



**UNDERGROUND STORAGE TANK
CLOSURE AND SITE
INVESTIGATION REPORT
BUILDING 2018
UST NO. 2
NJDEP FACILITY UST NO. 0192486
TMS NO. C-91-2837
SPILL CASE NO. 90-09-05-1616**

January 1995

Work Order No.: 03886-088-001

Prepared For:

UNITED STATES ARMY
Directorate of Public Works
Building 167
Fort Monmouth, New Jersey 07703

Prepared by:

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EXECUTIVE SUMMARY

On 4 September 1990, one underground storage tank (UST), identified as UST No. 2, located adjacent to Building 2018, was tightness tested by Tank Test Inc. (TTI). The results of the 1,000-gallon capacity, No. 2 fuel oil tank, were inconclusive due to excessive product loss. TTI's report is included in Appendix A.

On 5 September 1990, a discharge was reported to the New Jersey Department of Environmental Protection and Energy (NJDEP) by the Directorate of Public Works (DPW) (Case No. 90-09-05-1616).

On 25 October 1990, the DPW received a correspondence from NJDEP requesting a Discharge Investigation and Corrective Action Report (DICAR) to be submitted on or before 30 January 1991. Correspondence with the NJDEP is provided in Appendix A.

On 12 July 1991, a UST Decommissioning/Closure Plan was submitted to the NJDEP. Closure Approval No. TMS C-91-2837 was issued with an effective date of 22 October 1991. The UST Decommissioning/Closure Plan, UST Closure Plan Approval application and Closure Approval are provided in Appendix A.

On 8 November 1991, one UST was closed at U.S. Army Fort Monmouth, in Fort Monmouth, New Jersey. UST No. 2 was located adjacent to Building 2018 in the Charles Wood area of Fort Monmouth. UST No. 2 was a single walled steel, 1,000-gallon capacity, No. 2 fuel oil tank. Fabiano and Sons, Inc. performed the tank closure.

Soils surrounding the tank were visually inspected and screened with air monitoring instruments for evidence of contamination. The tank was inspected following removal for cracks, corrosion holes and puncture holes for indications of historical leakage from the tank. Several corrosion holes, described as "pin holes" were noted. No groundwater was encountered in the tank excavation.

On 14 November 1991, six post-excavation soil samples were collected and analyzed by Environmental Profile Laboratory (EPL) for total petroleum hydrocarbons (TPHC). The results indicated TPHC concentrations in Sample Nos. C91-614 (20,000 mg/kg) and C91-615 (9,000 mg/kg). In accordance with the Closure Plan Approval and the Technical Guidance Document 25% of soils with TPHC values greater than 1,000 mg/kg were also analyzed for base neutral compounds plus 15 tentatively identified compounds (BN+15). Sample No. C91-614 was selected for BN+15 analysis based on its TPHC results. Analytical results were compared to both the Impact to Ground Water (ITGW) and Residential Direct Contact (RDC) Soil Cleanup Criteria establish by NJDEP.



On 15 November 1991, a Standard Reporting Form (SRF) for closure was sent to the NJDEP.

Due to the presence of TPHC levels above 10,000 mg/kg, Fort Monmouth will re-excavate at the two sample locations indicated as sample Nos. C91-614 and C91-615. These locations will be re-sampled and analyzed for TPHC. In accordance with the Technical Guidance Document, the excavation of contaminated soils will continue until the analytical results indicate a TPHC concentration at or below 1,000 mg/kg.

The results of the analysis and recommendations for further action will be provided to NJDEP in an addendum to this report.



1.2 SITE DESCRIPTION AND UST HISTORY

Building 2018 is located in the Charles Wood area of U.S. Army, Fort Monmouth. A site location map is provided in Figure 1-1. The area surrounding the building is relatively level with a paved parking lot to the south and to the east, and tennis courts to the north. Building 2018 is used as a storage/locker room facility for the swimming pool. Underground Storage Tank (UST) No. 2 was located immediately adjacent to Building No. 2018's southern corner. A site plan is provided in Figure 1-2.

On 4 September 1990 UST No. 2 was tightness tested by Tank Test Inc. (TTI). The tightness test results of the 1,000-gallon capacity, No. 2 fuel oil tank, were inconclusive due to excessive product loss.

On 5 September 1990, a discharge was reported to the New Jersey Department of Environmental Protection and Energy (NJDEP) by the Directorate of Public Works (DPW) (Case No. 90-09-05-1616).

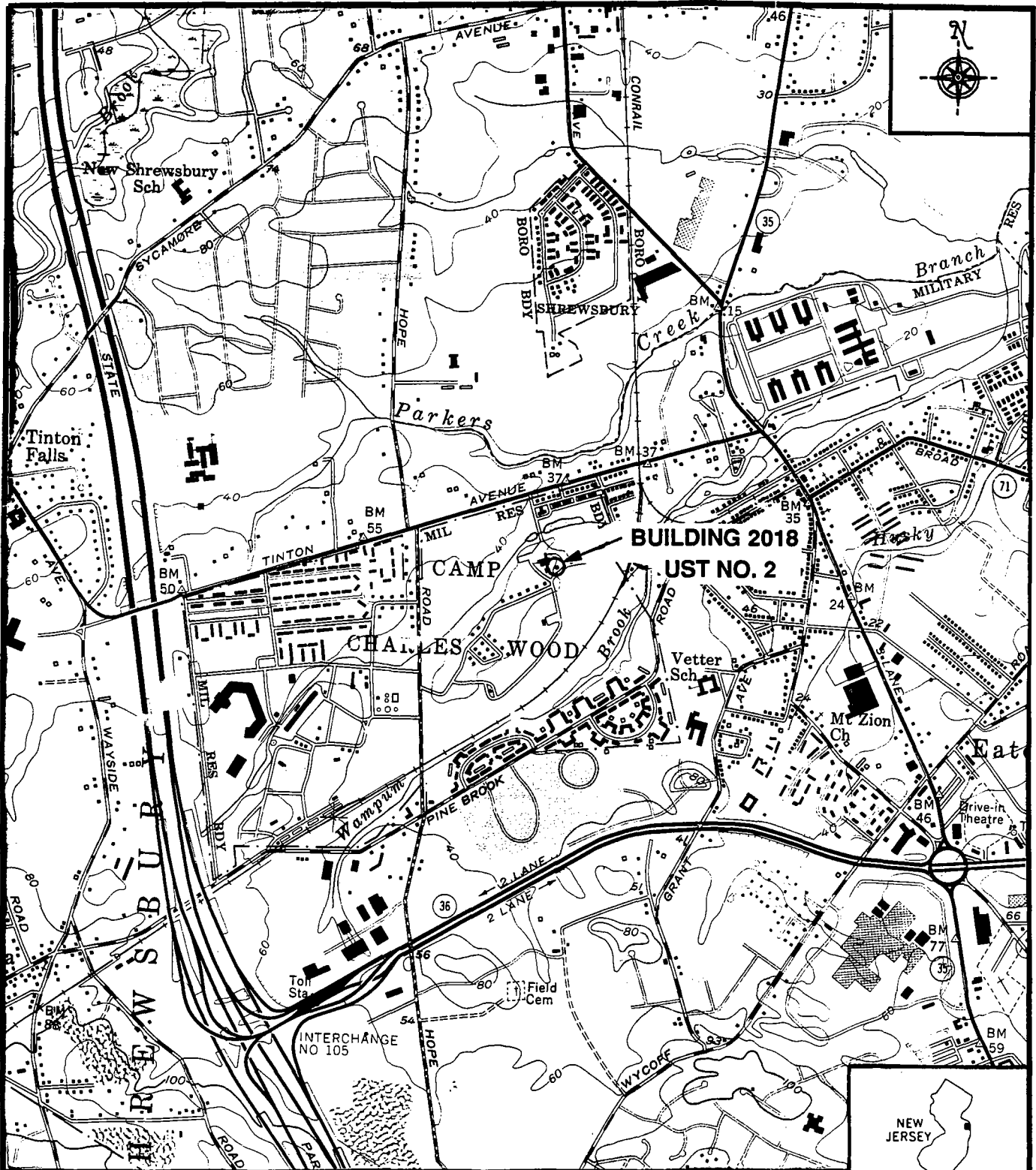
On 25 October 1990, the DPW received correspondence from NJDEP requesting a Discharge Investigation and Corrective Action Report (DICAR) to be submitted on or before 30 January 1991.

On 12 July 1991, a UST Decommissioning/Closure Plan was submitted to the NJDEP. Closure Approval No. TMS C-91-2837 was issued with an effective date of 22 October 1991. The UST Decommissioning/Closure Plan, UST Closure Plan Approval application and Closure Approval are provided in Appendix A.

On 8 November 1991, UST No. 2 was closed at U.S. Army Fort Monmouth, in Fort Monmouth, New Jersey. UST No. 2 was confirmed as a single walled steel, 1,000-gallon capacity, #2 fuel oil tank. Fabiano and Son, Inc. performed the tank closure.

1.3 GEOLOGICAL/HYDROGEOLOGICAL SETTING

The following is a description of the geological/hydrogeological setting of the area surrounding Building 2018. Included is a description of the regional geology of the area surrounding Fort Monmouth as well as descriptions of the local geology and hydrogeology of the Charles Wood area.



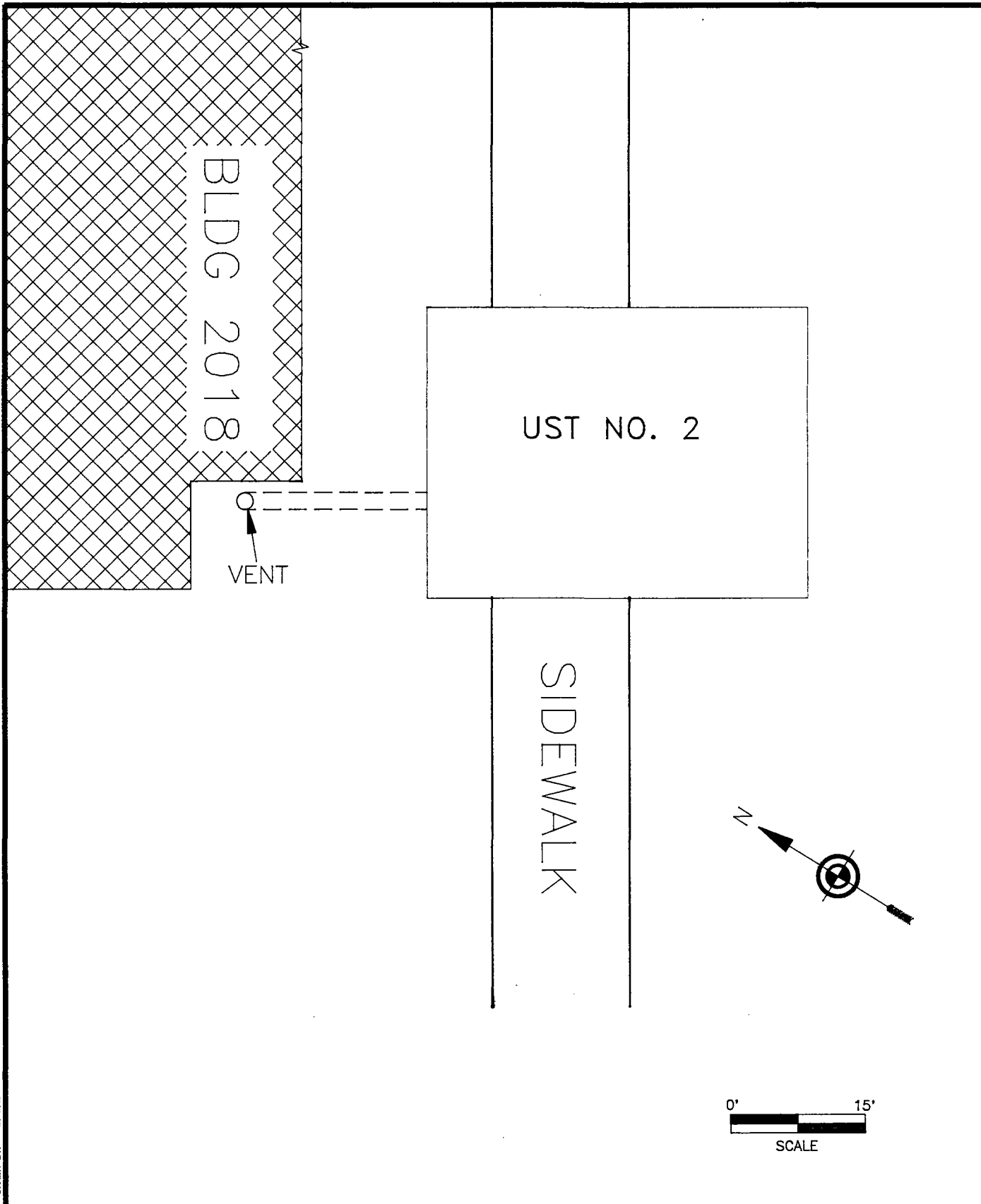
REFERENCE: U.S.G.S. QUADRANGLE LONG BRANCH, NJ: PHOTOREVISED 1981
 CONTOUR INTERVAL 20 FEET SCALE 1 INCH = 2000 FEET

UST LATITUDE: N 40 Deg. 18 Min. 5 Sec.
 UST LONGITUDE: W 74 Deg. 6 Min. 4 Sec.

QUADRANGLE LOCATION



FIGURE 1-1
FACILITY LOCATION MAP
U.S. ARMY - DIRECTORATE OF PUBLIC WORKS
FORT MONMOUTH, NEW JERSEY



REVISION # 1 DATE: 6/10/94 PLOT NAME: B2018-S
 FILE NAME: B2018-LDWG DRAWN BY: B. MAC



PROJECT NAME: UNDERGROUND STORAGE TANK CLOSURE
 AND SITE INVESTIGATION REPORT
 BUILDING 2018 - UST NO. 2
 FORT MONMOUTH NEW JERSEY
 CLIENT NAME: U.S. ARMY - FORT MONMOUTH
 DIRECTORATE OF PUBLIC WORKS

SITE MAP
 DATE: 6/10/94 FIGURE #: 1-2

1.3.1 Geological Setting

Regional Geology

Monmouth County lies within the New Jersey Section of the Atlantic Coastal Plain physiographic province. The Main Post, Charles Wood, and the Evans areas are located in what may be referred to as the Outer Coastal Plain subprovince, or the Outer Lowlands.

In general, New Jersey, Coastal Plain formations consist of a seaward-dipping wedge of unconsolidated deposits of clay, silt, sand, and gravel. These formations typically strike northeast-southwest with a dip ranging from 10 to 60 feet per mile and were deposited on Precambrian and lower Paleozoic rocks (Zapeczka, 1989). These sediments, predominantly derived from deltaic, shallow marine, and continental shelf environments, date from Cretaceous through the Quaternary Periods. The mineralogy ranges from quartz to glauconite.

The formations record several major transgressive/regressive cycles and contain units which are generally thicker to the southeast and reflect a deeper water environment. Over 20 regional geologic units are present within the sediments of the Coastal Plain. Regressive, upward-coarsening deposits are usually aquifers (e.g., Englishtown and Kirkwood Formations, and the Cohansey Sand) while the transgressive deposits act as confining units (e.g., the Merchantville, Marshalltown, and Navesink Formations). The individual thicknesses for these units vary greatly (i.e., from several feet to several hundred feet). The Coastal Plain deposits thicken to the southeast from the Fall Line to greater than 6,500 feet in Cape May County (Brown and Zapeczka, 1990).

Local Geology

Based on the regional geologic map (Jablonski, 1968), the Cretaceous age Red Bank and Tinton Sands outcrop at the Charles Wood area. The Red Bank sand conformably overlies the Navesink Formation and dips to the southeast at 35 feet per mile. The upper member (Shrewsbury) of the Red Bank sand is a yellowish-gray to reddish-brown clayey, medium-to-course-grained sand that contains abundant rock fragments, minor mica and glauconite (Jablonski). The lower member (Sandy Hook) is a dark grey to black, medium-to-fine grained sand with abundant clay, mica, and glauconite.

The Tinton sand conformably overlies the Red Bank Sand and ranges from a clayey, medium-to-very coarse grained feldspathic quartz and glauconite sand to a glauconitic coarse sand. The color varies from dark yellowish-orange or light brown to moderate brown and from light olive to grayish olive. Glauconite may constitute 60 to 80 percent of the sand fraction in the upper part of the unit (Minard, 1969). The upper part of the Tinton is often highly oxidized and iron-oxide encrusted (Minard).



Over the last 80 years, the natural topography of Fort Monmouth has been altered by excavation and filling activities by the military. Topographic elevations for the Charles Wood area range from five feet above mean sea level (MSL) to 31 feet above MSL.

1.3.2 Hydrogeological Setting

Hydrogeology

The water table aquifer at the Charles Wood area is identified as part of the "composite confining units", or minor aquifers. The minor aquifers include the Navesink formation, Red Bank Sand, Tinton Sand, Hornerstown Sand, Vincentown Formation, Manasquan Formation, Shark River Formation, Piney Point Formation, and the basal clay of the Kirkwood Formation.

Based on records from wells drilled at the Charles Wood area, groundwater is typically encountered at depths of two to nine feet below ground surface (BGS). According to Jablonski, wells drilled in the Red Bank and Tinton Sands may produce from 2 to 25 gallons per minute (gpm). Some well owners have reported acidic water that requires treatment to remove iron.

Shallow groundwater is locally influenced within the Charles Wood area by the following factors:

- tidal influence (based on proximity to the Atlantic Ocean, rivers and tributaries),
- topography,
- nature of the fill material within the Charles Wood area,
- presence of clay and silt lenses in the natural overburden deposits, and
- local groundwater recharge areas (i.e. stream, lakes).

Due to the fluvial nature of the overburden deposits (i.e. sand and clay lenses), shallow groundwater flow direction is best determined on a case-by-case basis. This is consistent with lithologies observed in borings installed within the Charles Wood area, which primarily consisted of fine-to-medium grained sands, with occasional lenses or laminations of silt and/or clay.

Building 2018 is less than 1/4 mile south of Wampum Brook, the nearest water body. The Atlantic Ocean is located approximately 5 miles east of the site.

1.3.3 Offsite Groundwater Usage

In compliance with the NJDEP regulations, WESTON conducted a well search to identify all irrigation, monitoring, domestic, industrial and public supply wells within one half mile of U.S. Army Fort Monmouth, Charles Wood area. The file search produced records for 68 wells. The well search summary table includes the following information on surrounding wells: well identification number; well owner; well address; total depth (feet BGS); casing length (feet); static water level elevation (feet BGS); use code; and NJDEP permit number. In addition, a



summary table of all U.S. Army wells located at Fort Monmouth, which includes the following information: well number; NJDEP permit number; New Jersey State Plane Coordinates; casing elevation and, well records for the nearest identified offsite well have been included, if available. This information is included in Appendix C.

A review of the well records indicated that the majority of the wells within the area of concern are used for irrigation purposes. There are 52 monitoring wells. An irrigation well (Permit Number 29-13187), owned by Tinton Woods, is the closest to the site. The well is located at 301 Tinton Avenue, approximately 2,600 feet northeast of the site.

1.4 HEALTH AND SAFETY

Before, during, and after all activities, hazards at the work site which may have posed a threat to the health and safety of all personnel who were involved with, or were affected by, the decommissioning of the UST system were minimized. All areas which posed, or may have been suspected to pose a vapor hazard were monitored by a qualified individual utilizing approved equipment. The trained individual ascertained if the area was properly vented to render the area safe, as defined by OSHA.

1.5 REMOVAL OF UNDERGROUND STORAGE TANK

1.5.1 General Procedures

On 8 November 1991, UST No. 2 was closed by removal at Building 2018 in the Charles Wood area of Fort Monmouth. Tank closure activities were conducted as follows:

- All underground obstructions (utilities,... etc.) were marked out by the contractor performing the closure prior to excavation activities.
- Surface materials (i.e, asphalt, concrete, etc...) were excavated and staged separate from all soils. These materials were later recycled in accordance with all applicable laws and regulations.
- The tank atmosphere was inerted.
- Access ways on top of the tank were opened.
- Licensed tank closure contractor personnel entered the tank to visually inspect and manually clean the insides of the tank.
- All wastes (tank bottom sludge and tank rinsate) generated during cleaning were collected and disposed.



- Post closure soil samples were collected for laboratory analysis.
- The tank was removed from the excavation and staged on plastic sheeting.
- The excavation was backfilled with clean fill material to the original surface grade.
- A Sub-Surface Evaluator from the DPW was present during all closure activities.

1.5.2 Underground Storage Tank Excavation

Soil was excavated to expose the UST and the associated piping. The piping was not removed/disturbed until all free product was drained into the UST. The UST was rendered vapor free by purging prior to any cutting or access. After removal of the associated piping, a manway from the UST was made to allow for proper cleaning. The UST was completely emptied of all liquids prior to removal. All of the openings in the tank were plugged except for one hole (manway).

Soils surrounding the UST were screened visually and with a Photoionization Detector (PID) for evidence of contamination. After the UST was removed from the excavation, it was staged on polyethylene sheeting and examined for cracks, corrosion or puncture holes. The presence or absence of holes was documented by the Sub-Surface Evaluator. Several corrosion holes described as "pin holes" noted. No groundwater was present in the tank excavation.

1.6 UNDERGROUND STORAGE TANK TRANSPORTATION AND DISPOSAL

According to a representative of U.S. Army Fort Monmouth, the tank was transported by Fabiano and Son, Inc. to Mazza and Sons, Inc., for recycling in compliance with all applicable regulations and laws.

The contractor labelled the UST prior to transport with the following information:

- Site of origin,
- Contact person,
- NJDEP UST Facility ID number,
- Name of transporter/contact person, and
- Destination site/contact person.



1.7 MANAGEMENT OF EXCAVATED SOIL

According to a representative of U.S. Army Fort Monmouth, an unknown quantity of contaminated soil was removed from the area surrounding UST No. 2. In addition, all soils free of evidence of contamination were backfilled into the excavation following removal of the UST. Information concerning the amount and destination of the contaminated soil was unavailable at the time of this closure and site investigation report.



SECTION 2.0

SITE INVESTIGATION ACTIVITIES

2.1 OVERVIEW

The Site Investigation was managed and carried out by U.S ARMY DPW personnel. All analyses were performed and reported by Environmental Profile Laboratory (EPL) which is a NJDEP-certified testing laboratory. All sampling was performed under the direct supervision of a NJDEP Certified Sub-Surface Evaluator according to the methods described in the NJDEP Field Sampling Procedures Manual (May 1991). Sampling frequency and parameters analyzed complied with the NJDEP-BUST document "Interim Closure Requirements for Underground Storage Tanks" (November 1991) which was the applicable regulation at the date of closure. All records of the Site Investigation activities are maintained by Fort Monmouth DPW: Environmental Office.

The following Parties participated in Closure and Site Investigation activities:

- Closure Contractor: Fabiano and Son, Inc.
Contact Person: Anthony Fabiano
Phone Number: (908) 571-1004
NJDEP Company Certification No.: PLE01349
- Subsurface Evaluator: Dinker Desai
Employer: U.S. Army, Fort Monmouth
Phone Number: (908) 532-1475
NJDEP Certification No.: 2226
- Analytical Laboratory: Environmental Profile Laboratory
Contact Person: Daniel Wright
Phone Number: (609) 224-6278
NJDEP Laboratory Certification No.: 15526
- Hazardous Waste Hauler: Lionetti and Sons, Inc.
Contact Person: Frank Labella
Phone Number: (908) 566-2785
USEPA I.D. No.: NJD01427895

2.2 FIELD SCREENING/MONITORING

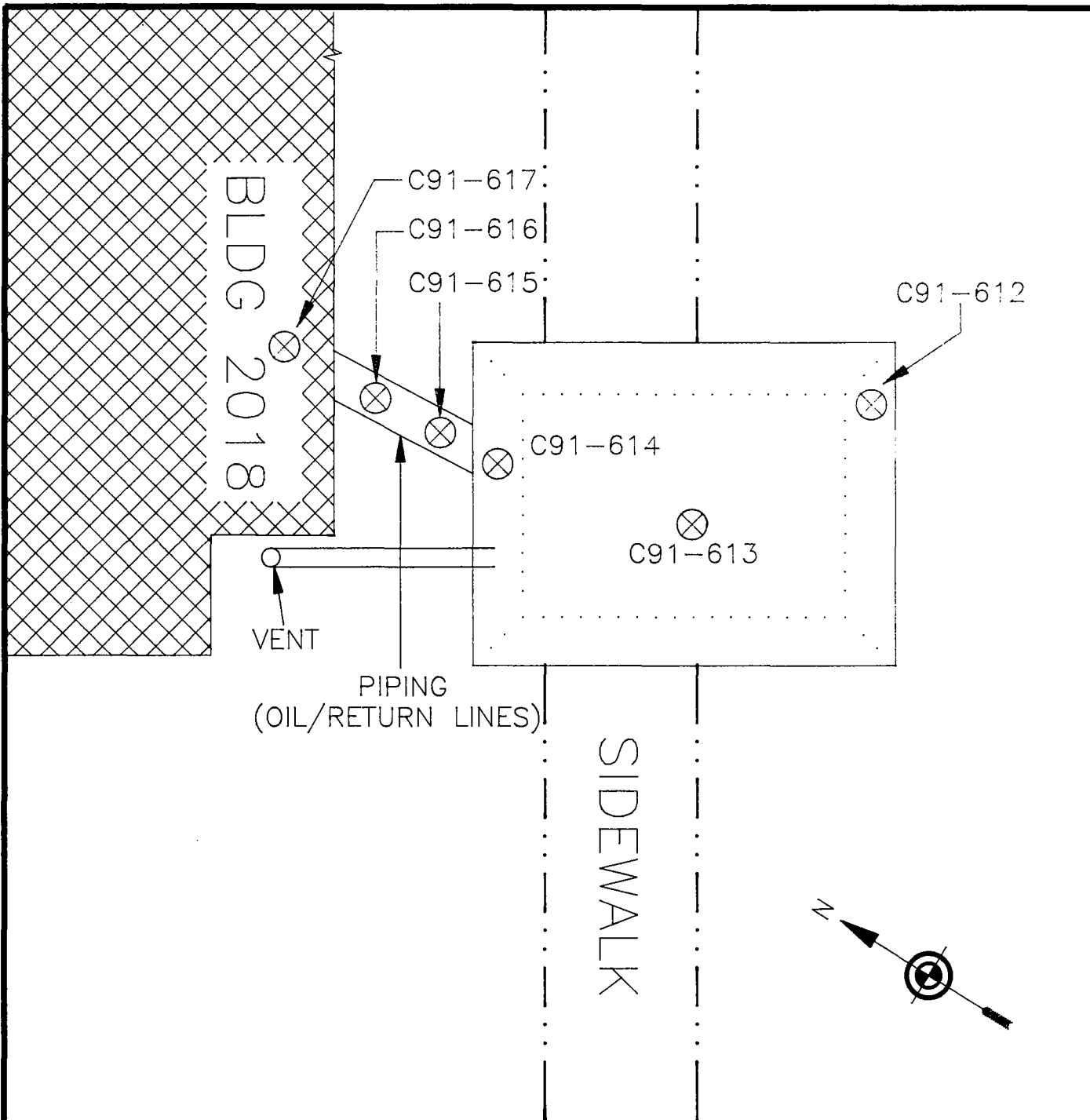
All soils that were excavated as part of the removal of the UST were screened using a PID, for evidence of contamination. Soils were also inspected visually for evidence of contamination (staining, free product, etc.). Soils on the sidewalls and base of the excavation were screened with a PID by an individual under the direct supervision of the NJDEP Certified Sub-Surface Evaluator. Evidence of contamination was noted during excavation of soils surrounding the UST and soils were subsequently removed.

2.3 SOIL SAMPLING

On 14 November 1991, six post-excavation soil samples were collected and analyzed by EPL for TPHC. One sample, Sample No. C-91-614 was analyzed for BN+15.

A summary of sampling activities including parameters analyzed is provided in Table 2-1. Figure 2-1 depicts the location of the post-excavation soil samples. The post-excavation soil samples were collected using decontaminated stainless steel scoops. Following soil sampling activities, the samples were chilled and delivered to the EPL located in Toms River, New Jersey.

The frequency of sampling and parameters analyzed were consistent with the applicable NJDEP regulations at the date of Closure Plan Approval, which were the "Interim Closure Requirements for Underground Storage Tanks", dated November 1991



LEGEND

C91-612 ⊗ POST-EXCAVATION SAMPLE LOCATIONS

REVISION # 1 DATE: 6/10/94 PLOT NAME: B2018-S
FILE NAME: B2018-LDWG DRAWN BY: B. MAC



PROJECT NAME: UNDERGROUND STORAGE TANK CLOSURE
AND SITE INVESTIGATION REPORT
BUILDING 2018 - UST NO. 2
FORT MONMOUTH NEW JERSEY
CLIENT NAME: U.S. ARMY - FORT MONMOUTH
DIRECTORATE OF PUBLIC WORKS

POST-EXCAVATION SAMPLE LOCATIONS

DATE: 6/10/94

FIGURE #: 2-1

TABLE 2-1
SUMMARY OF POST-EXCAVATION SAMPLING ACTIVITIES
UST NO. 2
BUILDING NO. 2018
FORT MONMOUTH, NEW JERSEY

Sample I.D No.	Date of Collection	Matrix	Sample Type	Analytical Parameters	Sampling Method
C91-612	11/8/91	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
C91-613	11/8/91	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
C91-614	11/8/91	Soil	Post-Excavation	TPHC, BN + 15	Stainless Steel Scoop
C91-615	11/8/91	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
C91-616	11/8/91	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
C91-617	11/8/91	Soil	Post-Excavation	TPHC	Stainless Steel Scoop

Notes:

TPHC - Total Petroleum Hydrocarbons.
 BN + 15 - Base neutral acid analysis plus 15 tentatively identified compounds.

SECTION 3.0

CONCLUSIONS AND RECOMMENDATIONS

3.1 SOIL SAMPLING RESULTS

To evaluate soil conditions following removal of the UST, the analytical results of post-excavation samples were compared to NJDEP ITGW and RDC Soil Cleanup Criteria (N.J.A.C. 7:26D and revisions dated 3 February 1994). Summaries of soil analytical results for soils are presented in Table No. 3-1.

The results indicated TPHC concentrations in Sample Nos. C91-614 (20,000 mg/kg) and C91-615 (9,000 mg/kg). In accordance with the Closure Plan Approval and the Technical Guidance Document, 25% of soils with TPHC values greater than 1,000 mg/kg should also be analyzed for BN+15. Sample No. C-91-614 was selected for BN+15 analysis based on its TPHC results. Sample No. C91-614 (20,000 mg/kg) exceeded the (10,000 mg/kg) criteria for total organics established by NJDEP. Results of the BN+15 analysis however, were below the ITGW and RDC Soil Cleanup Criteria.

A summary of the analytical methods used and quality assurance information is provided in Table 3-2. The analytical data package summary is provided in Appendix D. The full data package, including associated quality control and chromatograph data is on file at U.S. Army Fort Monmouth, DPW.

3.2 CONCLUSIONS AND RECOMMENDATIONS

On 8 November 1991, DPW successfully removed UST No. 2 at Building 2018 in the Charles Wood area of U.S. Army Fort Monmouth. Due to the presence of TPHC levels above 10,000 mg/kg, Fort Monmouth will re-excavate the soil at the two sample locations indicated as sample Nos. C91-614 and C91-615. These locations will be re-sampled and analyzed for TPHC. In accordance with the Technical Guidance Document, the excavation of the contaminated soils will continue until the analysis results indicate a TPHC concentration at or below 1,000 mg/kg.

The results of the analysis and recommendations for further action will be provided to NJDEP in an addendum to this report.

TABLE 3-1
SUMMARY OF ANALYTICAL RESULTS
UST NO. 2
BUILDING NO. 2018
FORT MONMOUTH, NEW JERSEY

Sample ID No.		C91-612	C91-613	C91-614	C91-615	C91-616	C91-617	NJDEP Impact to Groundwater Soil Cleanup Criteria	Residential Direct Contact Soil Cleanup Criteria
Lab ID No.		6859.1	6859.2	6859.3	6859.4	6859.5	6859.6		
Matrix		Soil	Soil	Soil	Soil	Soil	Soil		
Sample Type		PE	PE	PE	PE	PE	PE		
Date of Collection		11/8/91	11/8/91	11/8/91	11/8/91	11/8/91	11/8/91		
Analytical Parameters	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPHC		1,000	140	20,000	9,000	60	100	NC*	NC*
Base Neutral Compounds									
Acenaphthene		NA	NA	2.1	NA	NA	NA	100	3,400
Bis(2-Ethylhexyl)phthalate		NA	NA	11.0	NA	NA	NA	100	49

Notes:

- NC*: - No cleanup criterion has been proposed by NJDEP; however, the proposed NJDEP subsurface cleanup criterion for total organic compounds is 10,000 mg/kg.
TPHC: - Total Petroleum Hydrocarbons.
PE: - Post-Excavation.
mg/kg: - Milligrams per Kilogram.
NA: - Not analyzed.

TABLE 3-2

**ANALYTICAL METHODS/QUALITY ASSURANCE SUMMARY TABLE
UST NO. 2
BUILDING NO. 2018
FORT MONMOUTH, NEW JERSEY**

Analytical Parameters	No. of Samples Collected	Matrix	Date Collected	Date Analysis Started	Preservation Method	USEPA SW-846 Analytical Method
TPHC	6	Soil	11/8/91	11/14/91	Cool to 4°C	418.1
BNA	1	Soil	11/8/91	11/21/91	Cool to 4°C	8270

Notes:

TPHC: - Total petroleum hydrocarbons.
BNAs: - Base neutral acid analysis.
C: - Celsius.



APPENDIX A

NJDEP-BUST CLOSURE APPROVAL, CORRESPONDENCE WITH NJDEP AND TANK TIGHTNESS TEST RESULTS

TankTest Inc.

TTI

Bldg. 2018
Leakor

September 5, 1990

MO-2256

E-Systems, Inc./Serv-Air
P.O. Box 360
Fort Monmouth, New Jersey 07703

Attention: Ms. Gail Sutton

Reference: TTI Project Report No. 2212

Dear Ms. Sutton:

This report covers the testing of one (1) underground storage tank by TankTest Inc. (TTI). The testing was conducted on September 4, 1990 at E-Systems, Inc./Serv-Air Building 2018, Fort Monmouth, New Jersey. For your ease of review, this report is organized as follows:

- . Summary of Test Results
- . Methodology
- . Field Data Sheets

If you have any questions or comments concerning this report, please do not hesitate to contact me at anytime.

Respectfully submitted,

TankTest, Inc.

Robert Giunta / RJ

Robert Giunta
Tank Testing Supervisor

RG/nj

Test\2212

Professional Environmental and Tank Management Services

Evesham Corporate Center, 4 East Stow Road, Marlton, New Jersey 08053 (609) 985-8800 FAX (609) 985-9200

TankTest Inc.

E-Systems, Inc./Serv-Air
September 5, 1990
TTI Project Report 2212
Page 2 of 4

I. SUMMARY OF PROJECT RESULTS

PROJECT NUMBER: 2212

Date Tested	September 4, 1990
System Location	E-Systems, Inc./Serv-Air Behind Building 2018
Tank Size	1,000 gallons
Product	No. 2 fuel oil
Ground water depth	70 inches below tank bottom
Standpipe elevation *	129 inches
Results **	Greater than 2.0 gallons per hour
Conclusion	Inconclusive due to excessive product loss

* From tank bottom to the twelve (12) inch mark on the standpipe, meets 4 pound rule requirement.

** The NFPA (National Fire Protection Association) criteria of plus or minus 0.050 gph used to certify tank system tightness is a mathematical calculation based on actual liquid volume change and temperature change and is not intended as permission of a leak.

*** One of the initial set up phases of conducting a tank test using the Petro Tite Tank Testing Methodology requires completely filling the tank and pipe extension known as a "stand pipe" with product. As product was introduced to the stand pipe it continued to run down the stand pipe into the tank. This prevented TTI from conducting a leak test on this tank. This situation could be caused by one of three reasons. The first reason is that there is a large "vapor pocket" within the tank which is not being correctly vented from the tank through the vent pipe. TTI can devaporize the tank using a PEN-X Devaporizer followed by an additional tank test. If the cause of this problem is a vapor pocket this would remedy the situation. The second reason for this occurrence would be a break in either the vent line or the product lines. This situation can only be evaluated by uncovering the tank top. The third reason is a leak in the tank itself.

Based on information currently available, this system indicated a leak in excess of 2.0 gallons per hour (gph).

TankTest Inc.

E-Systems, Inc./Serv-Air

September 5, 1990

TTI Project Report 2212

Page 3 of 4

II. METHODOLOGY

TTI tests underground storage tanks through the use of the Petro Tite system. This system, also known as the Kent-Moore system was developed in cooperation with the American Petroleum Institute (API). TTI uses this system for the leak testing of a wide variety of tanks, systems, and tank contents.

The Petro Tite testing process is by definition a "temperature compensated standpipe test with product circulation". The tank testing equipment is connected to the tank system (and associated piping) subsequently filled with the existing product in the tank. Any observable decrease in liquid volume in the standpipe gives a direct measurable reading of loss if the system is leaking. However a drop in the standpipe liquid level can also be the result of other factors such as temperature change or a change in the tank volume due to a phenomenon known as "tank end deflection". The temperature variable is compensated for using the Petro Tite system by accurate temperature measurement while vigorously circulating the tank contents. Tank end deflection is also compensated for by stabilizing the tank geometry using procedures developed for the testing system. When these factors are controlled, loss in the standpipe means loss in the system, with compensation for all of the important factors that can give false results. The Petro Tite process is the only approved system that compensates for all these important variables, thus providing the user with the most reliable results available.

The Petro Tite system as applied by TTI using certified testers, adheres to the National Fire Protection Association (NFPA) guidelines as described in NFPA Bulletin No. 329, Recommended Practice for Handling Underground Leakage of Flammable and Combustible Liquids.

TankTest Inc.

E-Systems, Inc./Serv-Air

September 5, 1990

TTI Project Report 2212

Page 4 of 4

III. FIELD DATA AND CALCULATIONS

Data Chart for Tank System Tightness Test

PLEASE PRINT

1. OWNER	☐ Property ☐ Tank(s)	Fort Monmouth Name Address		Joe Falon Representative		201-532-435 Telephone	
		Golf Course Warehouse Name Address					
		Name Address		Representative		Telephone	
2. OPERATOR		Name Address				Telephone	
3. REASON FOR TEST Explain Fully)		Integrity					
4. WHO REQUESTED TEST AND WHEN		Joe Falon / Gail Sutton E-Systems Name Title Company or Affiliation Date PO Box 360 FT. Monmouth NJ, 07703 201-542-5990 Address Telephone					
5. TANK INVOLVED Use additional lines for manifolded tanks		Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
		Behind Bldg	1,000		#2 Fuel Oil	40+	Steel
6. INSTALLATION DATA		Location	Cover	Fills	Vents	Siphones	Pumps
			Earth	1-2"	1-1/4"	—	Suction
		North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Titfill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make if known
7. UNDERGROUND WATER		Depth to the Water table $\downarrow$ 70"				Is the water over the tank? ☐ Yes ☒ No	
8. FILL-UP ARRANGEMENTS		Tanks to be filled _____ hr. _____ Date Arranged by _____ Name _____ Telephone _____ Extra product to "top off" and run tank tester. How and who to provide? Consider NO Lead.					
		Terminal or other contact for notice or inquiry _____ Company _____ Name _____ Telephone _____					
9. CONTRACTOR, MECHANICS, any other contractor involved							
10. OTHER INFORMATION OR REMARKS							
		Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test, etc.					
11. TEST RESULTS		Tests were made on the above tank systems in accordance with test procedures prescribed for as detailed on attached test charts with results as follows:					
		Tank Identification	Tight	Leakage Indicated	Date Tested		
		#1 Bldg 3018	NO	72.0 GPH	9-4-90		
12. SENSOR CERTIFICATION		13. This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 322.					
		Technicians 1. R. Giunta		TANK TEST INC Testing Contractor or Company. By: Signature			
		Certification # _____		4 STOW RD MARLTON NJ Address			
		2. _____ Certification # _____					

15. TANK TO TEST

GOLF Course Warehouse
Identify by position
#2 Fuel oil
Brand and Grade

15a. BRIEF DIAGRAM OF TANK FIELD

16. CAPACITY

Nominal Capacity 4,000 Gallons
By most accurate capacity chart available 1064 Gallons

From
☐ Station Chart
☐ Tank Manufacturer's Chart
☐ Company Engineering Data
☐ Charts supplied with
☐ Other

17. FILL-UP FOR TEST

Stick Water Bottom before Fill-up 0 in. 0 Gallons 48 in. Tank Diameter

Inventory 48 Gallons Total Gallons ea. Reading 1064

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK,

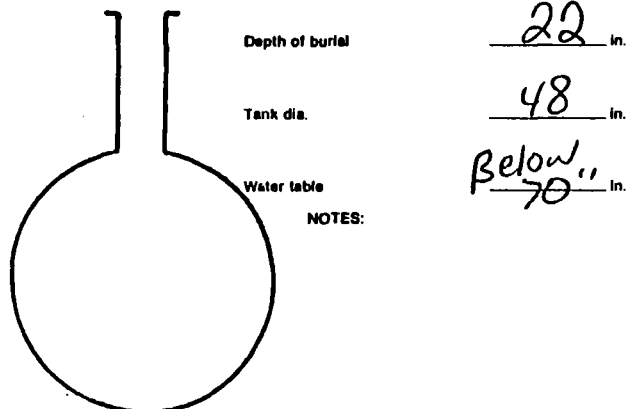
☐ Water in tank ☐ Line(s) being tested with LVLLT
☐ High water table in tank excavation

See manual sections applicable. Check below and record procedure in log (27).

Use maximum allowable test pressure for all tests.
Four pound rule does not apply to doublewalled tanks.

Complete section below:

1. Is four pound rule required? Yes ☐ No ☒
2. Height to 12" mark from bottom of tank 129 in.
3. Pressure at bottom of tank 4 P.S.I.
4. Pressure at top of tank — P.S.I.



NOTES:

The above calculations are to be used for dry soil conditions to establish a positive pressure advantage, or when using the four pound rule to compensate for the presence of subsurface water in the tank area.

Refer to N.F.P.A. 30, Sections 2-3.2.4 and 2-7.2 and the tank manufacturer regarding allowable system test pressures.

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY

Bottom of tank to grade* 70 in.
Add 30" for "T" probe assy. 30 in.
Total tubing to assemble — approximate 100 in.

20. EXTENSION HOSE SETTING

Tank top to grade* 22 in.
Extend hose on suction tube 6" or more below tank top 6+ 28 in.

*If Fill pipe extends above grade, use top of fill.

22. Thermal-Sensor reading after circulation
digits
Between °F
23. Digits per °F in range of expected change
digits

COEFFICIENT OF EXPANSION (Complete after circulation)

24a. Corrected A.P.I. Gravity
Observed A.P.I. Gravity
Hydrometer employed
Observed Sample Temperature °F
Corrected A.P.I. Gravity @ 60°F, From Table A
Coefficient of Expansion for Involved Product From Table B
Transfer COE to Line 25b.

21. VAPOR RECOVERY SYSTEM ☐ Stage I ☐ Stage II

24b. COEFFICIENT OF EXPANSION RECIPROCAL METHOD

Type of Product #2 Fuel
Hydrometer Employed 4 H
Temperature in Tank After Circulation °F
Temperature of Sample °F
Difference (+/-) °F
Observed A.P.I. Gravity
Reciprocal Page #
Total quantity in full tank (16 or 17) Reciprocal Volume change in this tank per °F
Transfer to Line 26a.

24c. FOR TESTING WITH WATER see Table C & D

Water Temperature after Circulation Table C °F
Coefficient of Water Table D
Added Surfactant? ☐ Yes ☐ No Transfer COE to Line 25b.

25. (a) Total quantity in full tank (16 or 17) × (b) Coefficient of expansion for Involved product = (c) Volume change in this tank per °F gallons
26. (a) Volume change per °F (25 or 24b) + (b) Digits per °F in test = (c) Volume change per digit This is test

[illegible]



State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

CN 029

Trenton, N.J. 08625-0029

Office of
the Director

(609) 292-1637
Fax # (609) 984-7938

OCT 25 1990

Lieutenant Colonel Booth
U.S. Army
Building 167
Att: SELFM-EH,
Fort Monmouth, NJ 07703

CERTIFIED
RETURN RECEIPT REQUESTED

Re: Discharge from Underground Storage Tank System
Building 2018, Fort Monmouth
Oceanport Boro, Monmouth County
Case #90-09-05-1616

Dear Lt. Col. Booth:

On September 5, 1990, the New Jersey Department of Environmental Protection (the Department) received notification of a discharge of hazardous substances from your facility. While testing a #2 fuel oil underground storage tank, tank failed test.

Any discharge of hazardous substances not in compliance with a valid permit is in violation of the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq., and the Underground Storage of Hazardous Substances Act, N.J.S.A. 58:10A-21 et seq. Violators are liable for penalties of up to \$50,000 per day for each day of a continuing violation.

Enclosed is a Scope of Work specifying the procedures required by the Department to investigate and initiate corrective actions for the discharge from your facility. These procedures are intended to be implemented by a ground water consultant who meets the technical qualifications of the Department. The ground water consultant must have sufficient professional training and experience to conduct a satisfactory investigation and cleanup as outlined in the Scope of Work. Since the Department does not license or certify such consultants, it is recommended that you research the qualifications of any consultant prior to retaining their services. Examples of acceptable qualifications include licenses from other states or professional certificates from national trade associations. This information must be submitted along with the Discharge Investigation and Corrective Action



Report (DICAR) described later in this letter.

In accordance with the procedures outlined in the Scope of Work, you are required to do the following:

1. Reporting Requirements (Section I, Page 1)

- a. If you have not already done so, notify the Department's Environmental Action Hot Line (609-292-7172) and the local health department of the discharge.
- b. Notify the Department and the local health department if public or private potable supply wells are contaminated.
- c. Notify the Department and the local fire and health departments if vapors or other fire hazards are present.
- d. Comply with any other reporting requirements listed in Section I of the Scope of Work.

2. Immediate Cleanup Requirements (Section III, Page 3)

- a. Determine the source of the discharge.
- b. Cease use of the underground storage tank system(s) involved in the discharge, remove all hazardous substances from the system(s) and repair, replace or close the system(s).
- c. Mitigate any fire, safety or health hazard including, but not limited to, hazards from combustible vapor or vapor inhalation and the removal of ignition sources.
- d. Conduct an inspection to detect any above ground discharge, and where any discharge is evident, mitigate the effects of the discharge.

3. Discharge Mitigation Requirements
(Section IV, Page 4 and Appendix 10, Page 65)

In addition to the immediate cleanup requirements, you must also do the following:

- a. Perform activities concerning site characterization as outlined in Section IV A of the Scope of Work.
- b. Determine the horizontal and vertical extent of ground water contamination via installation and sampling of monitoring wells, for the following UST systems:
 - i. Those which contained gasoline, jet fuel or kerosene;
 - ii. Those which contained the petroleum products listed and have those site conditions outlined in item 2, page 69 of Appendix 10; and
 - iii. Those which contained hazardous substances other than petroleum products.

- c. Implement recovery of free product, if any, as soon as it has been detected (Section IV D, page 10).
 - d. Remove and/or treat soils contaminated by free product (i.e. soils at residual saturation), as outlined in Section IV B, Page 5. Perform a site survey and soil sampling and analysis as outlined in Appendix 10, page 68, items C and D. The Department will determine the need for additional soil remediation.
4. Discharge Investigation and Corrective Action Report
(Section I, Page 1)

A written report (DICAR) must be submitted to this Bureau at the above address, on or before January 30, 1991, specifying all activities conducted in compliance with the requirements listed in this letter. A DICAR Summary Sheet must be included with the report. In addition, a schedule with implementation target dates for those activities remaining to be completed to comply with all requirements must be submitted at the same time. Upon review of the DICAR, the Department will notify you of any further requirements.

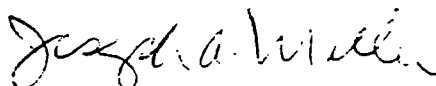
Should the goals noted in the Scope of Work document fail to be completed upon submission of your report, investigation / remediation shall continue in a manner consistent with the guidance provided in the Scope of Work while waiting for comments from the Department.

A cursory review of our registration files indicates no registration information for your facility. If you have not yet registered your tanks, please complete the enclosed forms and return immediately. If you have registered the tank(s) in question advise this office of your registration number.

Failure to comply with the requirements listed in this letter and enclosed Scope of Work may result in the assessment of penalties as provided by law.

If you have any questions, please contact Stephen Tatar or any other available member of my staff at (609) 984-3156.

Very truly yours,



Joseph A. Miller
Section Chief
Discharge Investigation Section
Bureau of Underground Storage Tanks

GWQM360: 11s

c: Lester W. Jargowsky, Monmouth County Health Department

Enclosures: Scope of Work
Registration Packet

UST-013
9/90

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WATER RESOURCES
BUREAU OF UNDERGROUND STORAGE TANKS
TANK MANAGEMENT SECTION

CN 029, 401 EAST STATE STREET
TRENTON, N.J. 08625-0029

FOR STATE USE ONLY

UST # _____
Date Rec'd _____
CA # _____
Staff _____

UNDERGROUND STORAGE TANK CLOSURE PLAN
APPROVAL APPLICATION

*Under the provisions of the Underground Storage
of Hazardous Substances Act
in accordance with N.J.A.C. 7:14B-9 et seq.*

This application form shall be used by all applicants who plan to close Underground Storage Tank Systems pursuant to N.J.A.C. 7:14B-9 et seq.

INSTRUCTIONS:

- Before completing application form please refer to the attached Application Instruction Sheet.
- Please print legibly or type.
- Fill in all appropriate blanks. This application form requires that additional sheets be attached for some of the information requested. You may call the Bureau of Underground Storage Tanks/Tank Management Section (609/984-3156) for assistance.
- Return one original of this form (including all attachments required) and a copy of the complete Standard Reporting Form (SRF) to the address above. You must sign all forms as required and attach a check for the proper fee (see the fee schedule on Page 3). Make check payable to the Treasurer, State of New Jersey.
- If the subject facility is not registered the Closure Plan will not be approved.
- Please Note: Make sure that all required information on the Standard Reporting Form (SRF) is submitted. The SRF and this Closure Plan Application must be submitted together.

Date of Application 7/12/91

FACILITY REGISTRATION #

0192486-2

I. FACILITY NAME AND ADDRESS

U.S. Army Fort Monmouth

DEH Bldg. 167

Fort Monmouth NJ 07703

Telephone No. (908) 532-1475 Dinkerrai Desai

II. THIS CLOSURE PLAN IS FOR:

A. Substance stored in subject tank(s):

1. Petroleum Products

Indicate Type of Product # 2 Heating oil
(Write out product name; e.g.)

- a. Gasoline, Jet Fuel, or Kerosene
- b. Heating Oil (#2, 4, 6), or Diesel
- c. Waste Oil (Please indicate total storage capacity of waste oil at the facility [including the tank(s) being closed]) N/A gals.

2. Hazardous Substances other than Petroleum Products (Describe)

Indicate Type of Product N/A
(Write out product name; add sheet if necessary.)

B. Type of Activity: (Circle one)

1. Abandonment of Tank(s)

Attach the closure plan for abandonment, as required by N.J.A.C. 7:14B-9.2(b) or 9.3(b), which must contain the following items:

- a. Implementation schedule (3 copies per N.J.A.C. 7:14B-9.2(a)3)
- b. Site assessment plan
- c. Tank decommissioning plan
- d. A site map
- e. Attach all justification for abandonment-in-place as required by N.J.A.C. 7:14-9.1(d). Attach the certification statement (on the back page) for abandonment-in-place, if applicable.

2. Removal of Tank(s)

Attach the closure plan for removal as required by N.J.A.C. 7:14B-9.2(b) or 9.3(b). The following items must be included:

- ✓ a. Implementation schedule (3 copies)
- ✓ b. Site assessment plan
- ✓ c. Tank decommissioning plan
- ✓ d. A site map

3. Temporary Closure

Indicate which situation applies and attach appropriate documentation.

- a. Temporary closure for 12 months or less is subject to requirements of N.J.A.C. 7:14B-9.1(a).
- b. Requesting an extension of temporary closure for more than 12 months per N.J.A.C. 7:14B-9.1(b) must perform site assessment and submit results.

4. Change in Service

Attach documentation that the tank system being changed from the storage of a regulated to a non-regulated substance has been emptied and cleaned and that a site assessment has been performed, as required by N.J.A.C. 7:14B-9.1(e).

III. FEE SCHEDULE

Check the activities below that apply, calculate the Total Fee and submit that amount with this application. Make checks payable to **Treasurer, State of New Jersey**. Public schools and religious and charitable institutions are exempt from the fees. The owner or operator shall submit a separate fee for each excavation where an activity occurs.

- | | | |
|--|-------------------|-----------|
| A. <u>Activities Which Require a Site Assessment</u> | <u>120.00</u> | \$ 120.00 |
| 1. Removal or Abandonment without exemption to site assessment requirement | | |
| 2. Change in service from a regulated substance to a non-regulated substance | | |
| 3. Extension of period of Temporary Closure | | |
| B. <u>Activities Not Requiring a Site Assessment</u> | <u> </u> | \$ 80.00 |
| 1. Removal or abandonment with valid exemption | | |
| C. <u>Additional Activities</u> | | |
| 1. Change in service from one regulated substance to another regulated substance | | NO FEE |

APPLICATION REVIEW FEE (activities in A, B, C) + \$ 50.00

TOTAL FEE DUE \$ 170.00

- IV. THE BUREAU OF UNDERGROUND STORAGE TANKS WILL REVIEW THE CLOSURE PLAN FOR COMPLETENESS AND APPROPRIATENESS AS SPECIFIED IN SUBCHAPTER 9 OF THE UST REGULATIONS. PLAN APPROVAL WILL INDICATE THAT THE OWNER OR OPERATOR MAY PROCEED WITH THE CLOSURE. FINAL APPROVAL OF THE CLOSURE IS NOT IMPLIED. ALL APPROPRIATE AND APPLICABLE PERMITS, LICENSES AND CERTIFICATES REQUIRED FOR ANY OF THE ABOVE ACTIVITIES FROM ANY LOCAL, STATE AND/OR FEDERAL AGENCIES MUST BE OBTAINED SEPARATELY FROM THIS APPLICATION.

THE SITE ASSESSMENT SAMPLING AND ANALYTICAL REQUIREMENTS WILL BE SENT WITH THE APPROVAL TO PROCEED.

NOTE: Notice of Approval to Proceed or Disapproval will be mailed to the facility address unless some other address is specified here.

SIGNATURE OF CONTACT PERSON

This application form must be signed by a contact person of the owner or operator of the subject facility. The contact person should have overall knowledge of tank decommissioning procedures and the site assessment requirements applicable to the tank closure which is the subject of this application.

NAME (Print or Type) Dinkerrai Desai SIGNATURE _____
TITLE DEH Environmental Coordinator DATE 7/12/91

Underground Storage Tank
Removal / Abandonment
Implementation Schedule

Date: 7/12/91

Facility Name: U.S. Army, Fort Monmouth

Facility Location: Bldg 2018
Fort Monmouth, Monmouth County NJ 07703

Owners Mailing Address: DEH Bldg. #167
Fort Monmouth, NJ 07703

Owners Name: U.S. Army

Contact Person: Dinkerrai Desai
Phone Number: (908) 532-1475

UST Number: 0192486 -

Tank ID Number(s)	Product Stored (Oil, Gas, etc.)	Tank Capacity (Gallons)	Site Assessment Required	Monitoring Well Required
<u>2</u>	<u>#2 H-oil</u>	<u>1000</u>	<u>yes</u>	<u>no</u>

Schedule

Activity	Start Date	Completion
Removal	<u>9/19/91</u>	<u>9/20/91</u>
Site Assessment	<u>9/20/91</u>	
Monitoring Well Installation	<u>N/A</u>	
Site Assessment Analytical Results	<u>10/25/91</u>	
Monitoring Well Analytical Results	<u>N/A</u>	
UST Site Assessment Summary		<u>12/19/91</u>

U.S. Army
DEH Bldg. 167
SELF-M-EH
Port Monmouth, NJ 07703

Date: 7/12/91

NJDEP UST REG #: 0190486-2
Page 1 of 3

Underground Storage Tank (UST)
Decommissioning / Closure Plan

A. General Requirements:

All activities associated with the decommissioning of any underground storage tank (UST) shall comply with all applicable Federal, State and Local laws and ordinances. These laws include but are not limited to: NJAC 7:14B et seq., 5:23 et seq. and OSHA 1910.146, 1910.120. All permits including but not limited to this document, the NJDEP Closure Plan Approval Package, etc., shall be posted on site for inspection. The contractor conducting the decommissioning activities shall be registered by the NJDEP for performing said activities.

B. Safety and Health:

Before, during, and after all activities, the work site shall be made free of all hazards which may pose a threat to the health and safety of all personnel who are involved with, or are affected by, the decommissioning of the UST. All areas which pose, or may be suspected of posing, a vapor hazard shall be monitored by a qualified individual utilizing approved equipment. This individual will ascertain if the area is properly vented to render the area safe, as defined by OSHA.

C. UST Excavation:

1. All underground obstructions (utilities, ... etc.) shall be marked out by the contractor performing the excavation.
2. All activities shall be carried out with the greatest regard to safety and health and the safeguarding of the environment.
3. All excavated soils will be evaluated as to the possibility of contamination. Soils suspected to be contaminated with product shall be staged on poly-sheeting separate from soils not suspected to be contaminated (see section E. Excavated Soils Management).
4. Surface materials (ie. asphalt, concrete, ect...) shall be excavated and staged separate from all soils.
5. Soil will be excavated to expose the UST and associated piping. The piping shall not be removed / disturbed until all free product is drained into the UST. The UST will be rendered vapor free prior to any cutting or access. After the removal of the associated piping, a manway will be made in the UST to allow for the proper cleaning of the UST.

U.S. Army
DEH Bldg. 167
SELF-M-EH
Fort Monmouth, NJ 07703

Date: 7/12/91
NJDEP UST REG #: 0192486-2
Page 2 of 3

6. After the UST is removed from the ground, it will be staged on poly-sheeting and examined for corrosion holes. The presence or absence of corrosion holes will be documented by the contractor. If corrosion holes are observed, or if upon inspection of the excavation site evidence of a discharge to the environment, the NJDEP hotline shall be notified.

7. In the event of a discharge to the environment, additional soils will be excavated. Site assessment activities will determine to what depth the contractor will excavate.

8. After completion of the Site Assessment activities, the excavation will be lined with poly-sheeting and backfilled to grade with noncontaminated soils from the site and additional certified clean fill provided by the contractor.

D. UST Transport / Disposal:

1. The tank will be transported and disposed / recycled in compliance with all applicable regulations and laws.

2. The contractor shall label the tank with the following information:

- a. site of origin
- b. generator / contact person
- c. NJDEP UST ID number
- d. product previously stored
- e. name of transporter / contact person
- f. destination site / contact person
- g. other info. as required

3. The contractor shall provide Fort Monmouth with sufficient documentation certifying that transport / disposal (recycling) of the tank was completed according to all applicable Federal and State regulations.

E. Excavated Soils Management:

1. All excavated soils suspected to be contaminated will be transported, by the contractor, to a designated staging area. The designated area will contain the soils as well as manage all stormwater runoff.

2. All soils stored in the designated staging area will be maintained in piles no larger than 100 cubic yards each. Each pile will be lined and covered with poly-sheeting and weighted to ensure containment.

3. Each soil pile will be sampled and analyzed for waste classification as outlined in the NJDEP document titled "Management of Excavated Soils" dated August 17, 1990.

U.S. Army
DEH Bldg. 167
SELFM-EH

Fort Monmouth, NJ 07703

Date: 7/12/91

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4. All soils catagorized as Hazardous waste or non-hazardous waste will be managed as such, in accordance with N.J.A.C. 7:26-1 et seq..
5. All soils that contain levels of contaminants below the Catagory 3 soil limits will be used in accordance with Federal and State requirments.

F. Changes / Authorizations:

1. All deviations in activities related to the closure of a UST as outlined in this document shall require prior authorization from the NJDEP-DWR-EUST.

U.S. Army
DEH Bldg. 167
SELFME-EH
Fort Monmouth, NJ 07703

Date: 7/12/91
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**UNDERGROUND STORAGE TANK (UST)
SITE ASSESSMENT PLAN**

A. General:

This site specific assessment plan will be managed and carried out by U.S. Army DEH and Serv-Air Inc. personnel. All analyses will be performed and reported by NJDEP certified testing laboratories. All monitoring wells will be installed by NJDEP licensed well drillers. All sampling will be performed according to methods described in the NJDEP Field Sampling Procedures Manual. All records of the Site Assessment will be maintained by DEH and submitted to the NJDEP-DWR-BUST in accordance with N.J.A.C. 7:14B-9.2 and 9.3.

**PHASE I
UST Decommissioning**

A. Initial Soil Excavation:

1. Soil will be excavated from the UST site and screened utilizing a Photo Ionization Detector (PID) and/or a Flame Ionization Detector (FID).
2. All soils suspected to be contaminated will be treated in accordance with the UST Decommissioning Plan.

B. Continued Excavation:

1. Excavation of suspect contaminated soil will continue until one of the following situations is encountered:
 - a. groundwater
 - b. excavated soils no longer exhibit characteristics of contamination
 - c. excavation equipment can no longer remove soils due to depth or other restrictive cause.

Date: 7/12/91
REG #: 0192486 - 2
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U.S. Army
DER Bldg. 107
SELPM-EH
Fort Monmouth, NJ 07703

Date: 7/12/91
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Page 3 of 4

B. Soil samples will be collected from the Pipe excavation and analyzed according to the following schedule:

TANK	LENGTH OF PIPE	PRODUCT	BN +15 (If TPHC >100)	VOA +15 Lead, Xylene (If TPHC >100)	PP+15	TPHC
#2	25'	#2 oil	2	N/A	N/A	2

C. All samples will be taken in the native soil below the bedding material. The sample locations should be along the mid-lines of the tank outline except for at least two of the samples which should be taken within one foot of each of the two highest field survey readings. All of the soil samples should be discrete samples taken within a 6" vertical interval. All samples will be collected by utilizing laboratory decontaminated stainless steel trowels dedicated to each sample location.

D. The excavation will remain open until laboratory results determine all TPHC samples are less than 100 ppm. If levels greater than 100 ppm are reported, further excavation and resampling may be requested for those specific areas. If further excavation is not possible, additional required analyses will be performed and the excavation lined with poly-sheeting and filled to grade with certified clean fill.

U.S. Army
DEH Bldg. 167
SELF-M-EH
Fort Monmouth, NJ 07703

Date: 7/12/91
NJDEP UST REG #: 0192486-2

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PHASE IV
Groundwater Monitoring

A. Monitoring wells will be installed within the UST field at all UST locations where the tank(s) being closed stored gasoline, kerosene, jet fuel and/or site specific factors indicate a known or potential impact of soil contamination exists.

B. Groundwater monitoring wells will be installed by a New Jersey licensed Well Driller in accordance with N.J.S.A 58:4A-4.1 et seq..

C. All monitoring wells will be sampled as described in the NJDEP Field Sampling Procedures Manual, 1988.

D. All monitoring wells will be analyzed in accordance with the following table:

TANK	PRODUCT	MONITORING WELL(S)	(A) EPA Method 624	(B) EPA Method 625
2	#2 oil	not Required	—	—

Note (A): Sample must be analyzed by EPA Method 624 + 15 (GC/MS plus identification of non-targeted compounds) modified to include calibration for xylenes, methyl tertiary butyl ether (MTBE), and tertiary butyl alcohol (TBA)

Note (B): Sample must be analyzed by EPA Method 624 + 15 (GC/MS plus identification of non-targeted compounds) modified to include calibration for xylenes; AND EPA Method 625 + 15 (base/neutral extractable extractable organics).

C. All monitoring well sampling will be conducted according to methods described in the NJDEP Field Sampling Procedures Manual February 1988

D. All laboratory analyses will be performed by NJDEP certified Laboratories using approved methods and following all Quality Control/Assurance procedures.

**Administrative Check List
Underground Storage Tank
Closure**

Submission and/or Activity	Completed		Submitted (NJDEP)	
	Yes	No	Yes	No
UST Registration		YES	YES	
Site Investigation (Preliminary)		NO		
Standard Reporting Form (Closure)				
Closure Plan Approval Application		YES		
Fees (\$ 170)		YES		
Implementation Schedule (3 copies)		YES		
Site Assessment Plan		YES		
Decommissioning Plan		YES		
Site Map		YES		
Certificate For Abandonment-In-Place		NA		
UST Site Assessment Summary				
Analytical Results (Soil)				
Analytical Results (M-Well Two Rounds)				
Chain of Custody				
Laboratory Authentication Statement				

Closure Approval
0-91-2837
10/22/91
tank pulled 11/8/91
Fabiana

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 # C-91-2837

UST # 0192486

U.S. Army Fort Monmouth
Building 2018
Fort Monmouth

(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: 1- 1000 gallon heating oil storage tanks

Site assessment: Three (3) soil samples will be taken for the
tanks, and two (2) for every 15 feet of piping; samples will be
collected and analyzed as per the Technical Guidance Document
(TPHC).

ON-SITE MANAGER: Dinkerrai Desai TELEPHONE: (908) 532-1475

OWNER: U.S. Army TELEPHONE:

EFFECTIVE DATE: October 22, 1991

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

Kenneth Goldstein

KENNETH GOLDSTEIN, P.E., CHIEF
BUREAU OF UNDERGROUND STORAGE TANKS



State of New Jersey
Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation

CN 029
Trenton, NJ 08625-0029
Tel. # 609-984-3156
Fax. # 609-292-5604

Scott A. Weiner
Commissioner

Karl J. Delaney
Director

OCT 24 1991

Dear Applicant:

The Department of Environmental Protection and Energy (the Department) received an "Underground Storage Tank Closure Plan Approval Application" for your facility. This application detailed the procedures to be implemented as required by the Underground Storage Tank Systems Technical Requirements and Procedures at N.J.A.C. 7:14B-1 et seq. Based upon our review of the information submitted, a Closure Approval is hereby granted.

A Standard Reporting Form (SRF) must be submitted to the Department within seven (7) days of removal or abandonment of the tank(s). The date of removal or abandonment must be included with the SRF. The SRF will be used to delist the tank(s) from the Bureau of Underground Storage Tanks (BUST) registration files. A copy of the SRF is attached.

Within ninety (90) days of completion of the tank(s) closure, a Site Assessment Summary pursuant to N.J.A.C. 7:14B-9.5 must be submitted to BUST. (copy attached). If contamination is discovered during closure, you are required to initiate corrective action as per N.J.A.C. 7:14B-8 and outlined in the Department's Scope of Work document. All discharges must be reported to the Spill Hotline at (609) 292-7172.

Once you have obtained a Closure Approval, a demolition permit issued pursuant to N.J.A.C. 5:23 et seq. and authorized by the Department of Community Affairs (DCA), Construction Code Element must be procured from your local construction code official. For further information in obtaining a demolition permit, please contact the local construction code official directly, or DCA's Code Assistance Unit at (609) 530-8793.

If you require further information or assistance, please contact the Tank Management Section of BUST at (609) 984-3156.

Attachments: Closure Approval
SRF
SAS



State of New Jersey
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF WATER RESOURCES
 CN 029
 Trenton, N.J. 08625-0029
 ATTN: BUST Program
 (609) 984-3156

For State Use Only

Date Rec'd. _____
 Auth. _____
 Routing _____
 UST NO. _____

STANDARD REPORTING FORM
 for reporting activities at an UST facility:

- | | |
|--|---|
| ☐ General Facility Information Changes | ☐ Sale or Transfer |
| ☒ Closure (Abandonment or Removal) | ☐ Substantial Modification |
| ☐ Temporary Closure | ☐ Financial Responsibility |
| ☐ Change in Service | ☐ Address Change Only |

Check ONLY One Type of Activity – Complete Form For That Activity

(More than one tank can be listed per activity)

*** NOTE *** ALL NEW tank installations at existing registered facilities must submit a Registration Questionnaire for the new tanks.

Answer questions 1 through 5 and others as applicable.

1. Company name and address (as it appears on registration questionnaire):
 U.S. Army Fort Monmouth
 DEH Bldg. #167
 Fort Monmouth NJ 07703
 ATTN Dinkerrai Desai
2. Facility name and location (if different from above):

3. Contact person for this activity:
 Dinkerrai Desai
 Telephone Number: (908) 532-1475
4. The identification number of the affected tank as it appears in Question Number 12 on the Registration Questionnaire:
 2
5. Registration Number (if known): UST - 0192 486
6. For GENERAL FACILITY INFORMATION changes (address, telephone, contact person, etc. – supply NEW information only):
 - a. Facility name: _____
 - b. Facility location: _____
 - c. Owner's mailing address: _____

 _____ NJ _____
 - d. Block: _____ Lot: _____
 - e. Contact person (facility operator): _____
 - f. Contact telephone number: () _____ - _____
 - g. Other (Specify): _____

(OVER)

7. For CLOSURE (abandonment or removal - check all that apply):

a. ☐ Abandonment

Attach the necessary implementation schedule (3 copies) and all documentation needed for abandonment per N.J.A.C. 7:14B-9.1 (d).

b. ☒ Removal UST PULLED 11/08/91

Attach the necessary implementation schedule (3 copies).

8. For CHANGES IN HAZARDOUS SUBSTANCES STORED (check all that apply):

a. ☐ Temporary Closure (12 month maximum time - see N.J.A.C. 7:14B-9.1(b)). Remove all hazardous substances; leave tank in place.

b. ☐ Change in service from a regulated substance to a non-regulated substance. Tank must be cleaned and site assessment performed per N.J.A.C. 7:14B-9.1(e).

c. ☐ Changes in service from one regulated hazardous substance to another regulated hazardous substance.

Tank No. _____	Old _____	New _____
Tank No. _____	Old _____	New _____
Tank No. _____	Old _____	New _____

(Attach additional sheets if more space is needed)

9. For TRANSFER OF OWNERSHIP:

a. New Owner (operator) _____

b. New Facility Name _____

_____ NJ _____

_____ County _____

c. Closing Attorney _____ Tele: (____) _____ - _____

10. For SUBSTANTIAL MODIFICATIONS (to include any retrofitted activity - e.g. the addition of spill/overfill protection, monitoring systems, cathodic protection, etc.):

a. Type of Modification _____

b. * NOTE * Substantial modifications require a permit under N.J.A.C. 7:14B-10.

11. For changes in FINANCIAL RESPONSIBILITY to (check appropriate changes and attach copies of new information):

a. Policy Type: ☐

d. Company/Carrier: ☐

b. Policy Number: ☐

e. Expiration Date: ☐

c. Other: ☐

(Specify)

NOTE: ALL appropriate and applicable permits, licenses and certificates required by the above activity(ies) from any local, state and/or federal agencies must be obtained separately from this notification.

CERTIFICATION

This registration form shall be signed by the highest ranking individual at the facility with overall responsibility for that facility (N.J.A.C. 7:14B-2.3 (a) 1).

"I certify under penalty of law that the information provided in this document is true, accurate and complete. I am aware that there are significant civil and criminal penalties for submitting false, inaccurate or incomplete information, including fines and/or imprisonment."

Signature: _____

Name (print or type): Dinkerrai Desai

Title: ENVIRONMENTAL COORDINATOR Date: 11/15/91



APPENDIX B

NJDEP UST SITE ASSESSMENT SUMMARY FORM

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WATER RESOURCES
BUREAU OF UNDERGROUND STORAGE TANKS
TANK MANAGEMENT SECTION

CN 029, 401 EAST STATE STREET
TRENTON, N.J. 08625-0029

UST #	_____
Date Rec'd	_____
TMS #	_____
State	_____

**UNDERGROUND STORAGE TANK
SITE ASSESSMENT SUMMARY**

*Under the provisions of the Underground Storage
of Hazardous Substances Act
in accordance with N.J.A.C. 7:14B*

This Summary form shall be used by all owners and operators of Underground Storage Tank Systems (USTS) who have either reported a release and are subject to the site assessment requirements of N.J.A.C. 7:14B-8.2 or who have closed USTS pursuant to N.J.A.C. 7:14B-9.1 et seq. and are subject to the site assessment requirements of N.J.A.C. 7:14B-9.2 and 9.3.

INSTRUCTIONS:

- Please print legibly or type.
- Fill in all applicable blanks. This form will require various attachments in order to complete the Summary. The technical guidance document, Interim Closure Requirements for USTs, explains the regulatory (and technical) requirements for closure and the Scope of Work, Investigation and Corrective Action Requirements for Discharges from Underground Storage Tanks and Piping Systems explains the regulatory (and technical) requirements for corrective action.
- Return one original of the form and all required attachments to the above address.
- Attach a scaled site diagram of the subject facility which shows the information specified in Item IV B of this form.
- Explain any "No" or "N/A" response on a separate sheet.

Date of Submission March 14, 1995

192486

FACILITY REGISTRATION #

I. FACILITY NAME AND ADDRESS

U.S. Army Fort Monmouth
DEH Bldg. #167
Fort Monmouth, NJ 07703 County Monmouth
Telephone No. (908) 532-1475

OWNER'S NAME AND ADDRESS, if different from above

Same

Telephone No. _____

II. DISCHARGE REPORTING REQUIREMENTS

- A. Was contamination found? ☒ Yes ☐ No If Yes, Case No. 90-09-05-1616
(Note: All discharges must be reported to the Environmental Action Hotline (609) 292-7172)
- B. The substance(s) discharged was(were) #2 Heating Oil
- C. Have any vapor hazards been mitigated? ☒ Yes ☐ No ☐ N/A

III. DECOMMISSIONING OF TANK SYSTEMS

Closure Approval No. C-91-2837

The site assessment requirements associated with tank decommissioning are explained in the Technical Guidance Document, Interim Closure Requirements for USTs, Section V. A-D. Attach complete documentation of the methods used and the results obtained for each of the steps of tank decommissioning used. Please include a site map which shows the locations of all samples and borings, the location of all tanks and piping runs at the facility at the beginning of the tank closure operation and annotated to differentiate the status of all tanks and piping (e.g., removed, abandoned, temporarily closed, etc.). The same site map can be used to document other parts of the site assessment requirements, if it is properly and legibly annotated.

IV. SITE ASSESSMENT REQUIREMENTS

A. Excavated Soil

Any evidence of contamination in excavated soil will require that the soil be classified as either Hazardous Waste or Non-Hazardous Waste. Please include all required documentation of compliance with the requirements for handling contaminated excavated soil (if any was present) as explained in the technical guidance documents for closure and corrective action. Describe amount of soil removed, its classification, and disposal location.

B. Scaled Site Diagrams

1. Scaled site diagrams must be attached which include the following information:

- North arrow and scale
- The locations of the ground water monitoring wells
- Location and depth of each soil sample and boring
- All major surface and sub-surface structures and utilities
- Approximate property boundaries
- All existing or closed underground storage tank systems, including appurtenant piping
- A cross-sectional view indicating depth of tank, stratigraphy and location of water table
- Locations of surface water bodies

C. Soil samples and borings (check appropriate answer)

- Were soil samples taken from the excavation as prescribed? ☒ Yes ☐ No ☐ N/A
- Were soil borings taken at the tank system closure site as prescribed? ☐ Yes ☒ No ☐ N/A
- Attach the analytical results in tabular form and include the following information about each sample:
 - Customer sample number (keyed to the site map)
 - The depth of the soil sample
 - Soil boring logs
 - Method detection limit of the method used
 - QA/QC information as required

D. Ground Water Monitoring

1. Number of ground water monitoring wells installed 0
2. Attach the analytical results of the ground water samples in tabular form. Include the following information for each sample from each well:
 - a. Site diagram number for each well installed
 - b. Depth of ground water surface
 - c. Depth of screened interval
 - d. Method detection limit of the method used
 - e. Well logs
 - f. Well permit numbers
 - g. QA/QC Information as required

V. SOIL CONTAMINATION

- A. Was soil contamination found? ☒ Yes ☐ No
If "Yes", please answer Question B-E
If "No", please answer Question B
- B. The highest soil contamination still remaining in the ground has been determined to be:
- | | | |
|------------------|------------------------------|-------------------------------|
| 1. <u>N/A</u> | ppb total BTEX, <u>N/A</u> | ppb total non-targeted VOC |
| 2. <u>13100</u> | ppb total B/N, <u>216900</u> | ppb total non-targeted B/N |
| 3. <u>20,000</u> | ppm TPHC | |
| 4. <u>N/A</u> | ppb <u>N/A</u> | (for non-petroleum substance) |

C. Remediation of free product contaminated soils

1. All free product contaminated soil on the property boundaries and above the water table are believed to have been removed from the subsurface ☐ Yes ☒ No
2. Free product contaminated soils are suspected to exist below the water table ☐ Yes ☒ No
3. Free product contaminated soils are suspected to exist off the property boundaries. ☐ Yes ☒ No

D. Was the vertical and horizontal extent of contamination determined? ☐ Yes ☒ No ☐ N/A

E. Does soil contamination intersect ground water? ☐ Yes ☒ No ☐ N/A

VI. GROUND WATER CONTAMINATION

- A. Was ground water contamination found? ☐ Yes ☒ No
If "Yes", please answer Questions B-G.
If "No", please answer only Question B.

B. The highest ground water contamination at any 1 sampling location and at any 1 sampling event to date has been determined to be:

- | | | |
|---|--|-------------------------------|
| 1. <u>N/A</u> | ppb total BTEX, <u>N/A</u> | ppb total non-targeted VOC |
| 2. <u>N/A</u> | ppb total B/N, <u>N/A</u> | ppb total non-targeted B/N |
| 3. <u>N/A</u> | ppb total MTBE, <u>N/A</u> | ppb total TBA |
| 4. <u>N/A</u> | ppb <u>N/A</u> | (for non-petroleum substance) |
| 5. greatest thickness of separate phase product found | <u>N/A</u> | |
| 6. separate phase product has been delineated | ☐ Yes ☐ No ☒ N/A | |

C. Result(s) of well search

1. A well search (including a review of manual well records) indicates that private, municipal or commercial wells do exist within the distances specified in the Scope of Work. ☐ Yes ☐ No ☐ N/A
2. The number of these wells identified is _____.

D. Proximity of wells and contaminant plume

1. The shallowest depth of any well noted in the well search which may be in the horizontal or vertical potential path(s) of the contaminant plume(s) is _____ feet below grade (consideration has been given for the effects of pumping, subsurface structures, etc. on the direction(s) of contaminant migration). This well is _____ feet from the source and its screening begins at a depth of _____ feet.
2. The shallowest depth to the top of the well screen for any well in the potential path of the plume(s) (as described in D1 above) is _____ feet below grade. This well is located _____ feet from the source.
3. The closest horizontal distance of a private, commercial or municipal well in the potential path of the plume (as determined in D1) is _____ feet from the source. This well is _____ feet deep and screening begins at a depth of _____ feet.

E. A plan for separate phase product recovery has been included. ☐ Yes ☐ No ☐ N/A

F. A ground water contour map has been submitted which includes the ground water elevations for each well.
☐ Yes ☐ No ☐ N/A

G. Delineation of contamination

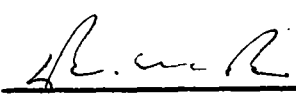
1. The ground water contaminants have been delineated to MCLs or lower values at the property boundaries. ☐ Yes ☐ No
2. The plume is suspected to continue off the property at concentrations greater than MCLs.
☐ Yes ☐ No
3. Off property access (circle one): ☐ is being sought ☐ has been approved ☐ has been denied

VII. SITE ASSESSMENT CERTIFICATION [preparer of site assessment plan - N.J.A.C. 7:14B-8.3(b) & 9.5(a)3]

The person signing this certification as the "Qualified Ground Water Consultant" (as defined in N.J.A.C. 7:14B-1.6) responsible for the design and implementation of the site assessment plan as specified in N.J.A.C. 7:14B-8.3(a) & 9.2(b)2, must supply the name of the certifying organization and certification number.

"I certify under penalty of law that the information provided in this document is true, accurate, and complete and was obtained by procedures in compliance with N.J.A.C. 7:14B-8 and 9. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) Dinkerrai Desai

SIGNATURE 

COMPANY NAME U.S. Army Fort Monmouth
(Preparer of Site Assessment Plan)

DATE 3/22/95

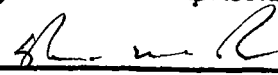
CERTIFYING ORGANIZATION NJDEPE

CERTIFICATION NUMBER 2226

VIII. **TANK DECOMMISSIONING CERTIFICATION** (person performing tank decommissioning portion of closure plan - N.J.A.C. 7:14B-9.5(a)4)

"I certify under penalty of law that tank decommissioning activities were performed in compliance with N.J.A.C. 7:14B-9.2(b)3. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) Dinkerrai Desai

SIGNATURE 

COMPANY NAME U.S. Army Fort Monmouth

(Performer of Tank Decommissioning)

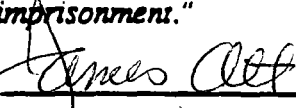
DATE 3/22/95

IX. **CERTIFICATIONS BY THE RESPONSIBLE PARTY(IES) OF THE FACILITY**

A. The following certification shall be signed by the highest ranking individual with overall responsibility for that facility [N.J.A.C. 7:14B-2.3(c)1].

"I certify under penalty of law that the information provided in this document is true, accurate, and complete. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) James Ott, P.E.

SIGNATURE 

COMPANY NAME U.S. Army Fort Monmouth

DATE 3/25/95

B. The following certification shall be signed as follows (according to the requirements of N.J.A.C. 7:14B-2.3(C)2):

1. For a corporation, by a principal executive officer or at least the level of vice president.
2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
3. For a municipality, State, Federal or other public agency by either the principal executive officer or ranking elected official.
4. In cases where the highest ranking corporate partnership, governmental officer or official at the facility as required in A above is the same person as the official required to certify in B, only the certification in A need to be made. In all other cases, the certifications of A and B shall be made.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) _____

SIGNATURE _____

COMPANY NAME _____

DATE _____



ATTACHMENT I

NO/NA RESPONSE EXPLANATION

<u>SAS QUESTION #</u>	<u>RESPONSE</u>	<u>EXPLANATION</u>
IV.C.2	No	No soil borings were taken at the tank system closure site.
V.C.1	No	Sample analysis indicated TPHC levels over 10,000 mg/kg in the soil. Soil contamination will be remediated followed by post-excavation soil samples.
V.C.2	No	Free product contaminated soils are not suspected to exist below the water table or off the property boundary.
V.C.3	No	Same as above.
V.D	No	Sample analysis indicated TPHC levels over 10,000 mg/kg in the soil. Soil contamination will be remediated followed by post-excavation soil samples.
V.E	No	Soil contamination is not suspected to intersect groundwater.
VI.A	No	No groundwater monitoring wells are planned at the site.



APPENDIX C

WELL SEARCH INFORMATION



SECTION 2.0

CHARLES WOOD AREA - WELL SEARCH

**WELL SEARCH SUMMARY TABLE
CHARLES WOOD AREA
U.S. ARMY FORT MONMOUTH**

WELL ID NO	WELL OWNER	WELL ADDRESS	TOTAL DEPTH (FEET BGS)	CASING LENGTH (FEET)	STATIC WATER ELEV. (FEET BGS)	USE CODE	NJDEPE PERMIT NO.
1	Wolf Press Redacted - Privacy Act	1138 Pinebrook Rd, Tinton Falls	215	200	33	D	29-19540
2	M&M Fair	7 Violate Court, Eatontown	40	30	8	G	29-28128
3	Redacted - Privacy Act	30 Victor Avenue, Eatontown	51	41	5	D	29-13163
4	Redacted - Privacy Act	144 Grant Avenue, Eatontown	117	111	12	D	29-16207
6	The Ranney School	235 Hope Rd, Tinton Falls	14	4	8	M	29-27751
7	The Ranney School	235 Hope Rd, Tinton Falls	14	4	6	M	29-27752
8	The Ranney School	235 Hope Rd, Tinton Falls	12	2	3.67	M	29-27800
9	The Ranney School	235 Hope Rd, Tinton Falls	25	5	5	G	29-14431
10	Redacted - Privacy Act	27 Devon Court, Tinton Falls	46	32	6	G	29-11142
13	Redacted - Privacy Act	463 Tinton Avenue, Tinton Falls	186	171	32	D	29-21698
18	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	4	6.4	M	29-25316
19	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	6.7	M	29-25317
20	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	7	M	29-25318
21	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	7	M	29-25319
22	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	7	M	29-25320
23	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	*	M	29-26053
24	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	*	M	29-26054
25	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	*	M	29-26055
26	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	15	5	7	M	29-26056
27	Eatontown Bd of Education	250 Pinebrook Rd, Eatontown	12	2	10	M	29-26865
28	Eatontown Bd of Education	250 Pinebrook Rd, Eatontown	12	2	10	M	29-26866
29	Eatontown Bd of Education	250 Pinebrook Rd, Eatontown	12	2	10	M	29-26867
30	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	23	3	8	E	29-27770
31	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	18	5	8	E	29-27771
32	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	18	5	8	E	29-27772
33	Mobil Oil Corporation	Block 8 Lot 5, Eatontown	18	5	8	E	29-27773
45	Redacted - Privacy Act	539 Tinton Avenue, Tinton Falls	261	241	21	D	29-28140
46	County of Monmouth	Hwy District 316 (B97;L21.01), Tinton Falls	17	7	11.08	M	29-28781
47	County of Monmouth	Hwy District 316 (B97;L21.01), Tinton Falls	17	7	7.17	M	29-28782
48	County of Monmouth	Hwy District 316 (B97;L21.01), Tinton Falls	17.5	7.5	8.33	M	29-29607
49	County of Monmouth	Hwy District 316 (B97;L21.01), Tinton Falls	14	4	6.58	M	29-29623
50	NJDOT	Block 113, Lot 8A,9A, Tinton Falls	63	58	*	M	29-16775
51	NJDOT	Block 113, Lot 8A,9A, Tinton Falls	76.5	71.5	*	M	29-16776

ID - Identification
BGS - Below Ground Surface
G - Irrigation Well
D - Domestic Well
P - Inactive Production Well

M - Monitoring Well
E - Recovery Well
S - Sealed Well
* - This information was not available during the well search

**WELL SEARCH SUMMARY TABLE
CHARLES WOOD AREA
U.S. ARMY FORT MONMOUTH**

WELL ID NO	WELL OWNER	WELL ADDRESS	TOTAL DEPTH (FEET BGS)	CASING LENGTH (FEET)	STATIC WATER ELEV (FEET BGS)	USE CODE	NJDEPE PERMIT NO.
52	County of Monmouth	143A Wayside Road, Tinton Falls	17	7	11.33	M	29-27443
53	County of Monmouth	143A Wayside Road, Tinton Falls	17	7	11.5	M	29-27444
54	County of Monmouth	143A Wayside Road, Tinton Falls	17.5	7.5	11.75	M	29-27453
55	Redacted - Privacy Act Aris Corp	Block 114.01, Lot 21.02, Tinton Falls	12	2	4	M	29-23921
56	Redacted - Privacy Act	Block 114.01, Lot 21.02, Tinton Falls	12	2	4	M	29-25775
57	Redacted - Privacy Act	Block 114.01, Lot 21.02, Tinton Falls	8	0	4	M	29-26312
58	Redacted - Privacy Act	46 Park Road, Tinton Falls	13	3	3.5	M	29-29421
59	Redacted - Privacy Act Aris Corp	Block 114.01, Lot 21.02, Tinton Falls	12	2	3	M	29-23919
60	Redacted - Privacy Act Aris Corp	Block 114.01, Lot 21.02, Tinton Falls	12	2	3	M	29-23290
61	Redacted - Privacy Act Aris Corp	Block 114.01, Lot 21.02, Tinton Falls	9	2	3	M	29-23916
62	Redacted - Privacy Act Aris Corp	Block 114.01, Lot 21.02, Tinton Falls	13	2	3	M	29-23917
63	Redacted - Privacy Act Aris Corp	Block 114.01, Lot 21.02, Tinton Falls	12	2	3	M	29-23918
102	Exxon Corporation	Block 2; Lot 7.01.8 Eatontown	15	3	5	M	29-26806
103	Exxon Corporation	Block 2; Lot 7.01.8 Eatontown	16	3	5	M	29-26807
104	Exxon Corporation	Block 2; Lot 7.01.8 Eatontown	17	3	6	M	29-26808
105	Exxon Corporation	Block 2; Lot 7.01.8 Eatontown	17	3	5	M	29-26809
107	Amoco Oil Company	Route 35 South, Eatontown	16.5	1.5	12	M	29-14593
108	Amoco Oil Company	Route 35 South, Eatontown	16.5	1.5	12	M	29-14594
109	Amoco Oil Company	Route 35 South, Eatontown	16.5	1.5	12	M	29-14595
110	Amoco Oil Company	Route 35 South, Eatontown	16.5	1.5	12	M	29-14596
111	Redacted - Privacy Act	11 West Street, Eatontown	150	150	7	D	29-2952
126	Tinton Woods	301 Tinton Avenue., Eatontown	80	41	15	G	29-13187
2567/1	U.S. Army, Fort Monmouth	Charles Wood Bldg 2567, Ft Monmouth ***	13	3	4	M	29-26925
2567/2	U.S. Army, Fort Monmouth	Charles Wood Bldg 2567, Ft Monmouth ***	13	3	5.5	M	29-26926
2567/3	U.S. Army, Fort Monmouth	Charles Wood Bldg 2567, Ft Monmouth ***	13	3	4	M	29-26927
2567/4	U.S. Army, Fort Monmouth	Charles Wood Bldg 2567, Ft Monmouth ***	12	2	3	M	29-26928
3021/1	U.S. Army, Fort Monmouth	Charles Wood Bldg 3021, Ft Monmouth	12	2	3.5	M	29-26930
3021/2	U.S. Army, Fort Monmouth	Charles Wood Bldg 3021, Ft Monmouth	11	1	3	M	29-26931
3021/3	U.S. Army, Fort Monmouth	Charles Wood Bldg 3021, Ft Monmouth	12	2	2.5	M	29-26932
2500/1	U.S. Army, Fort Monmouth	Charles Wood Bldg 2500, Ft Monmouth	25	5	7	M	29-29742
2500/2	U.S. Army, Fort Monmouth	Charles Wood Bldg 2500, Ft Monmouth	25	5	7	M	29-29743
2500/3	U.S. Army, Fort Monmouth	Charles Wood Bldg 2500, Ft Monmouth	25	5	7	M	29-29744
2500/4	U.S. Army, Fort Monmouth	Charles Wood Bldg 2500, Ft Monmouth	25	5	7	M	29-29745
P1	U.S. Army, Fort Monmouth	Charles Wood, Ft Monmouth	*	*	*	P	*
P2	U.S. Army, Fort Monmouth	Charles Wood, Ft Monmouth	*	*	*	P	*

ID - Identification
BGS - Below Ground Surface
G - Irrigation Well
D - Domestic Well
P - Inactive Production Well

M - Monitoring Well
E - Recovery Well
S - Sealed Well
* - This information was not available during the well search
*** - Form B has been completed for this well.

Well No.	Permit No.	NJ Planar Coord****		Elevation-TOC	Elevation-GRD
		Northing	Easting		
1	29-19540	530800	2163200	41.5	40
2	29-28128	537125	2167270	***	***
3	29-13163	532540	2169300	***	***
4	29-16207	530600	2167380	***	52
6	29-27751	538100	2163440	***	***
7	29-27752	538080	2163710	***	***
8	29-27800	537930	2163550	***	***
9	29-14431	537935	2163820	***	***
10	29-11142	537200	2163140	***	90
13	29-21698	536750	2161900	56.5	55
18	29-25316	537000	2168170	***	***
19	29-25317	537000	2168170	***	***
20	29-25318	537000	2168170	***	***
21	29-25319	537000	2168170	***	***
22	29-25320	537000	2168170	***	***
23	29-26053	537000	2168170	***	***
24	29-26054	537000	2168170	***	***
25	29-26055	537000	2168170	***	***
26	29-26056	537000	2168170	***	***
27	29-26865	533000	2168320	***	***
28	29-26866	533000	2168320	***	***
29	29-26867	533000	2168320	***	***
30	29-27770	537220	2168150	***	***
31	29-27771	537220	2168150	***	***
32	29-27772	537220	2168150	***	***
33	29-27773	537220	2168150	***	***
45	29-28140	536165	2159995	***	***
46	29-28781	530650	2158720	***	***
47	29-28782	530650	2158720	***	***
48	29-29607	530650	2158720	***	***
49	29-29623	530650	2158720	***	***
50	29-16775	528720	2160450	***	***
51	29-16776	528720	2160450	***	***
52	29-27443	530480	2158725	***	***
53	29-27444	530480	2158725	***	***
54	29-27453	530480	2158725	***	***
55	29-23921	529100	2162200	***	***
56	29-25775	529100	2162200	***	***

Well No.	Permit No.	NJ Planar Coord****		Elevation-TOC	Elevation-GRD
		Northing	Easting		
57	29-26312	529100	2162200	***	***
58	29-29421	529100	2162200	***	***
59	29-23919	529100	2162200	***	***
60	29-23290	529100	2162200	***	***
61	29-23916	529100	2162200	***	***
62	29-23917	529100	2162200	***	***
63	29-23918	529100	2162200	***	***
102	29-26806	537380	2168125	***	***
103	29-26807	537380	2168125	***	***
104	29-26808	537380	2168125	***	***
105	29-26809	537380	2168125	***	***
106	29-22900	496050	2166050	***	***
107	29-14593	538700	2168050	***	***
108	29-14594	538700	2168050	***	***
109	29-14595	538700	2168050	***	***
110	29-14596	538700	2168050	***	***
111	29-2952	536625	2168160	***	***
126	29-13187	535985	2163975	***	50
2500/1	29-29742	531340	2161910	***	***
2500/2	29-29743	531340	2161910	***	***
2500/3	29-29744	531340	2161910	***	***
2500/4	29-29745	531340	2161910	***	***
2567/1	29-26925	533250	2163740	33.93	33.72
2567/2	29-26926	533250	2163740	35.26	35.24
2567/3	29-26927	533250	2163740	33.88	33.82
2567/4	29-26928	533250	2163740	33.51	33.38
3021/1	29-26930	533265	2165780	***	***
3021/2	29-26931	533265	2165780	***	***
3021/3	29-26932	533265	2165780	***	***

Notes: * - This information was not available during the well search

** - This well was not issued a permit by NJDEPE

*** - No elevation data was found for this well location.

**** - Except for wells 699/1-14, all coordinates shown are approximate.

The information given does not represent surveyed coordinates.

TOC - Top of Casing

GRD - Ground Surface

WELL RECORD

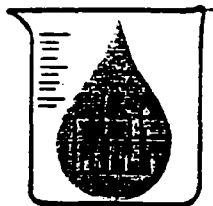
1. OWNER Tinton Woods ADDRESS 301 Tinton Ave., Eatontown
Owner's Well No. _____ SURFACE ELEVATION 50
(Above mean sea level)
2. LOCATION Route 537, Eatontown, N.J.
3. DATE COMPLETED Sept. 9, 1983 DRILLER Kaye Well Drilling, Inc.
4. DIAMETER: Top 4 inches Bottom 4 inches TOTAL DEPTH 80
5. CASING: Type Black Steel Diameter 4 inches Length 42
6. SCREEN: Type W.G. Size of Opening _____ Diameter _____ inches Length _____
Range in Depth { Top _____ Feet
Bottom _____ Feet Geologic Formation _____
Tail Piece: Diameter _____ inches Length _____ feet
7. WELL FLOWS NATURALLY _____ Gallons per minute at _____ Feet above surface
Water rises to _____ Feet above surface
8. RECORD OF TEST: Date Nov. 9, 1983 Yield 60 Gallons per minute
Static water level before pumping 15 Feet below surface
Pumping level 46 feet below surface after _____ hours pumping
Drawdown _____ Feet Specific Capacity _____ Gals. per min. per ft. of drawdown
How pumped Griller How measured Flow
Observed effect on nearby wells _____
9. PERMANENT PUMPING EQUIPMENT:
Type _____ Mfrs. Name _____
Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____
Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet
Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size _____ inches
10. USED FOR Irrigation AMOUNT { Average _____ Gallons Daily
Maximum _____ Gallons Daily
11. QUALITY OF WATER Irony Sample: Yes _____ No _____
Taste Irony Odor None Color Clear Temp. _____ °F.
12. LOG _____ Are samples available? _____
(Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy.)
13. SOURCE OF DATA Drillers
14. DATA OBTAINED BY Kaye Well Drilling, Inc. Date Oct. 11, 1983

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)



APPENDIX D

ANALYTICAL DATA PACKAGE



ENVIRONMENTAL PROFILE LABORATORIES

ROUTE 37 BUSINESS PARK
SUITE 13
TOMS RIVER, NJ 08755
OFFICE: (908) 244-6278
FAX: (908) 244-6372

REPORT OF ANALYSIS

SERV-AIR INC.
PO BOX 369
FT. MONMOUTH, NJ

EPL ID # : 6859.1-.6
SAMPLE RECEIVED: 11/14/91
ANALYSIS START : 11/14/91
ANALYSIS COMPD. : 11/14/91

MATRIX: SOIL

TEST PARAMETERS: PETROLEUM HYDROCARBONS

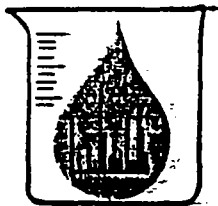
SITE: B2018-S#1-#6

These samples were analyzed by Infrared Spectrophotometry.
Infrared Analyses: EPA METHOD 418.1 Results expressed as ppm.

CLIENT ID	EPL#	RESULTS (mg/Kg)	METHOD DETECTION LIMIT (mg/Kg)
91-612	6859.1	1000-	50
91-613	6859.2	140	10
91-614	6859.3	20000-	1000
91-615	6859.4	9000-	1000
91-616	6859.5	60	10
91-617	6859.6	100	10

ND = NOT DETECTED

LABORATORY DIRECTOR
DANIEL WRIGHT



ENVIRONMENTAL PROFILE LABORATORIES

ROUTE 37 BUSINESS PARK
SUITE 13
TOMS RIVER, NJ 08755
OFFICE: (908) 244-6278
FAX: (908) 244-6372

LABORATORY ANALYSIS REPORT

CLIENT : Serv-Air Inc.

PROJECT: R2-519
BN+15 T=11

Report Number: 6859
Date Received: Nov. 14, 1991
Date Released: Nov. 22, 1991
Data Released By:

Daniel K. Wright
Laboratory Director

CLIENT: Serv-Air Inc.

SAMPLE LOCATION AND IDENTIFICATION

LAB ID NUMBER

SAMPLE IDENTIFICATION

MATRIX

6859.3

91-614

Soil

Environmental
Profile
Laboratories

CUSTOMER PURCHASE ORDER NO:

R2-519

CHAIN OF CUSTODY RECORD

PROJECT NO.:		SAMPLER (SIGNATURE):		DATE / TIME		ANALYSIS PARAMETERS		PRESERVATION METHOD	
CUSTOMER (NAME/ADDRESS)		SITE NAME:		FOX NO:		NUMBER OF CONTAINERS		REMARKS	
LID SAMPLE ID NUMBER	DATE / TIME	SAMPLE MATRIX	CUSTOMER SAMPLE LOCATION/ID NUMBER						
6859, 1	11/8	SOIL	91-612	1	X				ANALYZE FOR
2	11	"	91-613	1	X				BN+15 ONE
3	11	"	91-614	1	X	X			SAMPLE IF
4	11	"	91-615	1	X				GREATER THAN
5	11	"	91-616	1	X				100PPM TPHC
6	11	"	91-617	1	X				
Relinquished By (Signature)		DATE / TIME		Received By (Signature)		METHOD OF SHIPPING:			
Relinquished By (Signature)		DATE / TIME		Received By (Signature)		SHIPPED BY (Signature):			
Relinquished By (Signature)		DATE / TIME		Received for Lab By (Signature):		DATE / TIME			
NOTE: A DRAWING DEPICTING SAMPLE LOCATION SHOULD BE ATTACHED OR DRAWN ON THE REVERSE SIDE OF THIS CHAIN OF CUSTODY.									

LABORATORY CHRONICLE

SAMPLE NUMBER	6859.3						
Received & Refrigerated Date	11/14/91						
Organics Extraction Date							
BN/ABN	NA						
PCB's	NA						
Analysis Date							
BN/ABN	11/21/91						
PCB's	NA						
Volatiles	NA						
TPHC's	NA						
Metals	NA						
Total Solids	NA						
Organic Supervisor Review & Approval	Brian K. McKee						11/30/91
Inorganic Supervisor Review & Approval							

3

METHOD SUMMARY

Base Neutrals / Acid Extractables

The semivolatile samples in this report have been analyzed using the method cited in the USEPA-CLP-IFB version 2/88. The CLP semivolatile method is based on USEPA Method 625 and SW-846 method 8270.

Three base/neutral and three acid surrogates are added to each sample. Aqueous samples are extracted with methylene chloride; soil samples are extracted with a 1 to 1 solution of methylene chloride and acetone. The extracts are then concentrated and the internal standards are added. An Hewlett Packard 5890 GC coupled to the HP 5970 MSD was used for the analysis and data collection.

GC/MS

ORGANIC NON-CONFORMANCE SUMMARY

GC/MS TUNE FREQUENCY:- All samples, blanks, standards and matrix spikes were analyzed within the respective 12 hour tune periods.

INITIAL CALIBRATION REQUIREMENTS:

No CCC or SPCC compound was outside of QC limits.

CONTINUING CALIBRATION REQUIREMENTS:

No CCC or SPCC compound was outside of QC limits

DETECTION LIMITS:- Detection limits and search results were modified by dilution or percent solid.*

* All values reported on a DRY WEIGHT basis where applicable

MATRIX SPIKE RECOVERY:- No matrix spike compound was outside QC limits

INTERNAL STANDARD AREA:-

CLIENT ID #.	NUMBER OF INTERNAL STANDARD AREA(S) out of QC limits.
None	0

SURROGATE RECOVERY:-

Client ID #	Surrogates outside QC limits
None	0

ANALYSIS TIME:- All samples were extracted and analyzed within the prescribed holding times.

DATA REPORTING QUALIFIERS

For reporting results to EPA, the following "results qualifiers" are used:

VALUE - If the result is a value greater than or equal to the detection limit, report the value.

U - Indicates the compound was analyzed for but was not detected. Report the minimum detection limit for the sample with the U, "10U". This is not necessarily the instrument detection limit. The figure represents the minimum detection limit attainable for this particular sample based on any concentration or dilution that may have been required.

J - Indicates an estimated value. This flag is used:

- 1) When estimating a concentration for tentatively identified compounds (library search hits) where a 1:1 response is assumed.
- 2) When the mass spectral data indicated the identification criteria, however, the result was less than the specified detection limit but greater than zero. If the detection limit was 10ug/L and a concentration of 3ug/L was calculated, report as "3J".

B - Indicates the analyte was found in the blank as well as the sample; report as "12B".

E - Indicates the analyte concentration exceeds the calibrated range of the GC/MS instrument for that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

Environmental Profile Laboratories
BASE/NEUTRAL/ACID ANALYSIS DATA

JOB NUMBER
SAMPLE NAME 6859.3 3g 11-18-91
CLIENT ID
DATA FILE >A2204

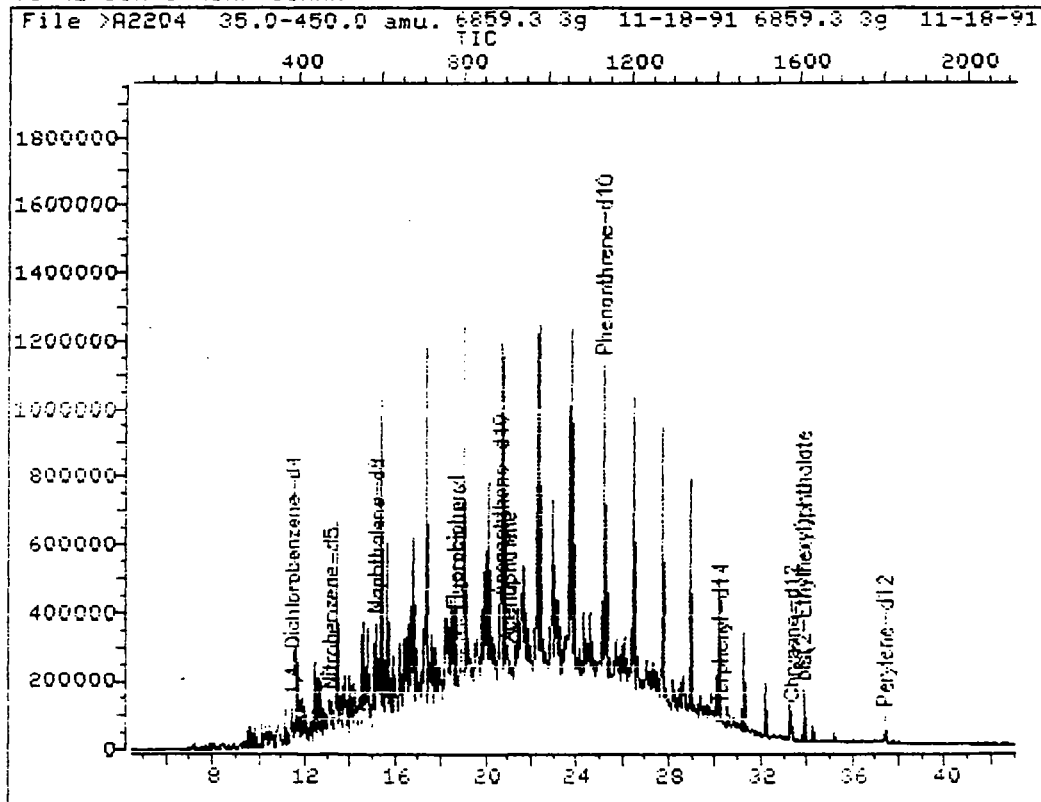
MATRIX Soil
DILUTION FACTOR 10.00
QA BATCH
DATE ANALYZED 11/21/91

COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
N-nitroso-dimethylamine	ND	3800	Diethylphthalate	ND	3800
bis(2-Chloroethyl)Ether	ND	3800	4-Chlorophenyl-phenylether	ND	3800
1,3-Dichlorobenzene	ND	3800	Fluorene	ND	3800
1,4-Dichlorobenzene	ND	3800	N-Nitrosodiphenylamine	ND	3800
Benzyl alcohol	ND	3800	4-Bromophenyl-phenylether	ND	3800
1,2-Dichlorobenzene	ND	3800	Hexachlorobenzene	ND	3800
bis(2-chloroisopropyl)ether	ND	3800	Phenanthrene	ND	3800
N-Nitroso-Di-n-propylamine	ND	3800	Anthracene	ND	3800
Hexachloroethane	ND	3800	Di-n-butylphthalate	ND	3800
Nitrobenzene	ND	3800	Fluoranthene	ND	3800
Isophorone	ND	3800	Benzidine	ND	3800
Benzoic Acid	ND	3800	Pyrene	ND	3800
bis(2-Chloroethoxy)methane	ND	3800	Butylbenzylphthalate	ND	3800
1,2,4-Trichlorobenzene	ND	3800	3,3'-Dichlorobenzidine	ND	3800
Naphthalene	ND	3800	Benz(a)anthracene	ND	3800
Hexachlorobutadiene	ND	3800	bis(2-Ethylhexyl)phthalate	11000	3800
2-Methylnaphthalene	ND	3800	Chrysene	ND	3800
Hexachlorocyclopentadiene	ND	3800	Di-n-octylphthalate	ND	3800
2-Chloronaphthalene	ND	3800	Benzo(b)fluoranthene	ND	3800
Dimethylphthalate	ND	3800	Benzo(k)fluoranthene	ND	3800
Acenaphthylene	ND	3800	Benzo(a)pyrene	ND	3800
Acenaphthene	2100 J	3800	Indeno(1,2,3-cd)pyrene	ND	3800
Dibenzofuran	ND	3800	Dibenz(a,h)anthracene	ND	3800
2,6-Dinitrotoluene	ND	3800	Benzo(g,h,i)perylene	ND	3800
2,4-Dinitrotoluene	ND	3800	1,2-Diphenylhydrazine	ND	3800

Percent Solid of 86.0 is used for all Target compounds.

- (J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

TOTAL ION CHROMATOGRAM



Data File: >A2204::D3

Quant Output File: >A2204::DB

Name: 6859.3 3g 11-18-91

Misc: 6859.3 3g 11-18-91

BTL# 8

Id File: IDBNA::D4

Title: Semivolatile Organics (EPA Methods 825/8270) by GC/MS

Last Calibration: 911121 15:14

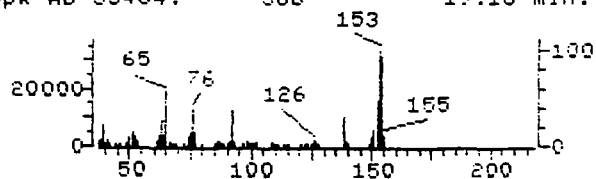
Operator ID: MARK

Quant Time: 911121 18:47

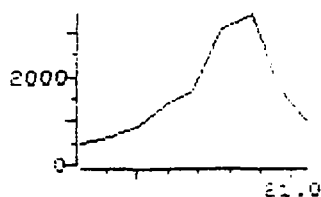
Injected at: 911121 18:04

REFERENCE STANDARD SPECTRUM

File >A1541 Acenaphthene Scan 867
Bpk Ab 33464. SUB 19.16 min.

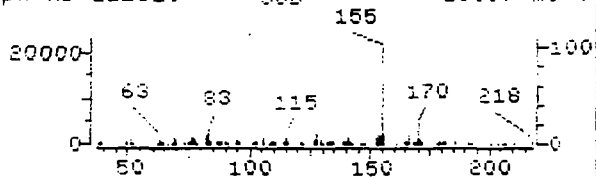


File >A2204 152.7-153.7

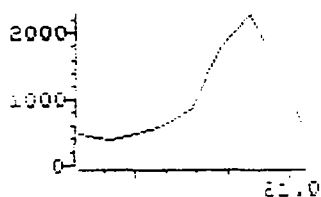


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

File >A2204 6859.3 3g 11-18- Scan 905
Bpk Ab 21202. SUB 20.97 min.

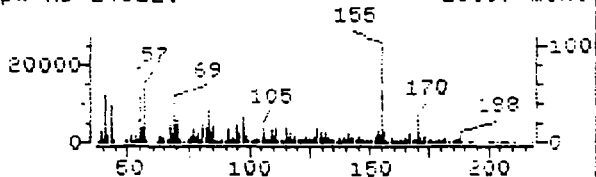


File >A2204 153.7-154.7

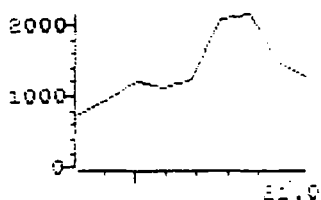


SAMPLE SPECTRUM (UNALTERED)

File >A2204 6859.3 3g 11-18- Scan 905
Bpk Ab 24512. SUB 20.97 min.



File >A2204 151.7-152.7



Data File: >A2204::D3
Name: 6859.3 3g 11-18-31
Misc: 6859.3 3g 11-18-31
Quant Time: 911121 18:47
Injected at: 911121 18:04

Quant Output File: >A2204::DB

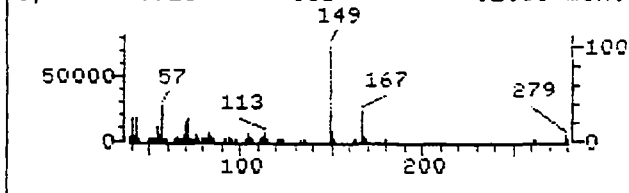
BTL# 8

Quant ID File: IDBNA::D4
Last Calibration: 911121 15:14

Compound No: 44
Compound Name: Acenaphthene
Scan Number: 905
Retention Time: 20.97 min.
Quant Ion: 153.0
Area: 12241
Concentration: 5.50 ng/uL
q-value: 81

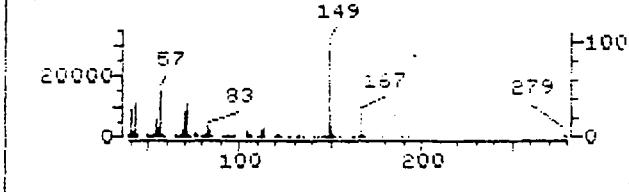
REFERENCE STANDARD SPECTRUM

File >A1541 bis(2-Ethylhexyl) Scan 1606
Bpk Ab 73920. SUB 32.58 min.



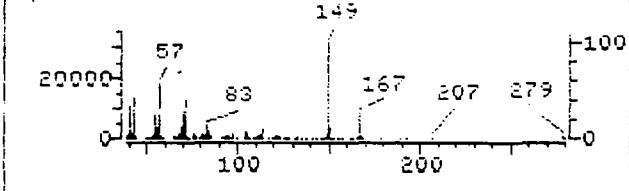
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

File >A2204 6859.3 3g 11-18- Scan 1607
Bpk Ab 31392. SUB 33.82 min.

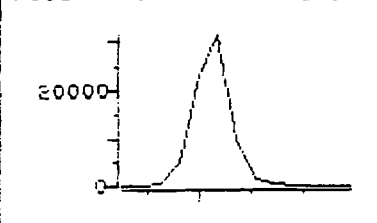


SAMPLE SPECTRUM (UNALTERED)

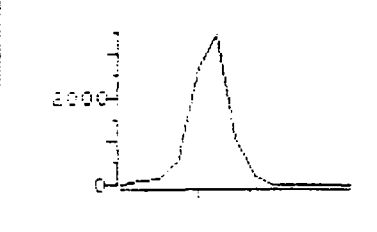
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Bpk Ab 31392. SUB 33.82 min.



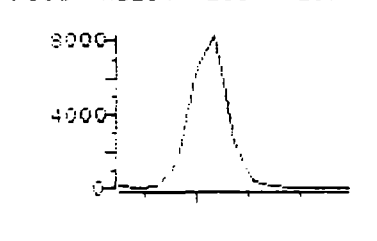
File >A2204 148.7-149.7



File >A2204 149.7-150.7



File >A2204 166.7-167.7



Data File: >A2204::D3
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Misc: 6859.3 3g 11-18-91
Quant Time: 911121 18:47
Injected at: 911121 18:04

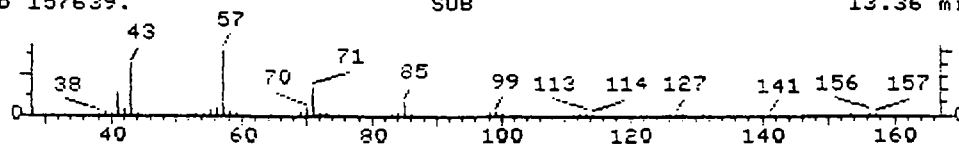
Quant Output File: >A2204::DB

BTL# 8

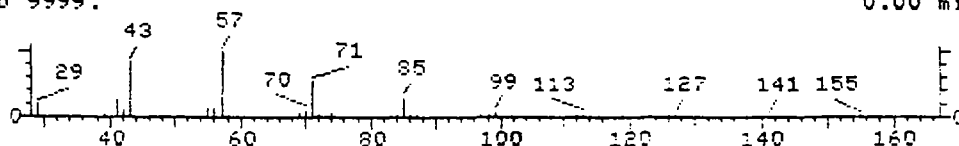
Quant ID File: IDBNA::D4
Last Calibration: 911121 15:14

Compound No: 73
Compound Name: bis(2-Ethylhexyl)phthalate
Scan Number: 1607
Retention Time: 33.82 min.
Quant Ion: 149.0
Area: 78994
Concentration: 29.64 ng/uL
q-value: 98

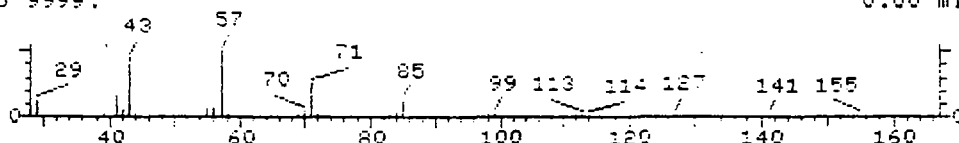
File >A2204 6859.3 3g 11-18-91 6859.3 3g 11-18-91 Scan 488
Bpk Ab 157639. SUB 13.36 min.



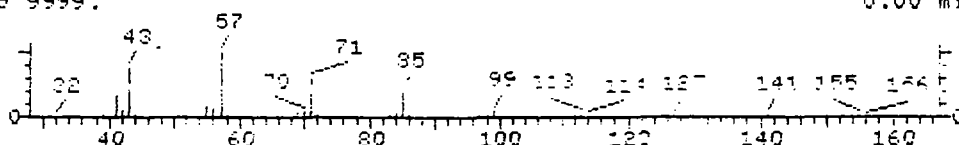
File NBS49K Tetradeane Scan 18383
Bpk Ab 9999. 0.00 min.



File NBS49K Tridecane Scan 15584
Bpk Ab 9999. 0.00 min.



File NBS49K Hexadecane Scan 23535
Bpk Ab 9999. 0.00 min.



UNKNOWN #,1

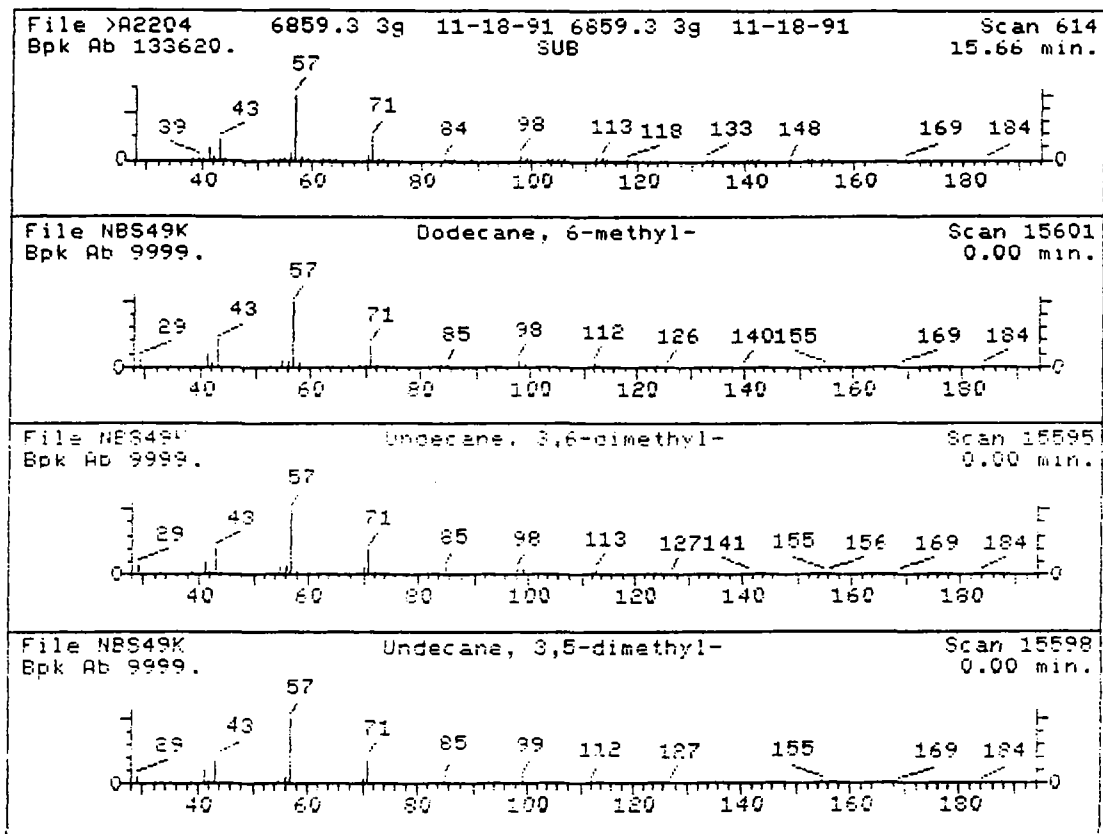
AREA = 1760144. TENTATIVE CONCENTRATION IS 49.00

- | | |
|--------------------------------|------------|
| 1. Tetradeane | 198 C14H30 |
| 2. Tridecane | 184 C13H28 |
| 3. Hexadecane | 226 C16H34 |
| 4. Decane, 6-ethyl-2-methyl- | 184 C13H28 |
| 5. Dodecane, 2,7,10-trimethyl- | 212 C15H32 |
| 6. Undecane, 4,6-dimethyl- | 184 C13H28 |

Sample file: >A2204 Spectrum #: 488
Search speed: 1 Tilting option: F No. of ion ranges searched: 43

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	83	629594	6804	NBS49K	81	27	2	3	82	1	57	23
2.	83	629505	6761	NBS49K	76	30	2	0	82	1	57	27
3.	78	544763	6835	NBS49K	80	40	2	4	75	4	55	14
4.	78	62108218	6767	NBS49K	58	41	2	0	79	5	55	17
5.	76	74645980	4422	NBS49K	78	31	1	4	70	8	45	29
6.	76	17312822	4387	NBS49K	64	34	2	0	70	8	45	23

12



UNKNOWN #,2

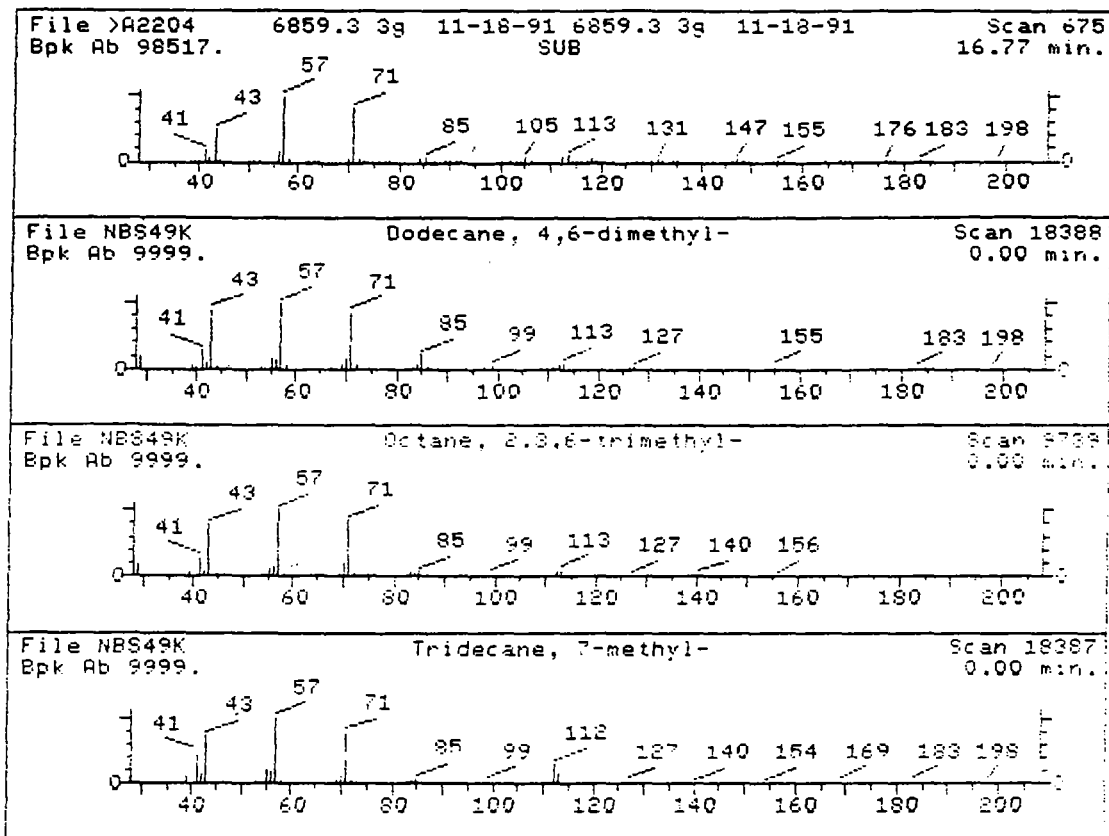
AREA = 1272426. TENTATIVE CONCENTRATION IS 35.00

1. Dodecane, 6-methyl-	184 C13H28
2. Undecane, 3,6-dimethyl-	184 C13H28
3. Undecane, 3,5-dimethyl-	184 C13H28
4. Decane, 2,6,8-trimethyl-	184 C13H28
5. Decane, 2,5,9-trimethyl-	184 C13H28
6. Undecane, 4,6-dimethyl-	184 C13H28

Sample file: >A2204 Spectrum #: 614
Search speed: 1 Tilting option: F No. of ion ranges searched: 51

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
1.	87*	6044719	9562	NBS49K	64	33	2	0	80	5	63	44
2.	87*	17301289	4386	NBS49K	64	33	2	0	70	5	63	44
3.	70*	17312811	9853	NBS49K	41	57	2	0	83	7	42	17
4.	70*	62108263	4392	NBS49K	37	55	2	0	73	9	42	18
5.	60	62108229	4388	NBS49K	43	48	2	0	72	13	30	12
6.	60*	17312822	4387	NBS49K	45	53	2	3	82	11	30	17

13



UNKNOWN #,3

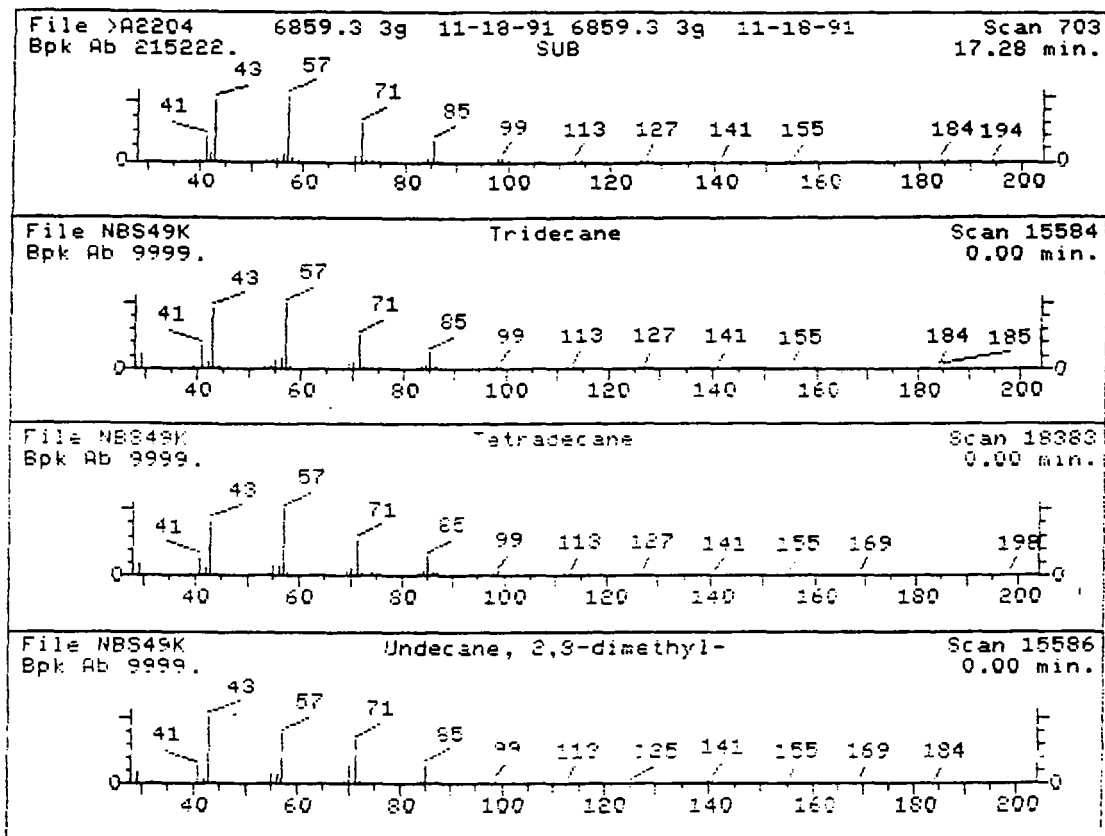
AREA = 1974040. TENTATIVE CONCENTRATION IS 55.00

- | | |
|------------------------------|------------|
| 1. Dodecane, 4,6-dimethyl- | 198 C14H30 |
| 2. Octane, 2,3,6-trimethyl- | 156 C11H24 |
| 3. Tridecane, 7-methyl- | 198 C14H30 |
| 4. Undecane, 6,6-dimethyl- | 184 C13H28 |
| 5. Octane, 3,6-dimethyl- | 142 C10H22 |
| 6. Heptane, 3,3,5-trimethyl- | 142 C10H22 |

Sample file: >A2204 Spectrum #: 675
Search speed: 1 Tilting option: F No. of ion ranges searched: 42

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	70*	61141728	4410	NBS49K	38	72	3	0	96	7	42	13
2.	70	62016335	4356	NBS49K	56	36	3	0	96	8	42	14
3.	56*	26730143	12201	NBS49K	68	43	3	3	100	22	22	28
4.	52	17312764	12432	NBS49K	56	42	2	4	96	17	20	11
5.	34	15869940	12333	NBS49K	47	42	1	0	70	32	12	17
6.	29	7154805	4330	NBS49K	35	49	2	0	81	32	12	12

14



UNKNOWN #,4
AREA = 3754507. TENTATIVE CONCENTRATION IS 100.00

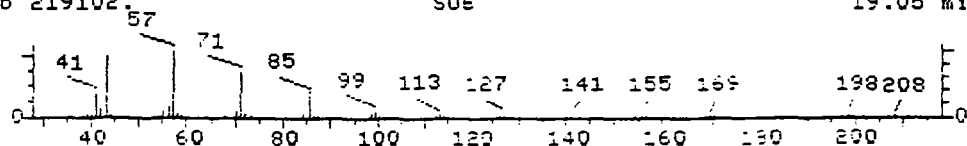
- | | |
|-------------------------------|------------|
| 1. Tridecane | 184 C13H28 |
| 2. Tetradecane | 198 C14H30 |
| 3. Undecane, 2,8-dimethyl- | 184 C13H28 |
| 4. Decane, 5-propyl- | 184 C13H28 |
| 5. Undecane, 4,7-dimethyl- | 184 C13H28 |
| 6. Nonane, 2-methyl-5-propyl- | 184 C13H28 |

Sample file: >A2204 Spectrum #: 703
Search speed: 1 Tilting option: F No. of ion ranges searched: 42

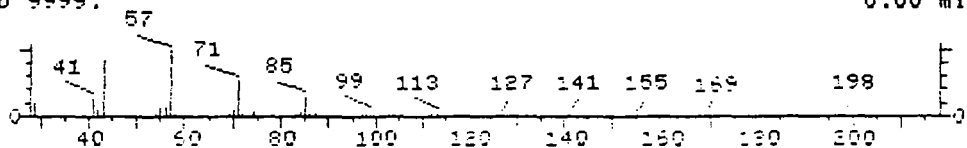
	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	93*	629505	6761	NBS49K	83	23	1	0	86	1	68	80
2.	83	629594	6804	NBS49K	73	29	2	2	89	1	57	23
3.	83	17301256	6763	NBS49K	68	36	2	0	89	4	57	23
4.	79*	17312628	4395	NBS49K	62	49	2	4	90	10	48	33
5.	78	17301325	6771	NBS49K	62	42	2	0	92	3	55	16
6.	78	31081171	4398	NBS49K	53	44	2	0	78	1	55	14

15

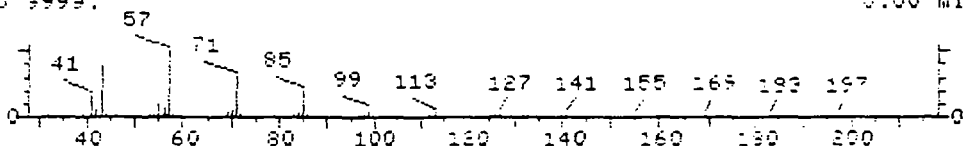
File >A2204 6859.3 3g 11-18-91 6859.3 3g 11-18-91 Scan 800
Bpk Ab 219102. SUE 19.05 min.



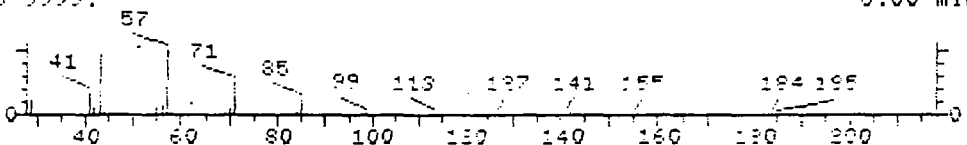
File NBS49K Tetradecane Scan 18383
Bpk Ab 9999. 0.00 min.



File NBS49K Hexadecane Scan 23535
Bpk Ab 9999. 0.00 min.



File NBS49K Tridecane Scan 15584
Bpk Ab 9999. 0.00 min.



UNKNOWN #,5

AREA = 4954722. TENTATIVE CONCENTRATION IS 42.00

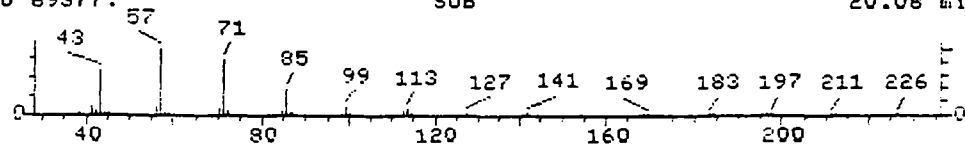
- | | |
|--|------------------|
| 1. Tetradecane | 198 C14H30 |
| 2. Hexadecane | 226 C16H34 |
| 3. Tridecane | 184 C13H28 |
| 4. Eicosane | 282 C20H42 |
| 5. Pentadecane | 212 C15H32 |
| 6. Iron, tricarbonyl[N-(phenyl-2-pyridinylmethylene)benzenamine-N,N']- | 398 C21H14FeN2O3 |

Sample file: >A2204 Spectrum #: 800
Search speed: 1 Tilting option: F No. of ion ranges searched: 44

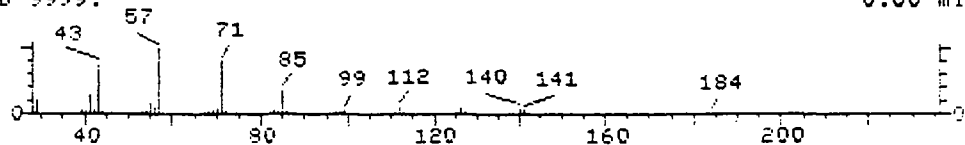
	Prob.	CAS #	CON *	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	89*	629594	6804	NBS49K	82	26	2	0	96	2	66	63
2.	83	544763	6835	NBS49K	88	32	2	3	93	4	57	23
3.	83	629505	6761	NBS49K	73	33	2	0	96	4	57	25
4.	78	112958	6871	NBS49K	100	39	3	4	82	5	55	16
5.	78	629629	6819	NBS49K	63	57	2	0	75	4	55	13
6.	76	74764117	6907	NBS49K	93	42	2	4	100	10	45	23

16

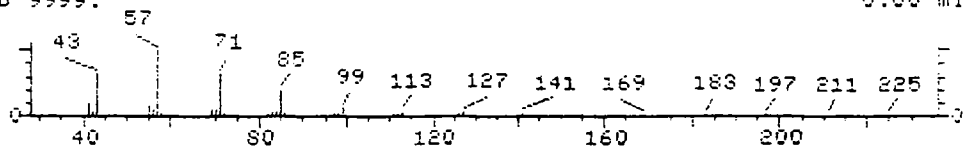
File >A2204 6859.3 3g 11-18-91 6859.3 3g 11-18-91 Scan 856
Bpk Ab 69377. SUB 20.08 min.



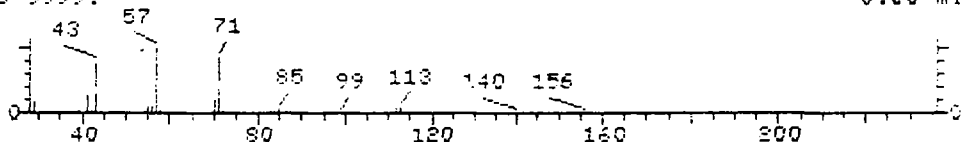
File NBS49K Decane, 5-propyl- Scan 15630
Bpk Ab 9999. 0.00 min.



File NBS49K Iron, tricarbonyl[N-(phenyl-2-pyridinyl)methylene] Scan 48337
Bpk Ab 9999. 0.00 min.



File NBS49K Octane, 2,3,6-trimethyl- Scan 8739
Bpk Ab 9999. 0.00 min.



UNKNOWN #,6

AREA = 1693338. TENTATIVE CONCENTRATION IS 14.00

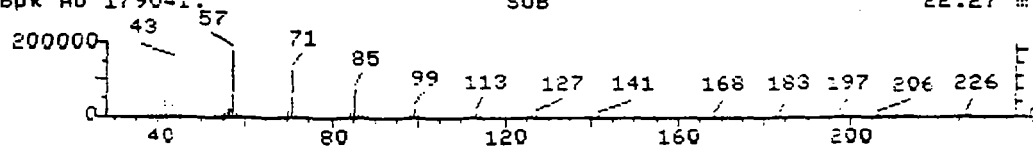
- | | |
|---|------------------|
| 1. Decane, 5-propyl- | 184 C13H28 |
| 2. Iron, tricarbonyl[N-(phenyl-2-pyridinyl)methylene]benzenamine-N,N']- | 398 C21H14FeN2O3 |
| 3. Octane, 2,3,6-trimethyl- | 156 C11H24 |
| 4. Heptane, 3-ethyl-5-methyl- | 142 C10H22 |
| 5. Tridecane, 6-propyl- | 226 C16H34 |
| 6. Undecane, 4,6-dimethyl- | 184 C13H28 |

Sample file: >A2204 Spectrum #: 856
Search speed: 1 Tilting option: F No. of ion ranges searched: 42

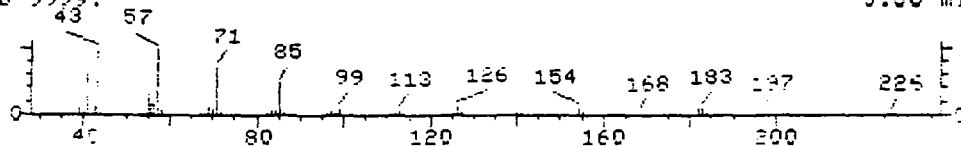
	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
1.	79*	17312628	4395	NBS49K	60	51	2	1	86	7	48	31
2.	78	74764117	6907	NBS49K	63	74	2	0	92	2	55	13
3.	48	62016335	4356	NBS49K	57	35	2	0	86	22	17	19
4.	45	52896909	4332	NBS49K	52	42	2	0	75	23	17	16
5.	43*	55045108	6834	NBS49K	51	78	3	0	67	25	17	14
6.	40*	17312822	4387	NBS49K	49	49	2	0	100	34	16	13

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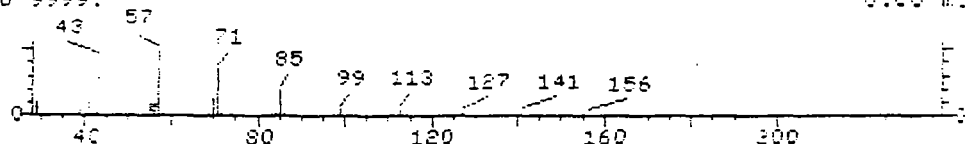
File >A2204 6859.3 3g 11-18-91 6859.3 3g 11-18-91 Scan 976
Bpk Ab 179041. SUB 22.27 min.



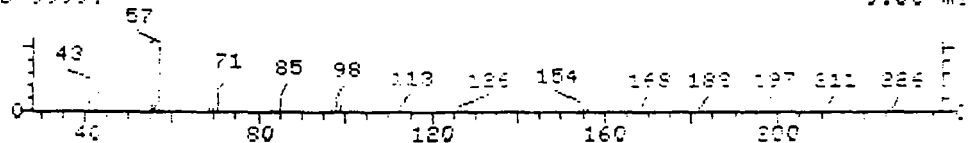
File NBS49K Tridecane, 6-propyl- Scan 23534
Bpk Ab 9999. 0.00 min.



File NBS49K Undecane, 3,8-dimethyl- Scan 15604
Bpk Ab 9999. 0.00 min.



File NBS49K Pentadecane, 6-methyl- Scan 23522
Bpk Ab 9999. 0.00 min.



UNKNOWN #,7

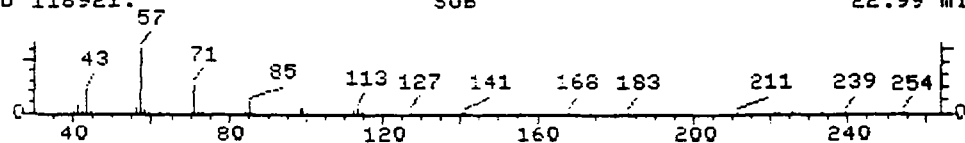
AREA = 3461130. TENTATIVE CONCENTRATION IS 29.00

- | | |
|-------------------------------|------------|
| 1. Tridecane, 6-propyl- | 226 C16H34 |
| 2. Undecane, 3,8-dimethyl- | 184 C13H28 |
| 3. Pentadecane, 6-methyl- | 226 C16H34 |
| 4. Octane, 2,3,6-trimethyl- | 156 C11H24 |
| 5. Tetradecane, 2,5-dimethyl- | 226 C16H34 |
| 6. Nonane, 2,6-dimethyl- | 156 C11H24 |

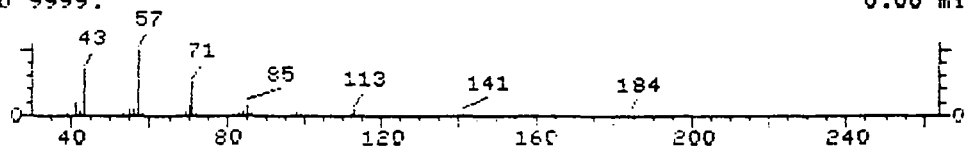
Sample File: >A2204 Spectrum #: 976
Search speed: 1 Tilting option: F No. of ion ranges searched: 42

	Prob	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
1.	83*	55045108	6834	NBS49K	62	67	3	2	77	4	57	23
2.	78	17301303	6766	NBS49K	60	48	2	0	71	4	55	12
3.	43*	10105381	9905	NBS49K	40	74	2	0	100	24	17	14
4.	39	62016335	4356	NBS49K	50	42	2	0	84	30	14	16
5.	37*	56292694	9906	NBS49K	31	80	2	0	77	29	14	14
6.	37	17302282	4354	NBS49K	49	44	2	0	85	30	14	14

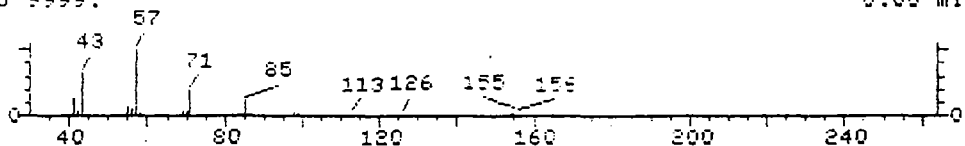
File >A2204 6859.3 3g 11-18-91 6859.3 3g 11-18-91 Scan 1015
Spk Ab 118921. SUB 22.99 min.



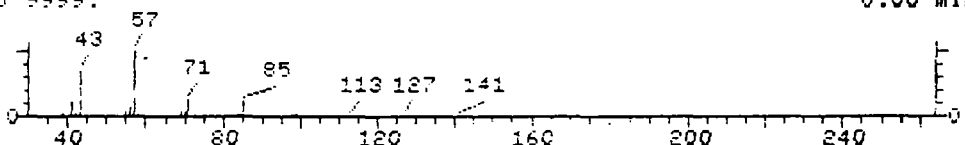
File NBS49K Undecane, 4,6-dimethyl- Scan 15603
Spk Ab 9999. 0.00 min.



File NBS49K Undecane, 5-ethyl- Scan 15631
Spk Ab 9999. 0.00 min.



File NBS49K Octane, 2,4,6-trimethyl- Scan 9743
Spk Ab 9999. 0.00 min.



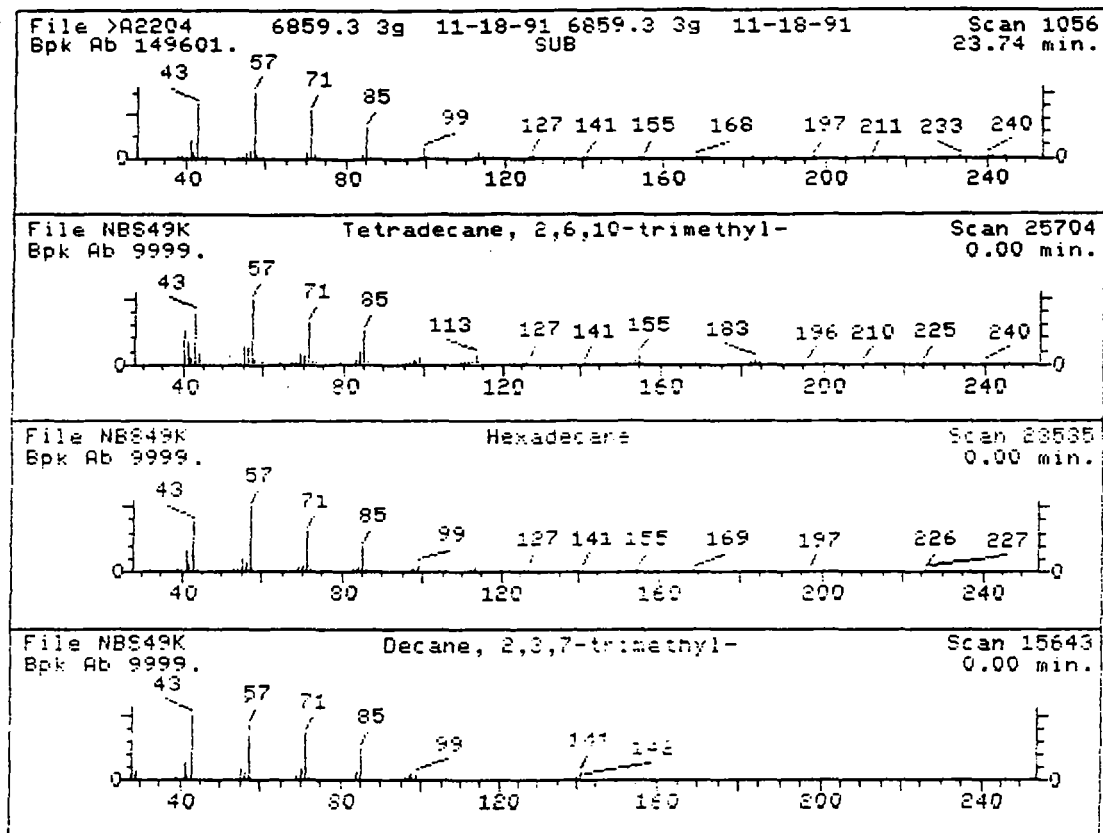
UNKNOWN #,8

AREA = 1924659. TENTATIVE CONCENTRATION IS 29.00

- | | |
|-----------------------------|------------|
| 1. Undecane, 4,6-dimethyl- | 184 C13H28 |
| 2. Undecane, 5-ethyl- | 184 C13H28 |
| 3. Octane, 2,4,6-trimethyl- | 156 C11H24 |
| 4. Dodecane, 4,6-dimethyl- | 198 C14H30 |
| 5. Octane, 2,3,6-trimethyl- | 156 C11H24 |
| 6. Undecane, 6,6-dimethyl- | 184 C13H28 |

Sample file: >A2204 Spectrum #: 1015
Search speed: 1 Tilting option: F No. of ion ranges searched: 45

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	E_IU
1.	70	17312822	4387	NBS49K	57	41	2	0	89	10	42	17
2.	70	17453940	6776	NBS49K	50	48	2	0	80	9	42	12
3.	35	62016379	6679	NBS49K	37	48	2	0	73	29	14	12
4.	29	61141728	4410	NBS49K	43	49	2	0	41	34	12	12
5.	28	62016335	4356	NBS49K	40	37	2	0	46	40	10	14
6.	20	17312764	12432	NBS49K	60	38	2	4	61	54	5	14



UNKNOWN #,9

AREA = 3286429. TENTATIVE CONCENTRATION IS 49.00

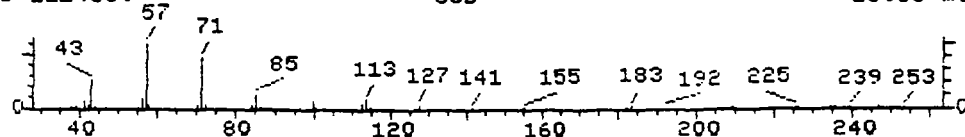
1. Tetradecane, 2,6,10-trimethyl-	240 C17H36
2. Hexadecane	226 C16H34
3. Decane, 2,3,7-trimethyl-	184 C13H28
4. Hexadecane, 7-methyl-	240 C17H36
5. Octane, 3-ethyl-	142 C10H22
6. Heptane, 3,3-dimethyl-	128 C9H20

Sample file: >A2204 Spectrum #: 1056
Search speed: 1 Tilting option: F No. of ion ranges searched: 42

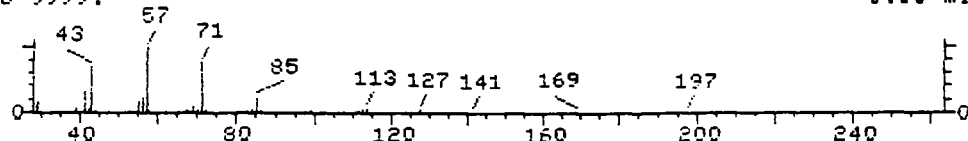
	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	78*	14905567	6847	NBS49K	37	95	3	0	92	3	55	13
2.	78	544763	6835	NBS49K	66	54	2	0	79	3	55	14
3.	70	62238135	6782	NBS49K	64	45	2	0	82	7	42	14
4.	60*	26730201	4433	NBS49K	28	96	3	0	98	14	30	13
5.	37	5881174	4326	NBS49K	49	44	2	0	82	30	14	14
6.	36	4032864	4311	NBS49K	45	46	2	0	97	27	14	13

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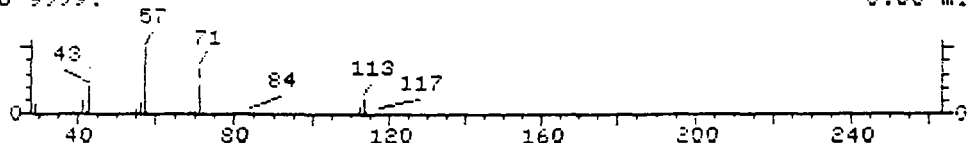
File >A2204 6859.3 3g 11-18-91 6859.3 3g 11-18-91 Scan 1061
Bpk Ab 121433. SUB 23.83 min.



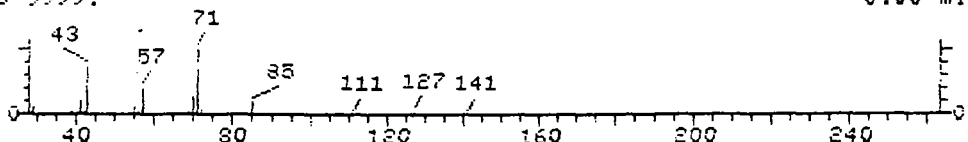
File NBS49K Dodecane, 2,6,11-trimethyl- Scan 21017
Bpk Ab 9999. 0.00 min.



File NBS49K Undecane, 6,6-dimethyl- Scan 15653
Bpk Ab 9999. 0.00 min.



File NBS49K Octane, 2,6,6-trimethyl- Scan 9737
Bpk Ab 9999. 0.00 min.



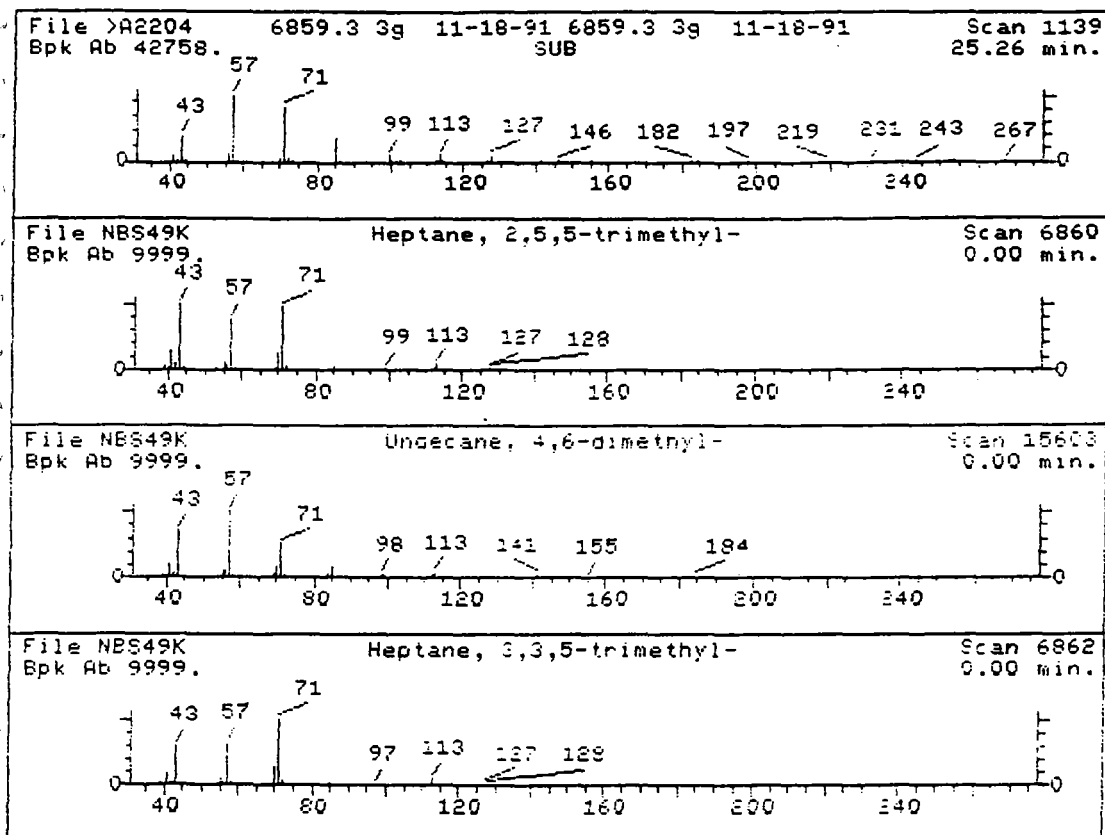
UNKNOWN #,10

AREA = 1906390. TENTATIVE CONCENTRATION IS 28.00

- | | |
|---|------------|
| 1. Dodecane, 2,6,11-trimethyl- | 212 C15H32 |
| 2. Undecane, 6,6-dimethyl- | 184 C13H28 |
| 3. Octane, 2,6,6-trimethyl- | 156 C11H24 |
| 4. Methylamine, N-(1-methylhexylidene)- | 127 C8H17N |
| 5. 3-Buten-2-ol, 2-methyl- | 86 C5H10O |
| 6. Nonane, 3,7-dimethyl- | 156 C11H24 |

Sample file: >A2204 Spectrum #: 1061
Search speed: 1 Tilting option: F No. of ion ranges searched: 42

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
1.	52	31295564	4421	NBS49K	60	46	2	0	74	17	20	13
2.	40	17312764	12432	NBS49K	69	29	2	2	91	27	14	17
3.	36	54166324	4355	NBS49K	41	46	2	0	58	29	14	13
4.	30*	22058715	4298	NBS49K	28	60	3	0	78	34	12	13
5.	25*	115184	4258	NBS49K	34	55	3	0	61	41	8	13
6.	11	17302328	6677	NBS49K	46	41	2	0	54	63	2	15



UNKNOWN #,11

AREA = 1135249. TENTATIVE CONCENTRATION IS 17.00

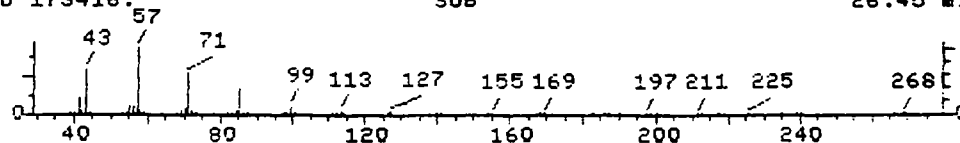
- | | |
|---|-------------|
| 1. Heptane, 2,5,5-trimethyl- | 142 C10H22 |
| 2. Undecane, 4,6-dimethyl- | 184 C13H28 |
| 3. Heptane, 3,3,5-trimethyl- | 142 C10H22 |
| 4. Decane, 5-propyl- | 184 C13H28 |
| 5. Borinic acid, diethyl-, methyl ester | 100 C5H13BO |

Sample file: >A2204 Spectrum #: 1139
Search speed: 1 Tilting option: F No. of ion ranges searched: 45

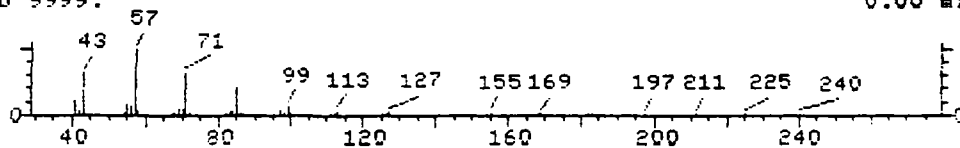
	Prob.	CAS #	CON #	ROOT	K	DK	*FLG	TILT	%	CON	C_I	R_IO
1.	60	1189997	4328	NBS49K	41	49	2	0	88	14	30	12
2.	31*	17312822	4387	NBS49K	31	67	2	0	100	32	12	14
3.	29	7154805	4330	NBS49K	35	49	2	0	64	35	12	12
4.	20*	17312628	4395	NBS49K	27	84	2	0	51	51	5	14
5.	15*	7397468	4267	NBS49K	23	66	2	0	61	57	3	13

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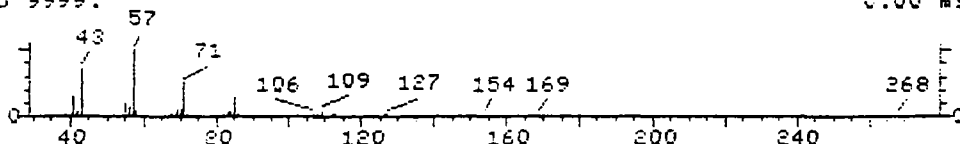
File >A2204 6859.3 3g 11-18-91 6859.3 3g 11-18-91 Scan 1204
Bpk Ab 173416. SUB 26.45 min.



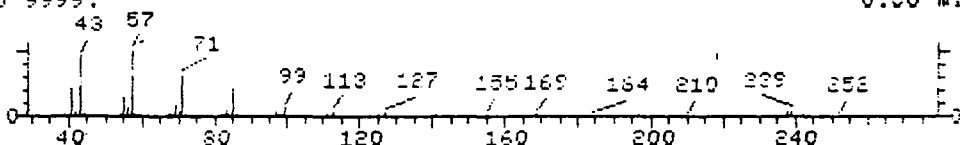
File NBS49K Iron, tricarboxyl[N-(phenyl-2-pyridinylmethylene) Scan 42337
Bpk Ab 9999. 0.00 min.



File NBS49K Nonadecane Scan 29532
Bpk Ab 9999. 0.00 min.



File NBS49K Heptadecane, 9-octyl- Scan 39131
Bpk Ab 9999. 0.00 min.



UNKNOWN #,12

AREA = 2638498. TENTATIVE CONCENTRATION IS 39.00

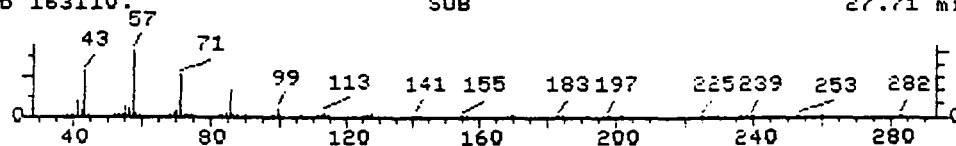
- | | | |
|---|-----|--------------|
| 1. Iron, tricarboxyl[N-(phenyl-2-pyridinylmethylene)ben | 398 | C21H14FeN2O3 |
| zenamine-N,N']- | | |
| 2. Nonadecane | 268 | C19H40 |
| 3. Heptadecane, 9-octyl- | 352 | C25H52 |
| 4. Eicosane, 10-methyl- | 296 | C21H44 |
| 5. Nonane, 3,7-dimethyl- | 156 | C11H24 |
| 6. Hexadecane | 226 | C16H34 |

Sample file: >A2204 Spectrum #: 1204
Search speed: 1 Tilting option: F No. of ion ranges searched: 43

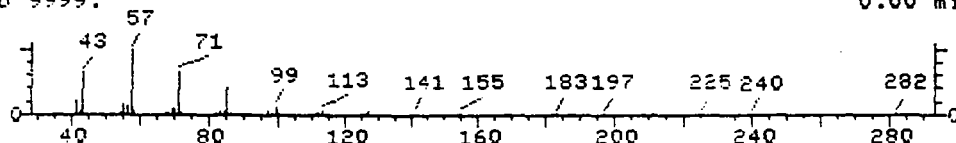
	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
1.	89	74764117	6907	NBS49K	112	25	1	3	83	2	66	60
2.	79*	629925	6864	NBS49K	61	56	2	0	83	9	48	33
3.	78	7225641	6893	NBS49K	63	84	2	0	73	5	55	13
4.	70	54833237	6879	NBS49K	70	67	2	0	71	7	42	16
5.	60	17302328	6677	NBS49K	39	48	2	0	97	11	30	12
6.	60	544763	6835	NBS49K	82	38	2	2	75	14	30	17

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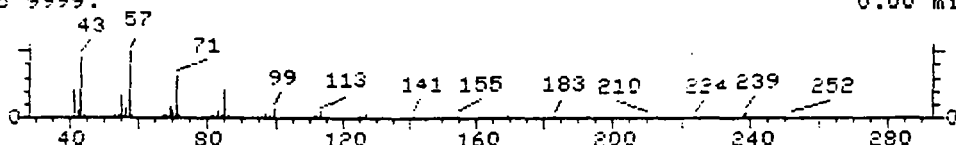
File >A2204 6859.3 3g 11-18-91 6859.3 3g 11-18-91 Scan 1273
Bpk Ab 163110. SUB 27.71 min.



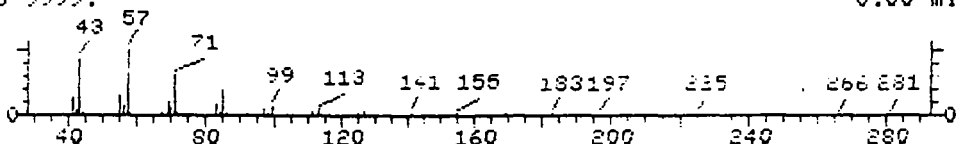
File NBS49K Iron, tricarbonyl[N-(phenyl-2-pyridinylmethylene) Scan 42337
Bpk Ab 9999. 0.00 min.



File NBS49K Heptadecane, 9-octyl- Scan 39131
Bpk Ab 9999. 0.00 min.



File NBS49K Tetracosane, 11-decyl- Scan 46098
Bpk Ab 9999. 0.00 min.



UNKNOWN #,13

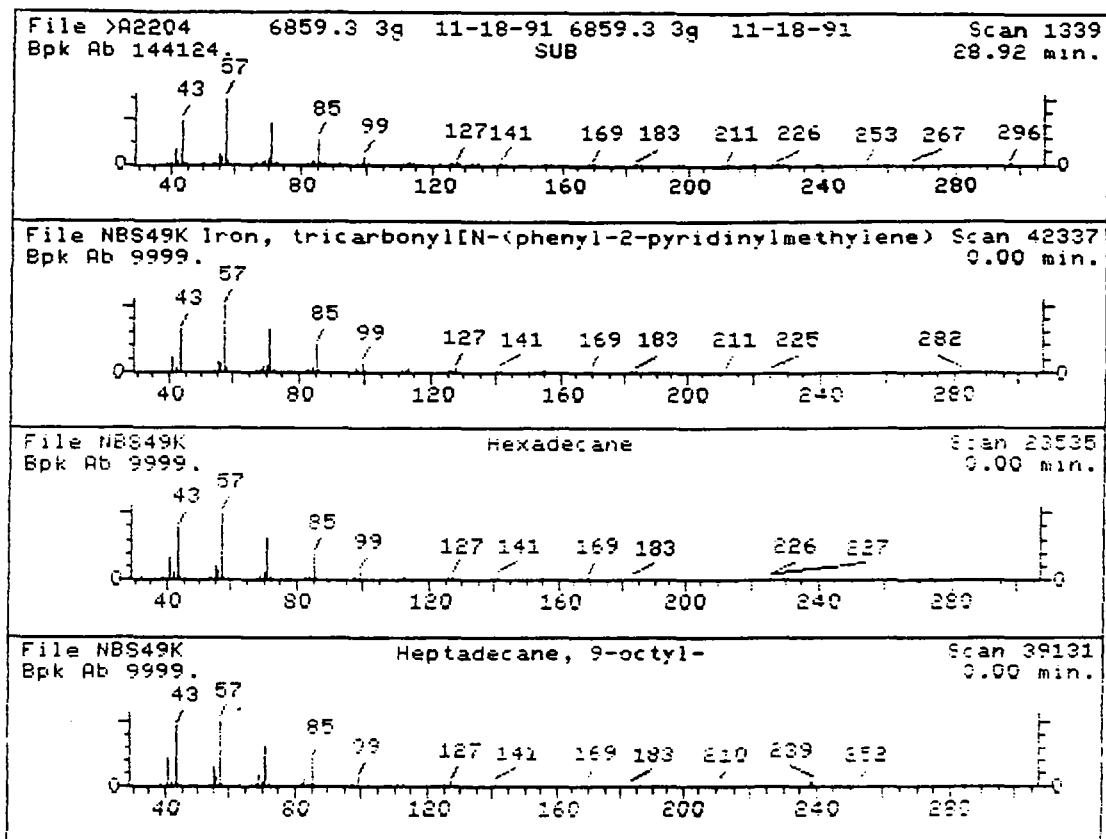
AREA = 2172616. TENTATIVE CONCENTRATION IS 32.00

- | | | |
|---|-----|--------------|
| 1. Iron, tricarbonyl[N-(phenyl-2-pyridinylmethylene)ben | 398 | C21H14FeN2O3 |
| zenamine-N,N']- | | |
| 2. Heptadecane, 9-octyl- | 352 | C25H52 |
| 3. Tetracosane, 11-decyl- | 478 | C34H70 |
| 4. Eicosane, 10-methyl- | 296 | C21H44 |
| 5. Nonane, 2-methyl-5-propyl- | 184 | C13H28 |
| 6. Hexadecane | 226 | C16H34 |

Sample file: >A2204 Spectrum #: 1273

Search speed: 1 Tilting option: F No. of ion ranges searched. 42

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	86	74764117	6907	NBS49K	113	28	2	3	99	2	60	39
2.	78	7225641	6893	NBS49K	63	84	2	0	75	5	55	13
3.	78	55429840	6913	NBS49K	14	94	2	0	74	3	55	14
4.	70	54833237	6879	NBS49K	75	62	2	0	74	7	42	19
5.	70	31081171	4398	NBS49K	54	49	2	0	77	10	42	12
6.	67	544763	6835	NBS49K	75	41	1	1	68	14	34	24



UNKNOWN #,14

AREA = 1654147. TENTATIVE CONCENTRATION IS 25.00

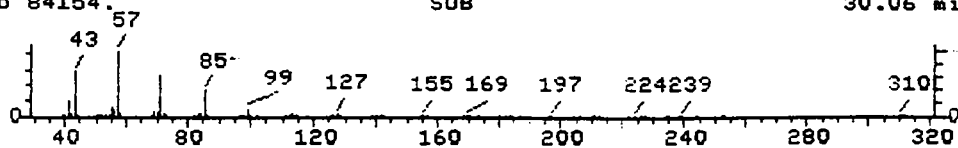
- | | | |
|---|-----|--------------|
| 1. Iron, tricarbonyl[N-(phenyl-2-pyridinylmethylene)ben | 398 | C21H14FeN2O3 |
| zenamine-N,N']- | | |
| 2. Hexadecane | 226 | C16H34 |
| 3. Heptadecane, 9-octyl- | 352 | C25H52 |
| 4. Tetracosane, 11-decyl- | 478 | C34H70 |
| 5. Undecane, 3,8-dimethyl- | 184 | C13H28 |
| 6. Pentadecane | 212 | C15H32 |

Sample file: >A2204 Spectrum #: 1339
Search speed: 1 Tilting option: F No. of ion ranges searched: 43

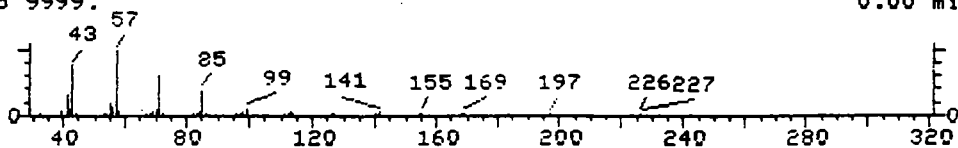
	Prob.	CAS #	CON #	ROOT	K	DK	*FLG	TILT	%	CON	C_I	R_IO
1.	84	74764117	6907	NBS49K	113	24	1	4	99	10	55	60
2.	83*	544763	6835	NBS49K	92	28	1	2	78	14	51	74
3.	78	7225641	6893	NBS49K	63	84	2	0	72	5	55	13
4.	78	55429840	6913	NBS49K	64	94	2	0	75	3	55	14
5.	78	17301303	6766	NBS49K	70	38	2	0	67	5	55	19
6.	78	629629	6819	NBS49K	68	52	2	0	69	5	55	15

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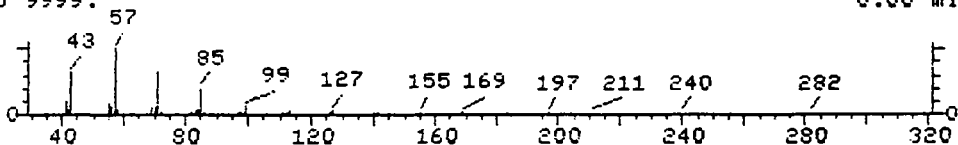
File >A2204 6859.3 3g 11-18-91 6859.3 3g 11-18-91 Scan 1401
Bpk Ab 84154. SUB 30.06 min.



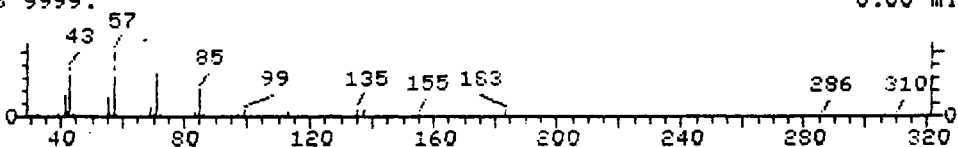
File NBS49K Hexadecane Scan 23535
Bpk Ab 9999. 0.00 min.



File NBS49K Iron, tricarbonyl[N-(phenyl-2-pyridinylmethylene) Scan 42337
Bpk Ab 9999. 0.00 min.



File NBS49K Tridecane, 1-iodo- Scan 34948
Bpk Ab 9999. 0.00 min.



UNKNOWN #,15

AREA = 1148778. TENTATIVE CONCENTRATION IS 180.00

- | | |
|--|------------------|
| 1. Hexadecane | 226 C15H34- |
| 2. Iron, tricarbonyl[N-(phenyl-2-pyridinylmethylene)ben
zenamine-N,N']- | 398 C21H14FeN2O3 |
| 3. Tridecane, 1-iodo- | 310 C13H27I |
| 4. Heptadecane | 240 C17H36 |
| 5. Undecane, 3,8-dimethyl- | 184 C13H28 |
| 6. Heptadecane, 9-octyl- | 352 C25H52 |

Sample file: >A2204 Spectrum #: 1401
Search speed: 1 Tilting option: F No. of ion ranges searched: 43

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	86	544763	6835	NBS49K	103	17	2	2	81	5	60	39
2.	86	74764117	6907	NBS49K	104	33	2	3	100	5	60	32
3.	86*	35599770	6884	NBS49K	71	69	3	2	83	3	60	30
4.	83	629787	6846	NBS49K	90	31	2	3	93	5	57	24
5.	83	17301303	6766	NBS49K	71	37	2	0	68	5	57	21
6.	78	7225641	6893	NBS49K	63	84	2	0	75	5	55	13

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