system passed.

4. Leak at top of tank. Product level drawn down below leak.

5. Failed initial testing. Re-tested and passed

6. Tank passed, leaking pipes. Navy stopped work.

7. Leak in tank, product removed.

8. System passed after vent pipe was tightened.

9. System passed after "T" union between remote fill and direct fill was tightened.

10. Leak likely associated with manway gasket. Navy stopped work.

11. Navy stopped work.

12. Unable to maintain liquid level during test to record a leak rate and generate a test data report.