COPY

United States Army
Fort Monmouth, New Jersey

Underground Storage Tank Closure and Site Investigation Report

Building 787
Main Post-West Area

NJDEP UST Registration No. 0081533-124

September 1998

UNDERGROUND STORAGE TANK
CLOSURE AND SITE INVESTIGATION REPORT

BUILDING 787

MAIN POST-WEST AREA
NJDEP UST REGISTRATION NO. 0081533-124

SEPTEMBER 1998

PREPARED FOR:

UNITED STATES ARMY, FORT MONMOUTH, NEW JERSEY
DIRECTORATE OF PUBLIC WORKS
BUILDING 167
FORT MONMOUTH, NJ 07703

PREPARED BY:

SMC ENVIRONMENTAL SERVICES GROUP
501 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406

PROJECT NO. 2491-308

787.DOC

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EXECUTIVE SUMMARY

UST Closure

On October 14, 1997, a steel underground storage tank (UST) was closed by removal in accordance with the New Jersey Department of Environmental Protection (NJDEP) underground storage tank procedures at the Main Post-West area of the U.S. Army Fort Monmouth, Fort Monmouth, New Jersey. The UST, NJDEP Registration No. 0081533-124 (Fort Monmouth ID No. 787), was located southwest of Building 787. UST No. 0081533-124 was a 1,000-gallon No. 2 fuel oil UST.

Site Assessment

The site assessment was performed by U.S. Army personnel in accordance with the NJDEP *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E) and the NJDEP *Field Sampling Procedures Manual.* The sampling and laboratory analysis conducted during the site assessment were performed in accordance with Section 7:26E-2.1 of the *Technical Requirements for Site Remediation.* Soils surrounding the tank were screened visually and with air monitoring equipment for evidence of contamination. Following removal, the UST was inspected for corrosion holes or punctures. No holes or punctures were noted in the UST. Groundwater was not encountered. No evidence of potentially contaminated soil or groundwater was observed surrounding the tank. Soil samples contained TPHC concentrations ranging from non-detect to 393.06 mg/kg.

Site Restoration

Following receipt of all post-excavation soil sampling results, the excavation was backfilled with crushed stone, sand, and native backfill to grade and restored to its original condition.

Conclusions and Recommendations

Based on the post-excavation soil sampling results, soils with TPHC concentrations exceeding the NJDEP soil cleanup criteria for total organic contaminants of 10,000 mg/kg, do not exist in the former location of the UST or associated piping.

No further action is proposed in regard to the closure and site assessment of UST No. 0081533-124 at Building 787.

1.0 UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES

1.1 OVERVIEW

One underground storage tank (UST), New Jersey Department of Environmental Protection (NJDEP) Registration No. 0081533-124, was closed at Building 787 at the Main Post-West area of U.S. Army Fort Monmouth, Fort Monmouth, New Jersey on October 14, 1997. Refer to site location map on Figure 1. This report presents the results of the Department of Public Works= (DPW) implementation of the UST Decommissioning/Closure Plan approved by the NJDEP. The UST was a steel 1,000-gallon tank containing No. 2 fuel oil.

Decommissioning activities for UST No. 0081533-124 complied with all applicable Federal, State and Local laws and ordinances in effect at the date of decommissioning. These laws included but were not limited to N.J.A.C. 7:14B-1 et seq., N.J.A.C. 5:23-1 et seq., and Occupational Safety and Health Administration (OSHA) 1910.146 & 1910.120. All permits including but not limited to the NJDEP-approved Decommissioning/Closure Plan were posted onsite for inspection. The decommissioning activities were conducted by DPW personnel who are registered and certified by the NJDEP for performing UST closure activities. Closure of UST No. 0081533-124 proceeded under the approval of the NJDEP Bureau of Underground Storage Tanks (NJDEP-BUST). The Standard Reporting Form and signed Site Assessment Summary form for UST No. 0081533-124 are included in Appendices A and B, respectively.

Based on inspecting the UST, field screening of subsurface soils and groundwater, and reviewing analytical results of collected soil samples, the DPW has concluded that no significant historical discharges are associated with the UST or associated piping.

This UST Closure and Site Investigation Report has been prepared by SMC Environmental Services Group, to assist the United States Army Directorate of Public Works (DPW) in complying with the NJDEP-BUST regulations. The applicable NJDEP-BUST regulations at the date of closure were the *Interim Closure Requirements for Underground Storage Tank Systems* (N.J.A.C. 7:14B-1 et seq. October 1990 and revisions dated November 1, 1991).

This report was prepared using information collected at the time of closure. Section 1 of this UST Closure and Site Investigation Report provides a summary of the UST decommissioning activities. Section 2 of this report describes the site investigation activities. Conclusions and recommendations, including the results of the soil sampling investigation, are presented in the final section of this report.

1.2 SITE DESCRIPTION

Building 787 is located in the Main Post-West area of the Fort Monmouth Army Base. UST No. 0081533-124 was located southwest of Building 787 and appurtenant copper piping ran approximately fifteen (15) feet northwest from the excavation to Building 787. A site map is provided on Figure 2.

1.2.1 Geological/Hydrogeological Setting

The following is a description of the geological/hydrogeological setting of the area surrounding Building 787. 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 Main Post area.

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, 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 (Zapecza, 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 Zapecza, 1990).

Local Geology

Based on the regional geologic map (Jablonski, 1968), the Cretaceous age Red Bank and Tinton Sands outcrop at the Main Post 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-coarse-grained sand that contains abundant rock fragments, minor mica and glauconite (Jablonski). The lower member (Sandy Hook) is a dark gray 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).

Hydrogeology

The water table aquifer in the Main Post 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 of wells drilled in the Main Post area, water is typically encountered at depths of 2 to 9 feet below ground surface (bgs). According to Jablonski, wells drilled in the Red Bank and Tinton Sands may produce 2 to 25 gallons per minute (gpm). Some well owners have reported acidic water that requires treatment to remove iron.

Due to the proximity of the Atlantic Ocean to Fort Monmouth, shallow groundwater may be tidally influenced and may flow toward creeks and brooks as the tide goes out, and away from creeks and brooks as the tide comes in. However, an abundance of clay lenses and sand deposits were noted in borings installed throughout Fort Monmouth. Therefore, the direction of shallow groundwater should be determined on a case-by-case basis.

Shallow groundwater is locally influenced within the Main Post area by the following factors:

X tidal influence (based on proximity to the Atlantic Ocean, rivers, and tributaries)
X topography
X nature of the fill material within the Main Post area
X presence of clay and silt lenses in the natural overburden deposits
X local groundwater recharge areas (i.e., streams, 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 Main Post area, which primarily consisted of fine-to-medium grained sands, with occasional lenses or laminations of gravel silt and/or clay.

Building 787 located approximately 400 feet north of Husky Brook, the nearest water body. Based on the Main Post topography, the groundwater flow in the area of Building 787 is anticipated to be to the south.

1.3 HEALTH AND SAFETY

Before, during, and after all decommissioning 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 an organic vapor analyzer (OVA). The individual ascertained if the area was properly vented to render the area safe, as defined by OSHA.

1.4 REMOVAL OF UNDERGROUND STORAGE TANK

1.4.1 General Procedures

X All underground obstructions (utilities, etc.) were identified by the contractor performing the closure prior to excavation activities.

X All activities were carried out with the greatest regard to safety and health and the safeguarding of the environment.

X All excavated soils were visually examined and screened with an OVA for evidence of contamination. Potentially contaminated soils were identified and logged during closure activities.

X Surface materials (i.e., asphalt, concrete, etc.) were excavated and staged separately from all soil and recycled in accordance with all applicable regulations and laws.

X A Sub-Surface Evaluator from the DPW was present during all site assessment activities.

1.4.2 Underground Storage Tank Excavation and Cleaning

Prior to UST decommissioning activities, surficial soil was removed to expose the UST and associated piping. All free product present in the piping was drained into the UST, and the UST was purged to remove vapors prior to cutting and removal of the piping. After removal of the associated piping, a manway was made in the UST to allow for proper cleaning. The UST was completely emptied of all liquids prior to removal from the ground. Approximately 135 gallons of liquid from the UST and its associated piping were transported by Lionetti Oil Recovery Co. Inc to the Lionetti Oil Recovery Co. Inc. facility, a NJDEP-approved petroleum recycling and disposal company located in Old Bridge, New Jersey. Refer to Appendix C for the waste manifest.

The UST was cleaned prior to removal from the excavation in accordance with the NJDEP-BUST regulations. After the UST was removed from the excavation, it was staged on polyethylene sheeting and examined for holes. No holes or punctures were observed during the inspection by the Sub-Surface Evaluator. Soils surrounding the UST were screened visually and with an OVA for evidence of contamination. No evidence of contamination was observed. Soil screening was also performed along the piping run associated with the UST closure. No contamination was noted anywhere along the piping length. Groundwater was not encountered. See Figure 3 for a cross-sectional view of the excavated area.

1.5 UNDERGROUND STORAGE TANK TRANSPORTATION AND DISPOSAL

The tank was transported to Mazza and Sons, Inc., Metal Recyclers. See Appendix D for a copy of the UST disposal certificate and Appendix F for photographs of the UST. The transportation of the UST was in compliance with all applicable regulations and laws.

The UST was labeled prior to transport with the following information:

- X Site of origin
- X Contact person
- X NJDEP UST Facility ID number
- X Former contents

1.6 MANAGEMENT OF EXCAVATED SOILS

Based on OVA air monitoring and TPHC analysis results from the post-excavation soil samples, no soils exhibited signs of contamination. Therefore, the excavated soils were used as backfill following removal of the UST.

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 U.S. Army Fort Monmouth Environmental Laboratory, 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* (1992). Sampling frequency and parameters analyzed complied with the NJDEP-BUST document *Interim Closure Requirements for Underground Storage Tank Systems* (October 1990 and revisions dated November 1, 1991) which was the applicable regulation at the date of the closure. All records of the Site Investigation activities are maintained by the Fort Monmouth DPW Environmental Office.

The following Parties participated in Closure and Site Investigation Activities:

X Subsurface Evaluator: Charles Appleby
Employer: U.S. Army, Fort Monmouth
Phone Number: (732) 532-6224
NJDEP Certification No.: 2056

X Analytical Laboratory: U.S. Army Fort Monmouth Environmental Laboratory
Contact Person: Daniel K. Wright
Phone Number: (908) 532-4359
NJDEP Company Certification No.: 13461

X Hazardous Waste Hauler: Lionetti Oil Recovery Co. Inc
Contact Person: Charles Clayton
Phone Number: (908) 721-0900
NJDEP Hazardous Waste Hauler No.: S6247

2.2 FIELD SCREENING/MONITORING

Field screening was performed by a NJDEP Certified Sub-Surface Evaluator using an OVA and visual observations to identify potentially contaminated material. Soil excavated from around the tank and appurtenant piping, as well as the UST excavation sidewalls and bottom, did not exhibit any evidence of potential contamination. Groundwater was not encountered.

2.3 SOIL SAMPLING

On October 14, 1997, following the removal of the UST, post-excavation soil samples ES, A, B, C, D, E, F, G and DUP E were collected from a total of eight (8) locations of the UST excavation. Samples A, B, and C were collected along the centerline at a depth of 6.5 feet bgs. Sidewall samples D, E, and DUP E were collected at a depth of 6.0 feet bgs. Sample ES was collected from the excavated soil. Piping samples F and G were collected at a depth of 1.0 feet bgs. All samples were analyzed for total petroleum hydrocarbons (TPHC) and total solids.

U.S. Army personnel in accordance with the NJDEP Technical Requirements and the NJDEP Field Sampling Procedures Manual performed the site assessment. A summary of sampling activities including parameters analyzed is provided in Table 1. The post-excavation soil samples were collected using NJDEP *Field Sampling Procedures Manual* (1992) standard sampling procedures. Following soil sampling activities, the samples were chilled and delivered to U.S. Army Fort Monmouth Environmental Laboratory located in Fort Monmouth, New Jersey, for analysis.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 SOIL SAMPLING RESULTS

To evaluate soil conditions following removal of the UST, post-excavation soil samples were collected on October 14, 1997, from a total of eight (8) locations. All samples were analyzed for TPHC and total solids. The post-excavation sampling results were compared to the NJDEP residential direct contact total organic contaminants soil cleanup criteria of 10,000 mg/kg (N.J.A.C. 7:26D and revisions dated February 3, 1994). A summary of the analytical results and comparison to the NJDEP soil cleanup criteria is provided in Table 2 and the soil sampling locations are shown on Figure 4. The analytical data package is provided in Appendix E.

All post-excavation soil samples collected on October 14, 1997, from the UST excavation and from below piping associated with the UST contained concentrations of TPHC below the NJDEP soil cleanup criteria. Samples contained levels of TPHC ranging in concentration from non-detect to 393.06 mg/kg.

3.2 CONCLUSIONS AND RECOMMENDATIONS

The analytical results for all post-excavation soil samples collected from the UST closure excavation at Building 787 were below the NJDEP soil cleanup criteria for total organic contaminants.

Based on the post-excavation sampling results, soils with TPHC concentrations exceeding the NJDEP soil cleanup criteria for total organic contaminants of 10,000 mg/kg, do not exist in the former location of the UST or associated piping.

No further action is proposed in regard to the closure and site assessment of UST No. 0081533-124 at Building 787.

TABLES

TABLE 1

SUMMARY OF POST-EXCAVATION SAMPLING ACTIVITIES
BUILDING 787, MAIN POST-WEST AREA
FORT MONMOUTH, NEW JERSEY

Sample ID	Date of Collection	Date Analysis Started	Matrix	Sample Type	Analytical Parameters*	Analysis Method
ES	10/14/97	10/16/97	Soil	Post-Excavation	TPHC	OQA-QAM-025
A	10/14/97	10/16/97	Soil	Post-Excavation	TPHC	OQA-QAM-025
B	10/14/97	10/16/97	Soil	Post-Excavation	TPHC	OQA-QAM-025
C	10/14/97	10/16/97	Soil	Post-Excavation	TPHC	OQA-QAM-025
D	10/14/97	10/16/97	Soil	Post-Excavation	TPHC	OQA-QAM-025
E	10/14/97	10/16/97	Soil	Post-Excavation	TPHC	OQA-QAM-025
F	10/14/97	10/16/97	Soil	Post-Excavation	TPHC	OQA-QAM-025
G	10/14/97	10/16/97	Soil	Post-Excavation	TPHC	OQA-QAM-025
DUP E	10/14/97	10/16/97	Soil	Post-Excavation	TPHC	OQA-QAM-025

Note:
* TPHC Total Petroleum Hydrocarbons

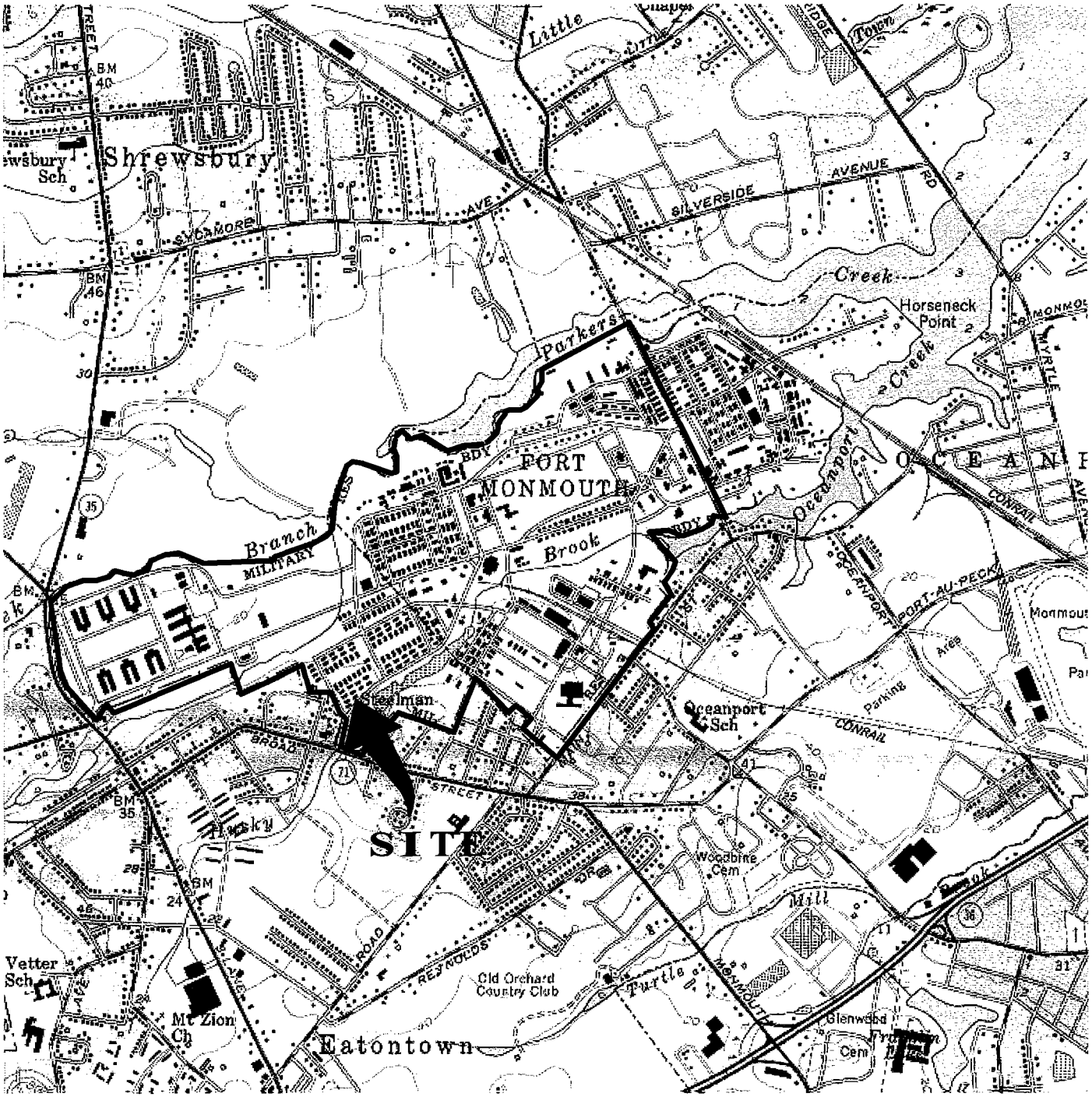
TABLE 2

POST-EXCAVATION SOIL SAMPLING RESULTS
BUILDING 787, MAIN POST-WEST AREA
FORT MONMOUTH, NEW JERSEY

Sample ID/ Depth	Sample Laboratory ID	Sample Date	Analysis Date	Analytical Method Used	Method Detection Limit (mg/kg)	Compound of Concern	Result (mg/kg) *	NJDEP Soil Cleanup Criteria ** (mg/kg)	Exceeds Cleanup Criteria
ES=	3063.01	10/14/97	10/16/97	Total Solid	--	--	95.01	--	--
				TPHC	161	yes	ND	10,000	No
A/6.5=	3063.02	10/14/97	10/16/97	Total Solid	--	--	93.94	--	--
				TPHC	159	yes	ND	10,000	No
B/6.5=	3063.03	10/14/97	10/16/97	Total Solid	--	--	90.53	--	--
				TPHC	166	yes	393.06	10,000	No
C/6.5=	3063.04	10/14/97	10/16/97	Total Solid	--	--	95.68	--	--
				TPHC	157	yes	ND	10,000	No
D/6.0=	3063.05	10/14/97	10/16/97	Total Solid	--	--	96.21	--	--
				TPHC	152	yes	ND	10,000	No
E/6.0=	3063.06	10/14/97	10/16/97	Total Solid	--	--	93.40	--	--
				TPHC	159	yes	ND	10,000	No
F/1.0=	3063.07	10/14/97	10/16/97	Total Solid	--	--	90.06	--	--
				TPHC	172	yes	ND	10,000	No
G/1.0=	3063.08	10/14/97	10/16/97	Total Solid	--	--	91.64	--	--
				TPHC	167	yes	239.32	10,000	No
DUP E/6.0=	3063.09	10/14/97	10/16/97	Total Solid	--	--	92.60	--	--
				TPHC	163	yes	ND	10,000	No

Note:
* Total Solid results are expressed as a percentage.
** NJDEP Residential Direct Contact soil cleanup criteria for total organics
-- Not detected above stated sample quantitation limit
TPHC Total Petroleum Hydrocarbons

FIGURES



LONG BRANCH, N. J.

40073-C8-TF-024

1954

PHOTOREVISED 1981

DMA 6164 I SE-SERIES V822

NEW JERSEY

QUADRANGLE LOCATION

Mapped, edited and published by the Geological Survey

FIGURE 1

SITE LOCATION MAP
Building 787
Main Post-West
Fort Monmouth Army Base
Monmouth County, NJ

SMC Environmental
Services Group
Engineers, Managers, Scientists & Planners
Valley Forge, PA.

SCALE: 1"= 2000'

DATE: OCT 1997

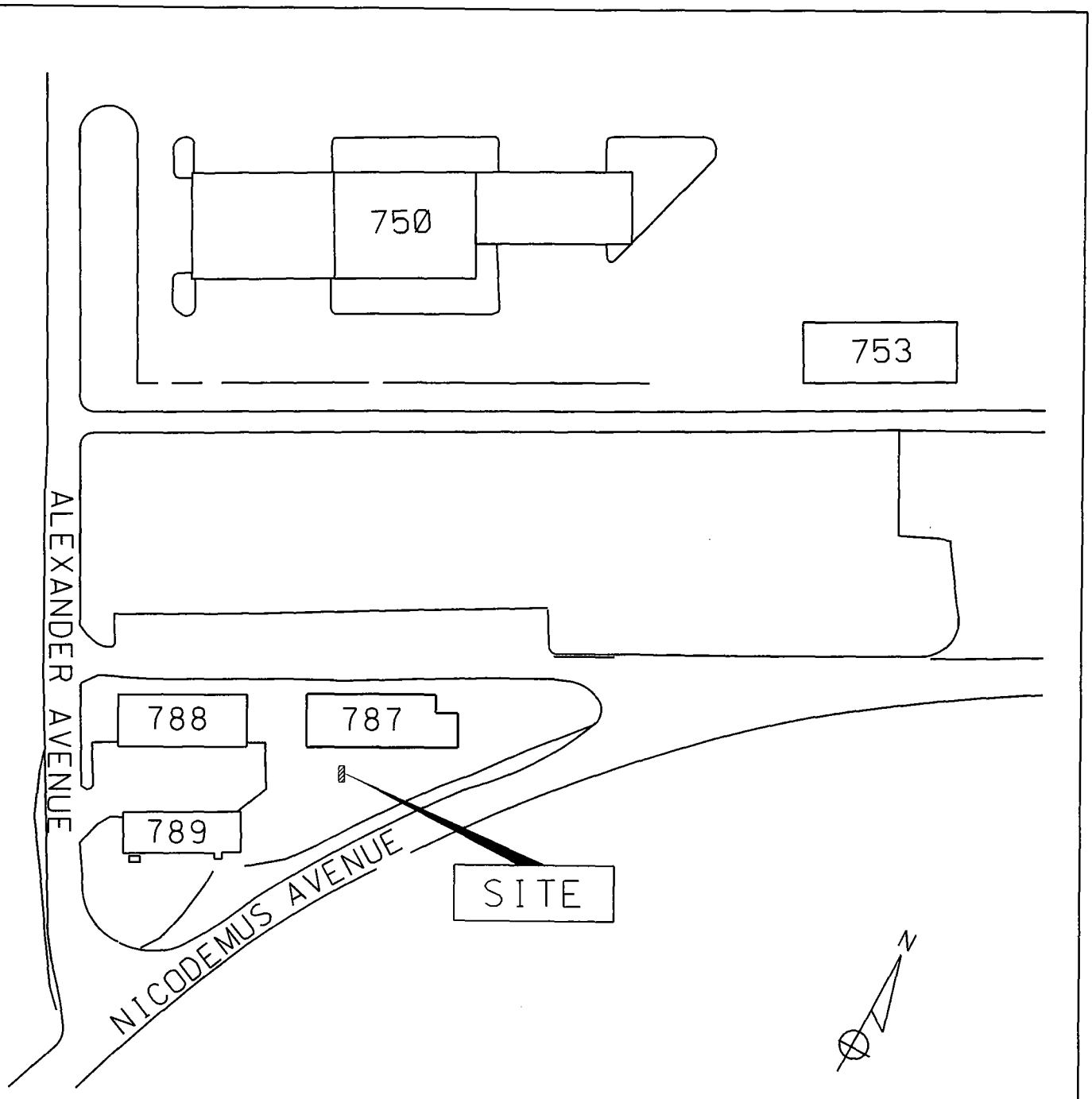


FIGURE 2
SITE MAP
BUILDING 787
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

SMC ENVIRONMENTAL
SERVICES GROUP
Engineers, Managers, Scientists & Planners
VALLEY FORGE, PA.

SCALE: 1"=100'

DATE: OCT. 1997

787 2429 FIG2

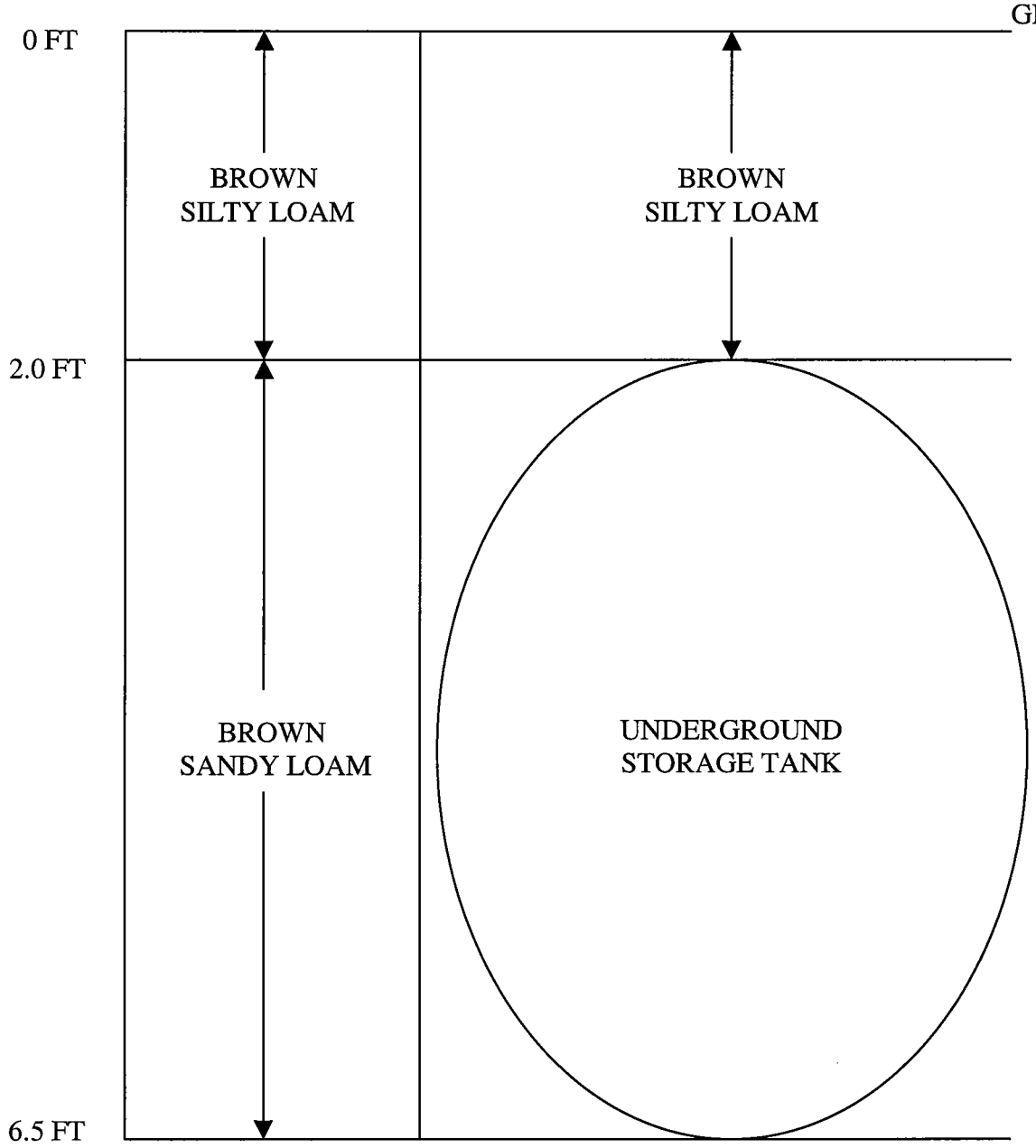
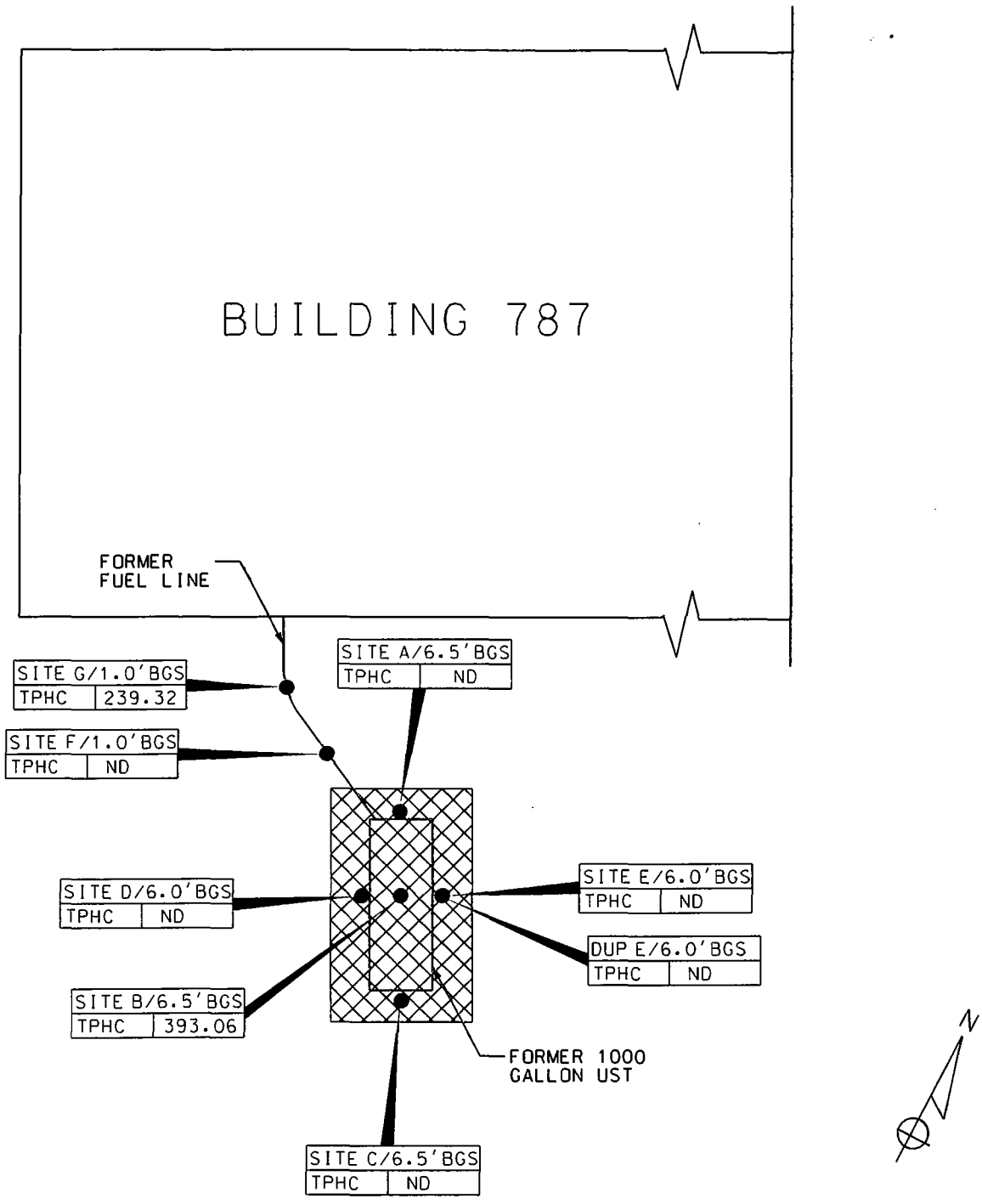


FIGURE 3
CROSS SECTIONAL VIEW
BUILDING 787
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

SMC ENVIRONMENTAL SERVICES GROUP
Engineers, Managers, Scientists & Planners
VALLEY FORGE, PA.

SCALE: NTS | DATE: OCT 1997



LEGEND

- SOIL SAMPLE LOCATION (OCTOBER 14, 1997)
- LIMIT OF EXCAVATION (OCTOBER 14, 1997)

NOTES:

1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS = BELOW GROUND SURFACE

FIGURE 4
SOIL SAMPLING LOCATION MAP
BUILDING 787
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

SMC ENVIRONMENTAL SERVICES GROUP
Engineers, Managers, Scientists & Planners
VALLEY FORGE, PA.

SCALE: 1"=10' | DATE: OCT. 1997

787 2429 FIG4

APPENDIX A

NJDEP-STANDARD REPORTING FORM

State of New Jersey
Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
CN 028
Trenton, NJ 08625-0029

ATTN: UST 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
_X_ Closure (Abandonment or Removal)
___ Temporary Closure
___ Change in Service
___ Sale or Transfer
___ Substantial Modification
___ Financial Responsibility
___ 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
DPW – BUILDING 173
FORT MONMOUTH NJ 07703

2. Facility name and location (if different from above): Main Post West

3. Contact person for this activity: Charles Appleby
Telephone Number: (732) 532 - 6224

4. The identification number of the affected tank as it appears in Question Number 12 on the Registration Questionnaire: 0081533

5. Registration Number (if known): Bldg 787, UST - 124

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 n. .val – check all that apply):
   a. ☐ Abandonment Date: ____/____/____ Case No: _____
   Attach the necessary implementation schedule (3 copies) and all documentation needed for abandonment per N.J.A.C. 7:14B-9.1 (d).
   b. X Removal Date: 10/14/97 Case No. N/A
   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: Effective Date: ____/____/____
   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 _____ Date: ____/____/____
   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: James Ott

Name (print or type): JAMES OTT

Title: DIRECTOR – DEPT OF PUBLIC WORKS Date: 10/14/97

SRF-1/00

(IND/MD-2/92)

APPENDIX B

SITE ASSESSMENT SUMMARY

(12/97) **New Jersey Department of Environmental Protection**

Site Remediation Program

UST Site/Remedial Investigation Report Certification Form

A. Facility Name : U.S. Army Fort Monmouth New Jersey

Facility Street Address : Directorate of Public Works Building 173

Municipality: Eatontown County : Monmouth

Block: Lot(s): Telephone Number : 732-532-6224

B. Owner (RP)'s Name:

Street Address: City :

State: Zip: Telephone Number :

C. (Check as appropriate)

___ Site Investigation Report (SIR) $500 Fee

___ Remedial Investigation Report (RIR) $1000 Fee

_X_ NA – Federal Agreement

D. (Complete all that apply)

- Assigned Case Manager : Ian Curtis, Federal Case Manager
- UST Registration Number : 81533-124 (7 digits)
- Incident Report Number ___•___•___•_____•___ (10 or 12 digits)
  ___•___•___•_____•___
- Tank Closure Number : Federal Case Manager

E. Certification by the Subsurface Evaluator:

The attached report conforms to the specific reporting requirements of N.J.A.C. 7:26E ..... Yes No

Name: Charles Appleby Signature: UST Cert. No.: 2056

Firm: U.S. Army Fort Monmouth Firm's UST Cert. Number: NA - U.S. Army

Firm Address: Directorate of Public Works Building 173 City: Fort Monmouth

State: New Jersey Zip: 07703 Telephone Number : 732-532-6224

(NOTE: Certification numbers required only if work was conducted on USTs regulated per N.J.S.A. 58:10A-21 et seq.)

F. Certification by the Responsible Party(ies) of the Facility:

The following certification shall be signed [according to the requirements of N.J.A.C. 7:14B-1.7(b)]as follows:

1. For a Corporation by a person authorized by a resolution of the board of directors to sign the document. A copy of the resolution, certified as a true copy by the secretary of the corporation, shall be submitted along with the certification; or
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 a principal executive officer or ranking elected Official.

"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 responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate, or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

Name (Print or Type): James Ott Title: Directorate of Public Works

Signature: James Ott

Company Name: U.S. Army Fort Monmouth Date: 1/7/99

APPENDIX C

WASTE MANIFEST

LORCO PETROLEUM SERVICES
RD. 1, BOX 5A - OLD BRIDGE, NJ 08857

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NJ.3.2.1.0.0.2.0.5.9.7 | Manifest Document No. 0.8.1.1.3 | 2. Page 1 of 1 | **NHZ 008113**

3. Generator's Name and Mailing Address
U.S. ARMY COMMUNICATIONS ELECTRONICS COMMAND MAIN POST
C/O J. FALLON BLDG 173 ATTN: SELEM-PW-EV
FORT MONMOUTH, N J 07703
4. Generator's Phone (732) 532-6223

B. 787

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
LIONETTI OIL RECOVERY CC INC	N J D 0 8 4 0 4 4 0 6 4	908 721-0900
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone

9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone
LIONETTI OIL RECOVERY CO INC DBA LORCO PETROLEUM SVCS RUNYON&CHEESEQUAKE RDS OLD BRIDGE,NJ 08857	N J D 0 8 4 0 4 4 0 6 4	908 721-0900

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. PETROLEUM OIL(PETROLEUM OIL) COMBUSTIBLEL LIQUID UN1270 PGIII	0 0 1	T	T02450	G
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
T,L PETROLEUM OIL 42 %
WATER 58 %

E. Handling Codes for Wastes Listed Above
T04 FILTRATION

15. Special Handling Instructions and Additional Information
24 HR EMERGENCY RESPONSE#(908) 721-0900
DECAL#87044 ERG#128 DEXSIL TEST KIT RESULTS _____ PPM
MANIFEST USED FOR TRACKING PURPOSES ONLY

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
JINKER M. DESAI		11	05	97

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
DAN MacKAY		11	05	97

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Richard LaBella		11	05	97

GENERATOR
TRANSPORTER
FACILITY

ORIGINAL - RETURN TO GENERATOR

APPENDIX D

UST DISPOSAL CERTIFICATE

THIS CHECK IS DELIVERED FOR PAYMENT ON THE FOLLOWING ACCOUNTS

DATE		AMOUNT	
TOTAL OF INVOICES			
LESS ___ % DISCOUNT			
LESS FREIGHT			
LESS			
TOTAL DEDUCTIONS			
AMOUNT OF CHECK			

MAZZA & SONS, INC.
RECYCLING DIVISION
3230 SHAFPO RD.
TINTON FALLS, NJ 07753

1483

55-7233/2212

DATE 11/14/97

PAY TO THE ORDER OF Tecom Vinnell $ 193.20

One Hundred Ninety Three + 20/100 DOLLARS

Sovereign Bank

James L Mazza

⑈001483⑈ ⑆221272332⑆000 109109286⑈

MAZZA & SONS, INC.

Metal Recyclers
3230 Shafto Rd.
Tinton Falls, NJ
(908) 922-9292

NO. 995

DATE. 14 Nov 97

Customer's Name Tecom Vinnell

Address

	Weight	Price
Cast Iron		
Steel		
Lt. Iron		
Copper #1		
Copper #2		

B. 787

14380 LB

13460 LB

920

NOV 14 1997

#1483

	Weight	Price
Lt. Copper		
Brass		
Alum Clean		
Lead		
Stainless		
Battery		
		49.70
TOTAL AMOUNT:		

Weigher

Customer

APPENDIX E

SOIL ANALYTICAL DATA PACKAGE

US ARMY FT. MONMOUTH ENVIRONMENTAL LABORATORY
NJDEPE # 13461

REPORT OF ANALYSIS

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Project: Total Petroleum Hydrocarbons
96-1262
Bldg. 787

Project # 3063
Date Rec. 10/15/97
Date Comp. 10/17/97
Released by:

Daniel K. Wright
Laboratory Director

Table of Contents

Method Summary

NJDEP Method OQA-QAM-025-10/97

Gas Chromatographic Determination of Total Petroleum Hydrocarbons in Soil

Fifteen grams (15g)(wet weight) of a soil sample is added to a 125 mL acid cleaned, solvent rinsed, capped Erlenmeyer flask. 15g anhydrous sodium sulfate is added to dry sample. Surrogate standard spiking solution is then added to the flask.

Twenty five milliliters(25mL) Methylene Chloride is added to the flask and it is secured on a gyrotory shaker table. The agitation rate is set to 400rpm and the sample is shaken for 30 minutes. The flask is the removed from the table and the particulate matter is allowed to settle. The extract is transferred to a Teflon capped vial. A second 25mL of Methylene Chloride is added to the flask and shaken for an additional 30 minutes. The flask is again removed and allowed to settle. The extracts are combined in the vial then transferred to a 1mL autosampler vial.

The extract is then injected directly into a GC-FID for analysis. The sample is analyzed for petroleum hydrocarbons covering a range of C8-C42 including pristane and phytane. Total Petroleum Hydrocarbon concentration is determined by integrating between 5 minutes and 22 minutes. The baseline is established by starting the integration after the end of the solvent peak and stopping after the last peak.

The final concentration of Total Petroleum Hydrocarbons is calculated using percent solid, sample weight and concentration.

Report of Analysis
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEP Certification # 13461

Client :	U.S. Army	**Lab. ID # :**	3063
	DPW. SELFM-PW-EV	**Date Rec'd:**	15-Oct-97
	Bldg. 173	**Analysis Start:**	16-Oct-97
	Ft. Monmouth, NJ 07703	**Analysis Complete:**	17-Oct-97
Analysis:	OQA-QAM-025	**UST Reg. #:**	
Matrix:	Soil	**Closure #:**	
Analyst:	D.DEINHARDT	**DICAR #:**	
Ext. Meth:	Shake	**Location #:**	B. 787

Sample	Field ID	Dilution Factor	Weight (g)	% Solid	MDL (mg/kg)	TPHC Result (mg/kg)
3063.01	787-ES	1.00	15.33	95.01	161	ND
3063.02	787-A	1.00	15.69	93.94	159	ND
3063.03	787-B	1.00	15.63	90.53	166	393.06
3063.04	787-C	1.00	15.60	95.68	157	ND
3063.05	787-D	1.00	16.05	96.21	152	ND
3063.06	787-E	1.00	15.81	93.40	159	ND
3063.07	787-F	1.00	15.21	90.06	172	ND
3063.08	787-G	1.00	15.38	91.64	167	239.32
3063.09	787-DUP	1.00	15.54	92.60	163	ND
METHOD BLANK	16-Oct-97	1.00	15.00	100.00	157	ND

ND = Not Detected

MDL = Method Detection Limit

Daniel K. Wright
Laboratory Director

Response Factor Report FID/TCD

Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997

Calibration Files
1 =T02563.D 2 =T02562.D 3 =T02561.D
4 =T02560.D 5 =T02559.D

		Compound	1	2	3	4	5	Avg		%RSD
1)	t	C8	1.239	1.233	1.136	1.165	1.149	1.184	E4	4.06
2)	t	C10	1.261	1.273	1.178	1.200	1.187	1.220	E4	3.62
3)	t	C12	1.329	1.346	1.248	1.268	1.259	1.290	E4	3.43
4)	t	C14	1.358	1.369	1.269	1.289	1.283	1.314	E4	3.53
5)	t	C16	1.374	1.394	1.290	1.310	1.304	1.334	E4	3.48
6)	t	C18	1.608	1.612	1.492	1.475	1.545	1.546	E4	4.10
7)	t	C20	1.484	1.499	1.382	1.409	1.393	1.433	E4	3.77
8)	t	C22	1.462	1.489	1.385	1.416	1.410	1.432	E4	2.93
9)	t	C24	1.479	1.469	1.363	1.400	1.393	1.421	E4	3.56
10)	t	C26	1.352	1.295	1.330	1.367	1.378	1.344	E4	2.47
11)	t	C28	1.232	1.272	1.214	1.253	1.350	1.264	E4	4.17
12)	t	C30	1.176	1.209	1.155	1.214	1.356	1.222	E4	6.43
13)	t	C32	1.077	1.131	1.072	1.187	1.230	1.139	E4	6.03
14)	t	C34	1.033	1.069	0.948	1.179	1.089	1.064	E4	7.91
15)	t	C36	8.305	8.680	6.669	9.566	8.289	8.302	E3	12.64
16)	t	C38	5.760	5.941	3.889	6.293	5.501	5.477	E3	17.04
17)	t	C40	3.163	3.285	1.884	3.423	2.984	2.948	E3	20.90
18)	t	c42	1.608	1.557	0.832	1.656	1.400	1.411	E3	23.92
19)	T	Pristane	1.484	1.490	1.364	1.403	1.349	1.418	E4	4.65
20)	T	Phytane	1.502	1.513	1.389	1.413	1.393	1.442	E4	4.19
21)	s	o-terphenyl	1.615	1.629	1.504	1.542	1.531	1.564	E4	3.52
22)	t	TPHC - total	1.804	1.668	1.279	1.394	1.322	1.494	E4	15.43

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\971016\T02708.D
Acq On : 16 Oct 97 11:27 pm
Sample : 50 PPM STANDARD
Misc :
IntFile : TPHCINT.E

Vial: 2
Operator: DEINHARDT
Inst : FID/TCD
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	t	C8	11.844	11.908 E3	-0.5	100	-0.02
2	t	C10	12.199	12.490 E3	-2.4	101	-0.01
3	t	C12	12.899	13.202 E3	-2.3	101	0.00
4	t	C14	13.135	13.374 E3	-1.8	100	0.00
5	t	C16	13.343	13.589 E3	-1.8	100	-0.01
6	t	C18	15.464	15.308 E3	1.0	97	-0.01
7	t	C20	14.334	14.666 E3	-2.3	102	-0.01
8	t	C22	14.324	14.685 E3	-2.5	101	-0.01
9	t	C24	14.208	14.595 E3	-2.7	102	-0.01
10	t	C26	13.442	14.352 E3	-6.8	106	-0.01
11	t	C28	12.641	13.733 E3	-8.6	114	-0.01
12	t	C30	12.219	13.489 E3	-10.4	121	-0.02
13	t	C32	11.393	12.178 E3	-6.9	122	-0.02
14	t	C34	10.635	10.405 E3	2.2	119	-0.02
15	t	C36	8.302	7.486 E3	9.8	119	-0.02
16	t	C38	5.477	4.603 E3	16.0	121	-0.03
17	t	C40	2.948	2.346 E3	20.4	124	-0.04
18	t	c42	1.411	1.087 E3	23.0	126	-0.05
19	T	Pristane	14.180	14.428 E3	-1.7	101	-0.01
20	T	Phytane	14.419	14.731 E3	-2.2	102	-0.01
21	s	o-terphenyl	15.642	16.023 E3	-2.4	105	-0.01
22	t	TPHC - total	14.936	14.385 E3	3.7	106	0.91#

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\971016\T02719.D Vial: 2
Acq On : 17 Oct 97 7:01 am Operator: DEINHARDT
Sample : 50 PPM STANDARD Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E

Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	t	C8	11.844	12.243 E3	-3.4	103	-0.02
2	t	C10	12.199	13.082 E3	-7.2	106	-0.01
3	t	C12	12.899	13.884 E3	-7.6	106	-0.01
4	t	C14	13.135	14.039 E3	-6.9	105	-0.01
5	t	C16	13.343	14.200 E3	-6.4	104	-0.01
6	t	C18	15.464	16.388 E3	-6.0	104	-0.01
7	t	C20	14.334	15.265 E3	-6.5	106	-0.01
8	t	C22	14.324	15.255 E3	-6.5	105	-0.01
9	t	C24	14.208	15.121 E3	-6.4	106	-0.01
10	t	C26	13.442	14.843 E3	-10.4	110	-0.01
11	t	C28	12.641	14.207 E3	-12.4	118	-0.01
12	t	C30	12.219	13.935 E3	-14.0	125	-0.02
13	t	C32	11.393	12.492 E3	-9.6	125	-0.02
14	t	C34	10.635	10.564 E3	0.7	121	-0.02
15	t	C36	8.302	7.413 E3	10.7	118	-0.02
16	t	C38	5.477	4.397 E3	19.7	116	-0.03
17	t	C40	2.948	2.147 E3	27.2#	113	-0.04
18	t	c42	1.411	0.933 E3	33.9#	108	-0.05
19	T	Pristane	14.180	14.866 E3	-4.8	104	-0.01
20	T	Phytane	14.419	15.319 E3	-6.2	106	-0.01
21	s	o-terphenyl	15.642	16.591 E3	-6.1	109	-0.01
22	t	TPHC - total	14.936	14.275 E3	4.4	105	0.91#

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Report of Analysis
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEP Certification # 13461

Surrogate Recovery Report

Lab. ID # : 3063

Location #: B. 787

Sample		Surrogate Added (ppm)	Amount Recovered (ppm)	Percent Recovery
3063.01		10.00	12.43	124.33
3063.02		10.00	12.22	122.18
3063.03		10.00	12.92	129.22
3063.04		10.00	12.55	125.51
3063.05		10.00	12.39	123.90
3063.06		10.00	12.29	122.90
3063.07		10.00	12.51	125.07
3063.08		10.00	12.54	125.37
3063.09		10.00	12.30	122.95
METHOD BLANK	16-Oct-97	10.00	12.36	123.62

Surrogate Added : **o-Terphenyl**

10/21/97

Report of Analysis
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEP Certification # 13461

Matrix Spike Recovery Report

Lab. ID # : 3063
Location #: B. 787

Sample	Spike Amount Added (ppm)	Sample Amount (ppm)	Matrix Spike Amount (ppm)	Percent Recovery	QC Limits %
3062.15MS	1000	0.00	1056.43	105.64	75-125
3062.15MSD	1000	0.00	1020.68	102.07	75-125

RPD	3.44	20.00

10/21/97

Report of Analysis
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEP Certification # 13461

Blank Spike Recovery Report

Lab. ID # : 3063

Location #: B. 787

Sample	Date Extracted	Spike Amount Added (ppm)	Matrix Spike Amount (ppm)	Percent Recovery	QC Limits %
Blank Spike	16-Oct-97	1000	1001.94	100.19	75-125

10/21/97

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\971016\T02718.D Vial: 23
Acq On : 17 Oct 97 6:21 am Operator: DEINHARDT
Sample : 3063.01 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 17 6:49 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Initial Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
21) s	o-terphenyl	13.64	194467	12.433	mg/L
Spiked Amount	10.000	Recovery	=	124.33%	
	Target Compounds				
1) t	C8	0.00	0	N.D.	mg/L
2) t	C10	0.00	0	N.D.	mg/L
3) t	C12	0.00	0	N.D.	mg/L
4) t	C14	0.00	0	N.D.	mg/L
5) t	C16	0.00	0	N.D.	mg/L
6) t	C18	0.00	0	N.D.	mg/L
7) t	C20	0.00	0	N.D.	mg/L
8) t	C22	0.00	0	N.D.	mg/L
9) t	C24	14.70	3202	0.225	mg/L
10) t	C26	0.00	0	N.D.	mg/L
11) t	C28	0.00	0	N.D.	mg/L
12) t	C30	0.00	0	N.D.	mg/L
13) t	C32	0.00	0	N.D.	mg/L
14) t	C34	0.00	0	N.D.	mg/L
15) t	C36	0.00	0	N.D.	mg/L
16) t	C38	0.00	0	N.D.	mg/L
17) t	C40	0.00	0	N.D.	mg/L
18) t	c42	0.00	0	N.D.	mg/L
19) T	Pristane	0.00	0	N.D.	mg/L
20) T	Phytane	0.00	0	N.D.	mg/L
22) t	TPHC - total	0.00	0	N.D.	mg/L

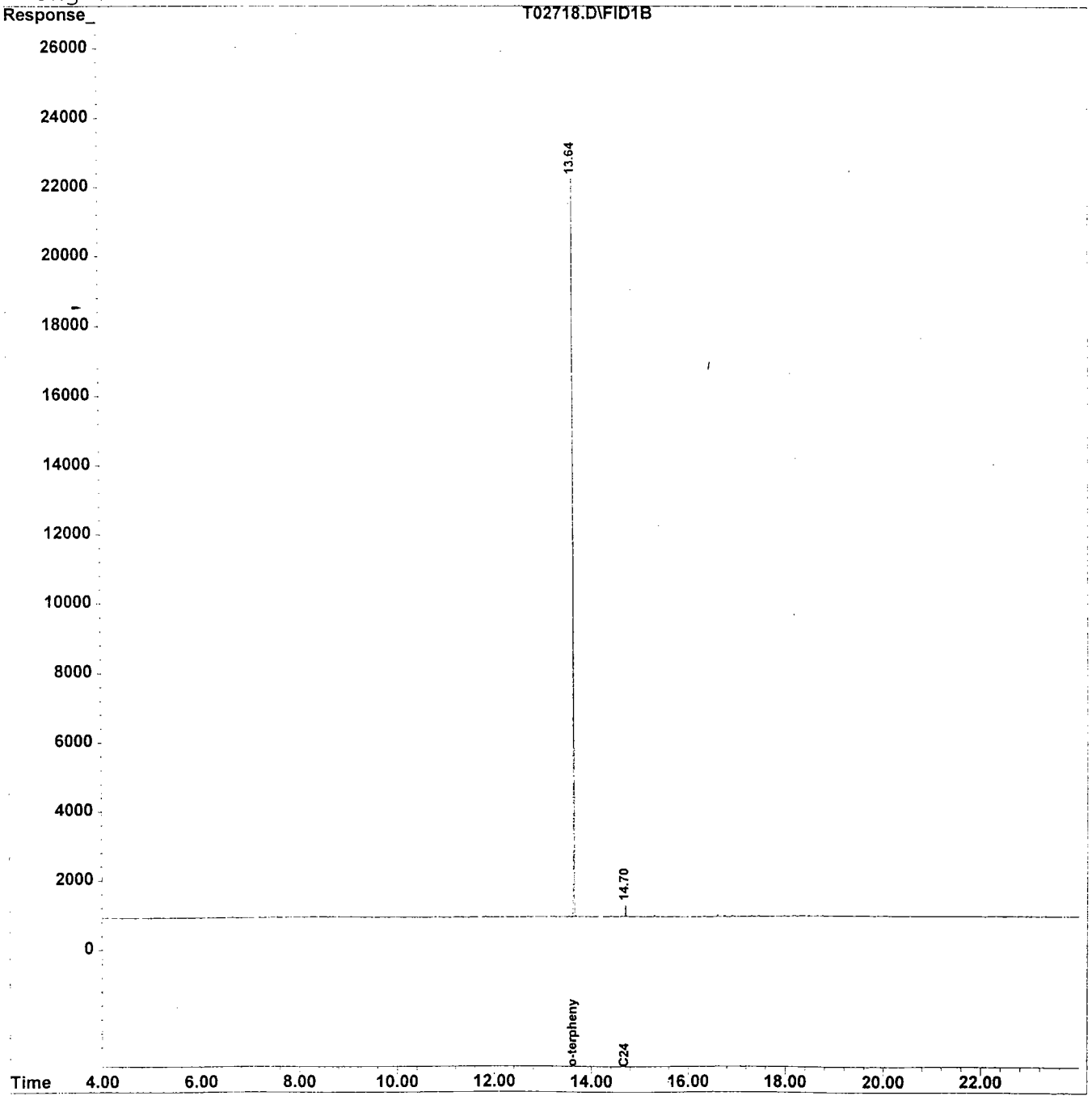
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\971016\T02718.D Vial: 23
Acq On : 17 Oct 97 6:21 am Operator: DEINHARDT
Sample : 3063.01 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 17 6:49 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Multiple Level Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\971016\T02720.D Vial: 25
Acq On : 17 Oct 97 7:42 am Operator: DEINHARDT
Sample : 3063.02 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 17 8:10 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Initial Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
21) s	o-terphenyl	13.64	191111	12.218	mg/L
Spiked Amount	10.000	Recovery	=	122.18%	
	Target Compounds				
1) t	C8	0.00	0	N.D.	mg/L
2) t	C10	0.00	0	N.D.	mg/L
3) t	C12	0.00	0	N.D.	mg/L
4) t	C14	0.00	0	N.D.	mg/L
5) t	C16	0.00	0	N.D.	mg/L
6) t	C18	0.00	0	N.D.	mg/L
7) t	C20	0.00	0	N.D.	mg/L
8) t	C22	0.00	0	N.D.	mg/L
9) t	C24	14.71	3055	0.215	mg/L
10) t	C26	0.00	0	N.D.	mg/L
11) t	C28	0.00	0	N.D.	mg/L
12) t	C30	0.00	0	N.D.	mg/L
13) t	C32	0.00	0	N.D.	mg/L
14) t	C34	0.00	0	N.D.	mg/L
15) t	C36	0.00	0	N.D.	mg/L
16) t	C38	0.00	0	N.D.	mg/L
17) t	C40	0.00	0	N.D.	mg/L
18) t	c42	0.00	0	N.D.	mg/L
19) T	Pristane	0.00	0	N.D.	mg/L
20) T	Phytane	0.00	0	N.D.	mg/L
22) t	TPHC - total	0.00	0	N.D.	mg/L

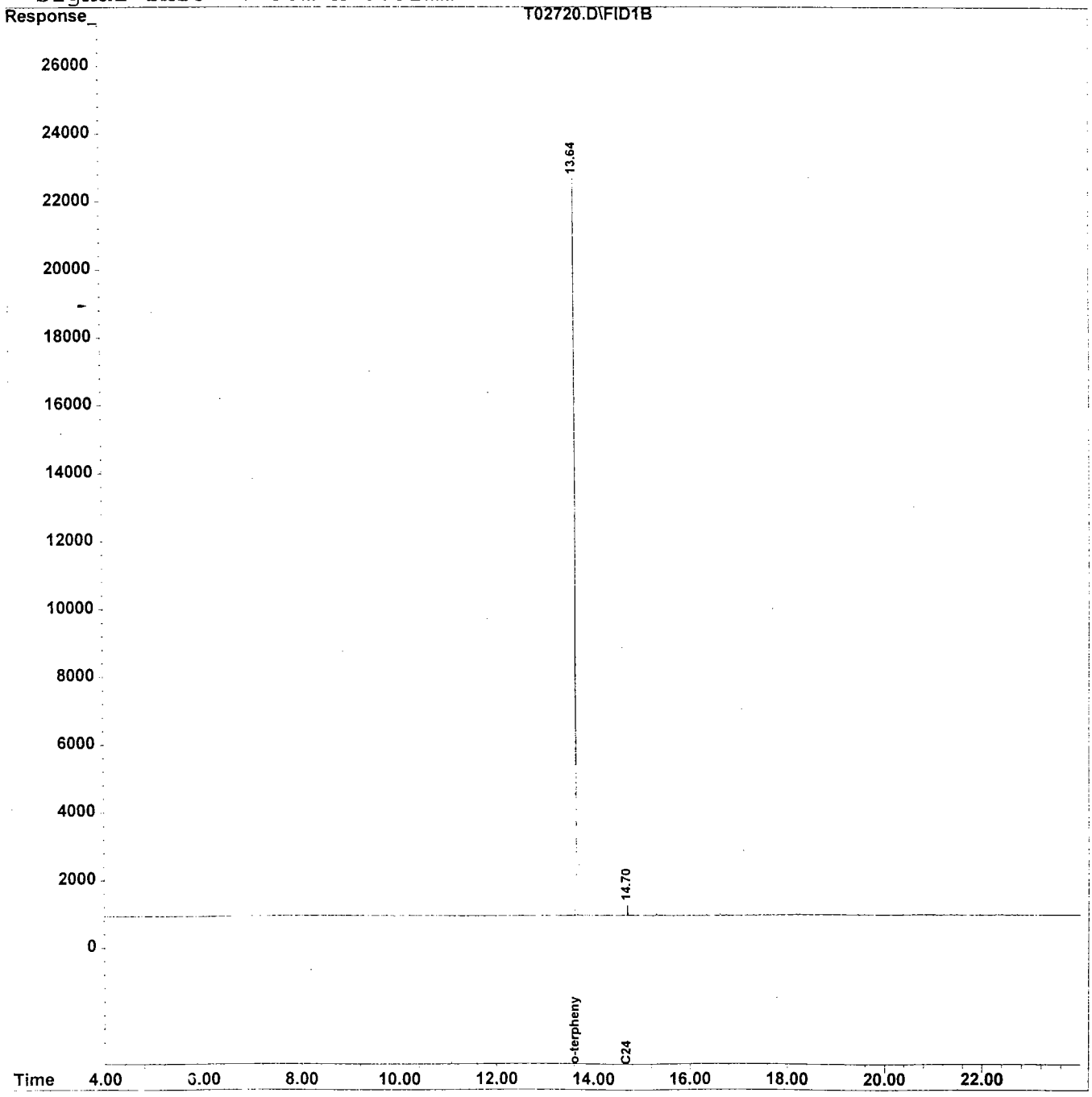
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\971016\T02720.D Vial: 25
Acq On : 17 Oct 97 7:42 am Operator: DEINHARDT
Sample : 3063.02 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 17 8:10 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Multiple Level Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\971016\T02721.D Vial: 26
Acq On : 17 Oct 97 8:23 am Operator: DEINHARDT
Sample : 3063.03 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 20 15:04 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Initial Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
21) s	o-terphenyl	13.64	202113	12.922	mg/L
Spiked Amount	10.000	Recovery	=	129.22%	
	Target Compounds				
1) t	C8	0.00	0	N.D.	mg/L
2) t	C10	0.00	0	N.D.	mg/L
3) t	C12	0.00	0	N.D.	mg/L
4) t	C14	11.48	1016	0.077	mg/L
5) t	C16	12.22	2550	0.191	mg/L
6) t	C18	12.71	5440	0.352	mg/L
7) t	C20	13.12	1511	0.105	mg/L
8) t	C22	13.94	1808	0.126	mg/L
9) t	C24	14.71	3491	0.246	mg/L
10) t	C26	0.00	0	N.D.	mg/L
11) t	C28	0.00	0	N.D.	mg/L
12) t	C30	16.61	1173	0.096	mg/L
13) t	C32	0.00	0	N.D.	mg/L
14) t	C34	0.00	0	N.D.	mg/L
15) t	C36	0.00	0	N.D.	mg/L
16) t	C38	0.00	0	N.D.	mg/L
17) t	C40	0.00	0	N.D.	mg/L
18) t	c42	0.00	0	N.D.	mg/L
19) T	Pristane	12.71	5440	0.384	mg/L
20) T	Phytane	13.17	2657	0.184	mg/L
22) t	TPHC - total	13.64	1661418	111.236	mg/L m

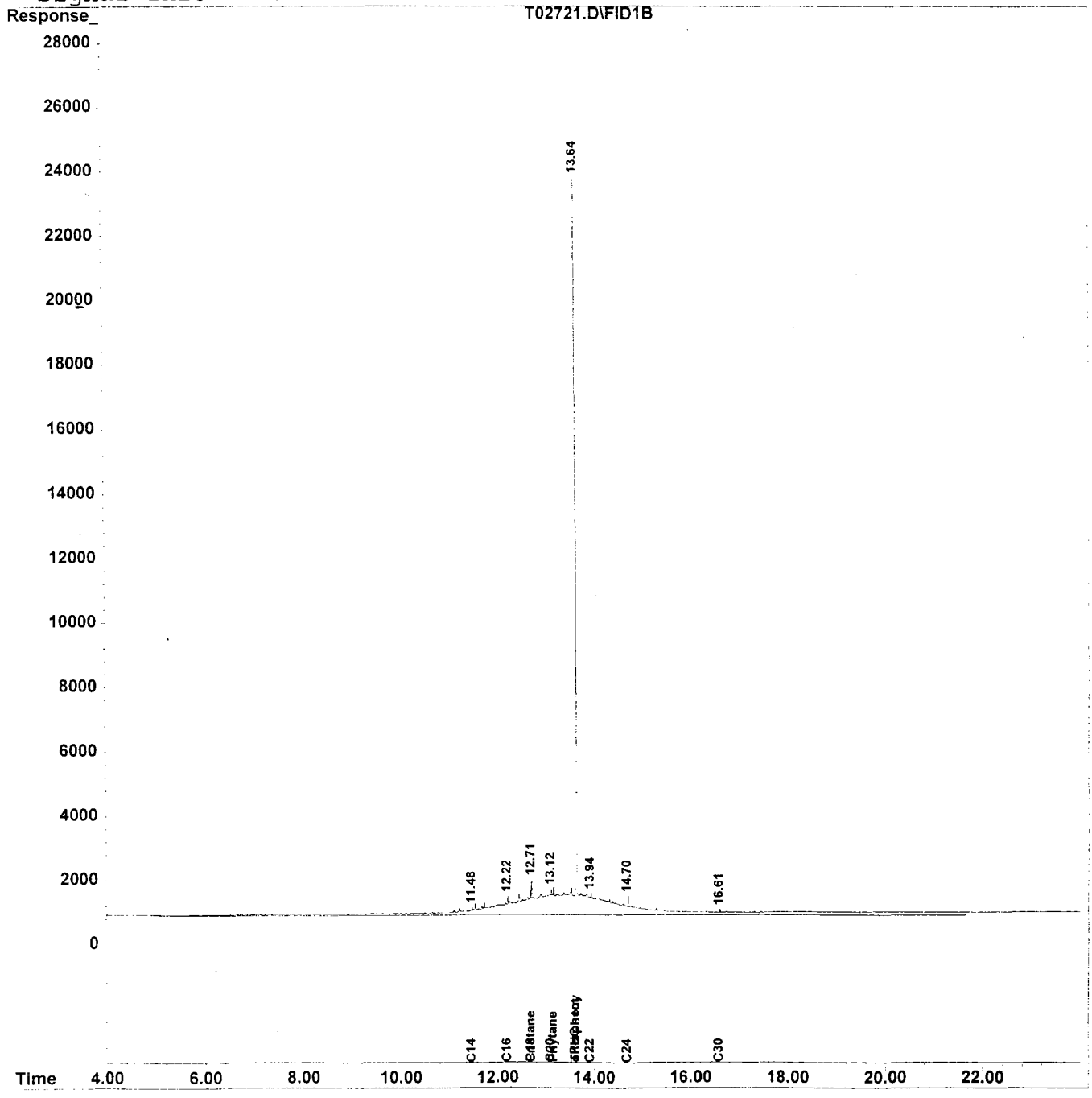
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\971016\T02721.D Vial: 26
Acq On : 17 Oct 97 8:23 am Operator: DEINHARDT
Sample : 3063.03 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 20 15:04 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Multiple Level Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\971016\T02722.D Vial: 27
Acq On : 17 Oct 97 9:04 am Operator: DEINHARDT
Sample : 3063.04 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 17 9:32 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Initial Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
21)	s o-terphenyl	13.64	196319	12.551	mg/L
Spiked Amount	10.000	Recovery	=	125.51%	
	Target Compounds				
1)	t C8	0.00	0	N.D.	mg/L
2)	t C10	0.00	0	N.D.	mg/L
3)	t C12	0.00	0	N.D.	mg/L
4)	t C14	0.00	0	N.D.	mg/L
5)	t C16	0.00	0	N.D.	mg/L
6)	t C18	0.00	0	N.D.	mg/L
7)	t C20	0.00	0	N.D.	mg/L
8)	t C22	0.00	0	N.D.	mg/L
9)	t C24	14.71	2644	0.186	mg/L
10)	t C26	0.00	0	N.D.	mg/L
11)	t C28	0.00	0	N.D.	mg/L
12)	t C30	0.00	0	N.D.	mg/L
13)	t C32	0.00	0	N.D.	mg/L
14)	t C34	0.00	0	N.D.	mg/L
15)	t C36	0.00	0	N.D.	mg/L
16)	t C38	0.00	0	N.D.	mg/L
17)	t C40	0.00	0	N.D.	mg/L
18)	t c42	0.00	0	N.D.	mg/L
19)	T Pristane	0.00	0	N.D.	mg/L
20)	T Phytane	0.00	0	N.D.	mg/L
22)	t TPHC - total	0.00	0	N.D.	mg/L

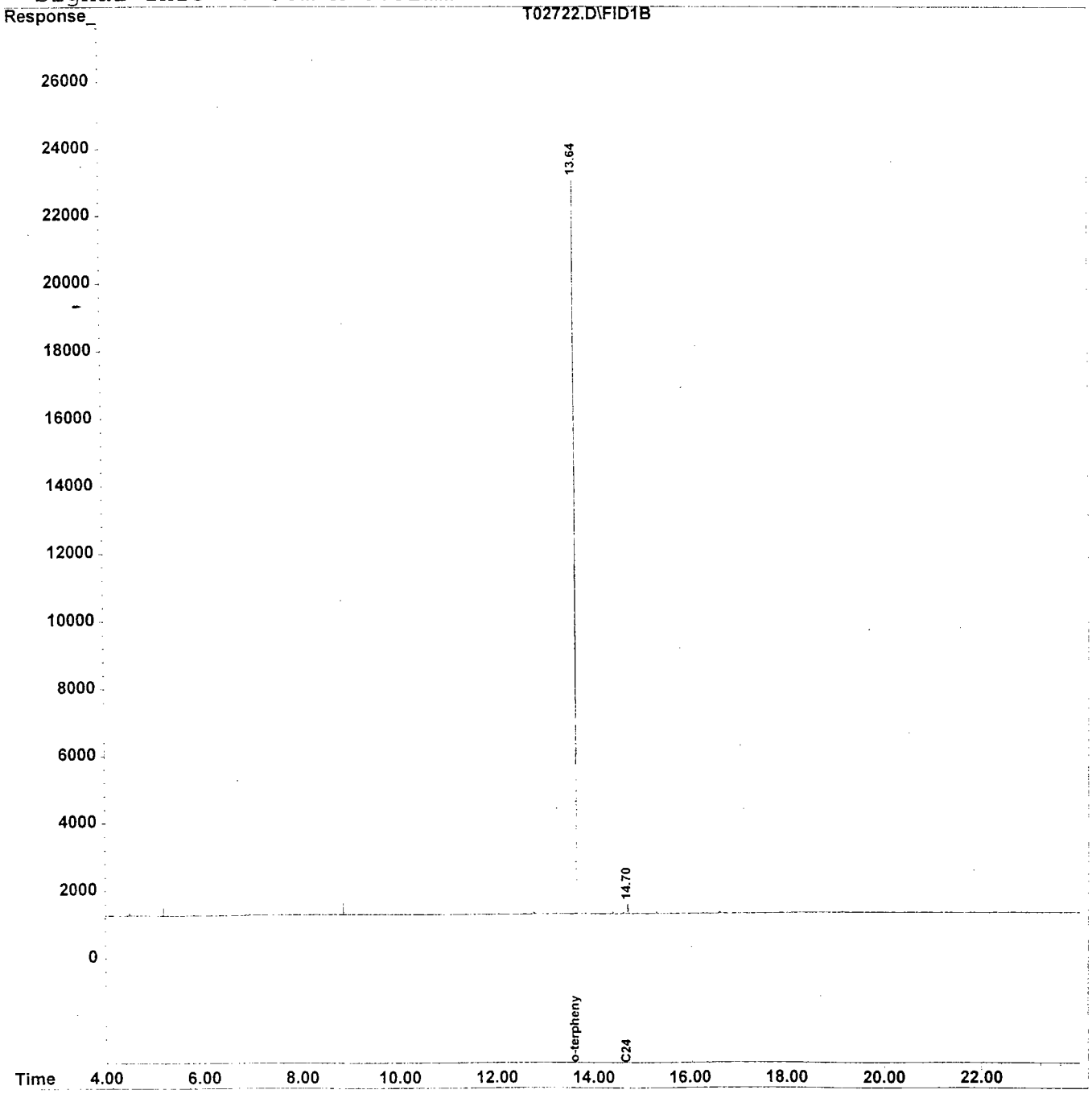
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\971016\T02722.D Vial: 27
Acq On : 17 Oct 97 9:04 am Operator: DEINHARDT
Sample : 3063.04 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 17 9:32 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Multiple Level Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\971016\T02723.D Vial: 28
Acq On : 17 Oct 97 9:46 am Operator: DEINHARDT
Sample : 3063.05 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 17 10:14 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Initial Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc	Units
System Monitoring Compounds				
21) s o-terphenyl	13.64	193806	12.390	mg/L
Spiked Amount 10.000		Recovery =	123.90%	
Target Compounds				
1) t C8	0.00	0	N.D.	mg/L
2) t C10	0.00	0	N.D.	mg/L
3) t C12	0.00	0	N.D.	mg/L
4) t C14	0.00	0	N.D.	mg/L
5) t C16	0.00	0	N.D.	mg/L
6) t C18	0.00	0	N.D.	mg/L
7) t C20	0.00	0	N.D.	mg/L
8) t C22	0.00	0	N.D.	mg/L
9) t C24	14.71	2694	0.190	mg/L
10) t C26	0.00	0	N.D.	mg/L
11) t C28	0.00	0	N.D.	mg/L
12) t C30	0.00	0	N.D.	mg/L
13) t C32	0.00	0	N.D.	mg/L
14) t C34	0.00	0	N.D.	mg/L
15) t C36	0.00	0	N.D.	mg/L
16) t C38	0.00	0	N.D.	mg/L
17) t C40	0.00	0	N.D.	mg/L
18) t c42	0.00	0	N.D.	mg/L
19) T Pristane	0.00	0	N.D.	mg/L
20) T Phytane	0.00	0	N.D.	mg/L
22) t TPHC - total	0.00	0	N.D.	mg/L

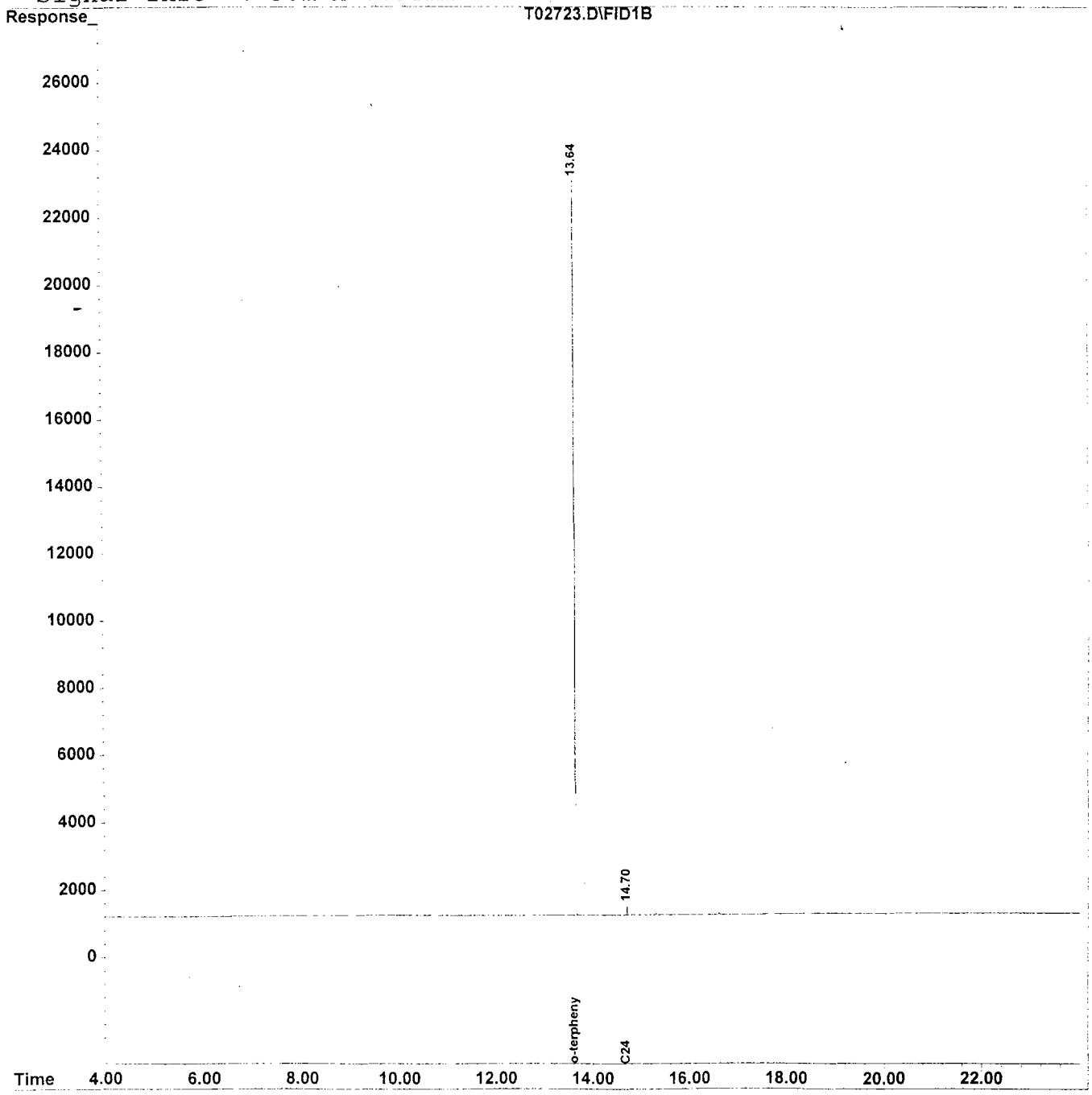
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\971016\T02723.D Vial: 28
Acq On : 17 Oct 97 9:46 am Operator: DEINHARDT
Sample : 3063.05 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 17 10:14 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Multiple Level Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\971016\T02724.D Vial: 29
Acq On : 17 Oct 97 10:28 am Operator: DEINHARDT
Sample : 3063.06 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 17 10:55 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Initial Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
21)	s o-terphenyl	13.64	192240	12.290	mg/L
Spiked Amount	10.000	Recovery	=	122.90%	
	Target Compounds				
1)	t C8	0.00	0	N.D.	mg/L
2)	t C10	0.00	0	N.D.	mg/L
3)	t C12	0.00	0	N.D.	mg/L
4)	t C14	0.00	0	N.D.	mg/L
5)	t C16	0.00	0	N.D.	mg/L
6)	t C18	0.00	0	N.D.	mg/L
7)	t C20	0.00	0	N.D.	mg/L
8)	t C22	0.00	0	N.D.	mg/L
9)	t C24	14.71	2534	0.178	mg/L
10)	t C26	0.00	0	N.D.	mg/L
11)	t C28	0.00	0	N.D.	mg/L
12)	t C30	0.00	0	N.D.	mg/L
13)	t C32	0.00	0	N.D.	mg/L
14)	t C34	0.00	0	N.D.	mg/L
15)	t C36	0.00	0	N.D.	mg/L
16)	t C38	0.00	0	N.D.	mg/L
17)	t C40	0.00	0	N.D.	mg/L
18)	t c42	0.00	0	N.D.	mg/L
19)	T Pristane	0.00	0	N.D.	mg/L
20)	T Phytane	0.00	0	N.D.	mg/L
22)	t TPHC - total	0.00	0	N.D.	mg/L

(f)=RT Delta > 1/2 Window (m)=manual int.

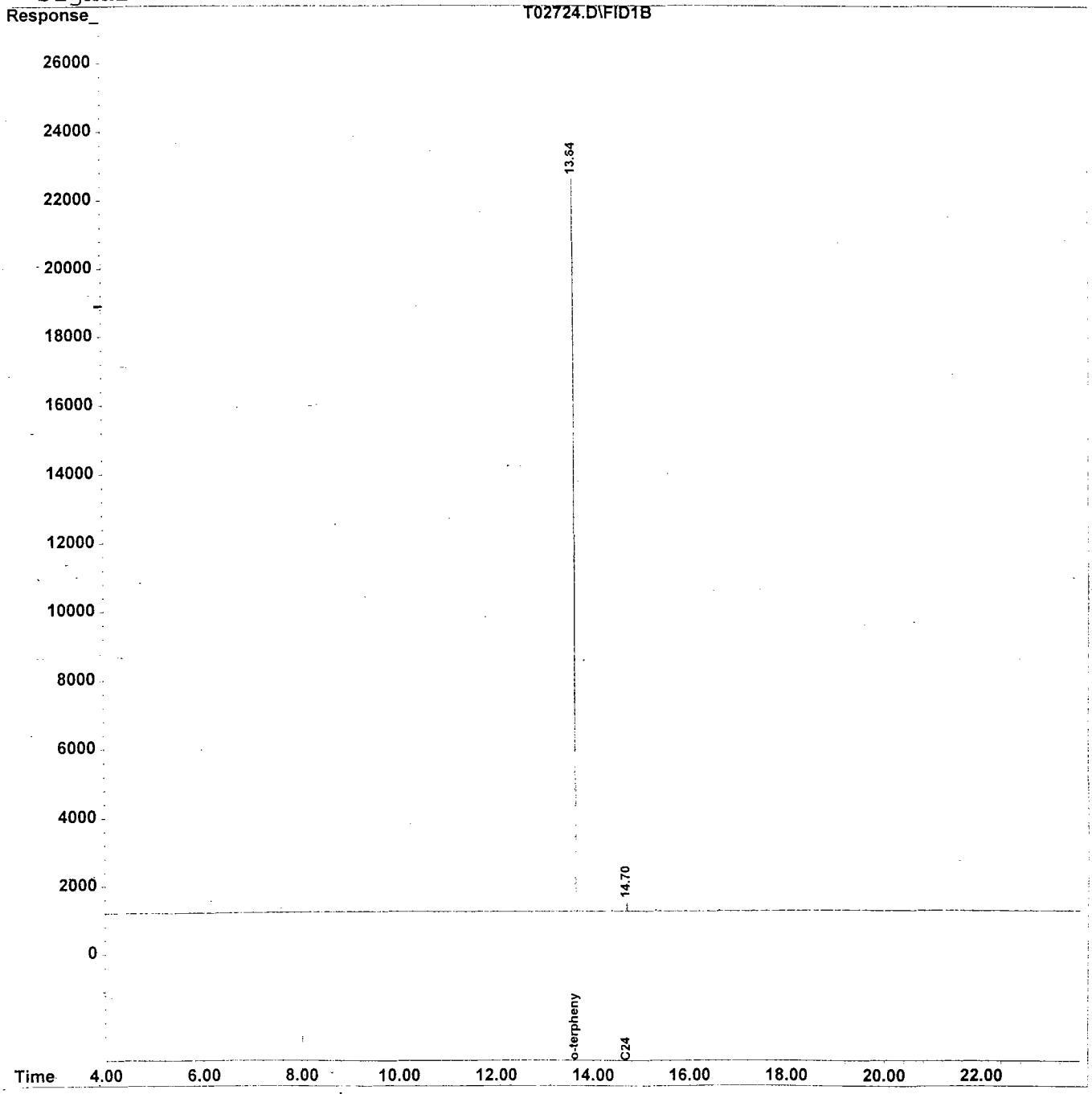
Quantitation Report

Data File : C:\HPCHEM\1\DATA\971016\T02724.D
Acq On : 17 Oct 97 10:28 am
Sample : 3063.06
Misc :
IntFile : TPHCINT.E
Quant Time: Oct 17 10:55 1997 Quant Results File: TPH15.RES

Vial: 29
Operator: DEINHARDT
Inst : FID/TCD
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Multiple Level Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\971016\T02725.D Vial: 30
Acq On : 17 Oct 97 11:10 am Operator: DEINHARDT
Sample : 3063.07 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 17 11:37 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Initial Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc	Units
System Monitoring Compounds				
21) s o-terphenyl	13.64	195628	12.507	mg/L
Spiked Amount 10.000		Recovery =	125.07%	
Target Compounds				
1) t C8	0.00	0	N.D.	mg/L
2) t C10	0.00	0	N.D.	mg/L
3) t C12	0.00	0	N.D.	mg/L
4) t C14	0.00	0	N.D.	mg/L
5) t C16	0.00	0	N.D.	mg/L
6) t C18	0.00	0	N.D.	mg/L
7) t C20	0.00	0	N.D.	mg/L
8) t C22	0.00	0	N.D.	mg/L
9) t C24	14.71	2765	0.195	mg/L
10) t C26	0.00	0	N.D.	mg/L
11) t C28	0.00	0	N.D.	mg/L
12) t C30	16.75	1287	0.105	mg/L
13) t C32	0.00	0	N.D.	mg/L
14) t C34	0.00	0	N.D.	mg/L
15) t C36	0.00	0	N.D.	mg/L
16) t C38	0.00	0	N.D.	mg/L
17) t C40	0.00	0	N.D.	mg/L
18) t c42	0.00	0	N.D.	mg/L
19) T Pristane	0.00	0	N.D.	mg/L
20) T Phytane	0.00	0	N.D.	mg/L
22) t TPHC - total	0.00	0	N.D.	mg/L

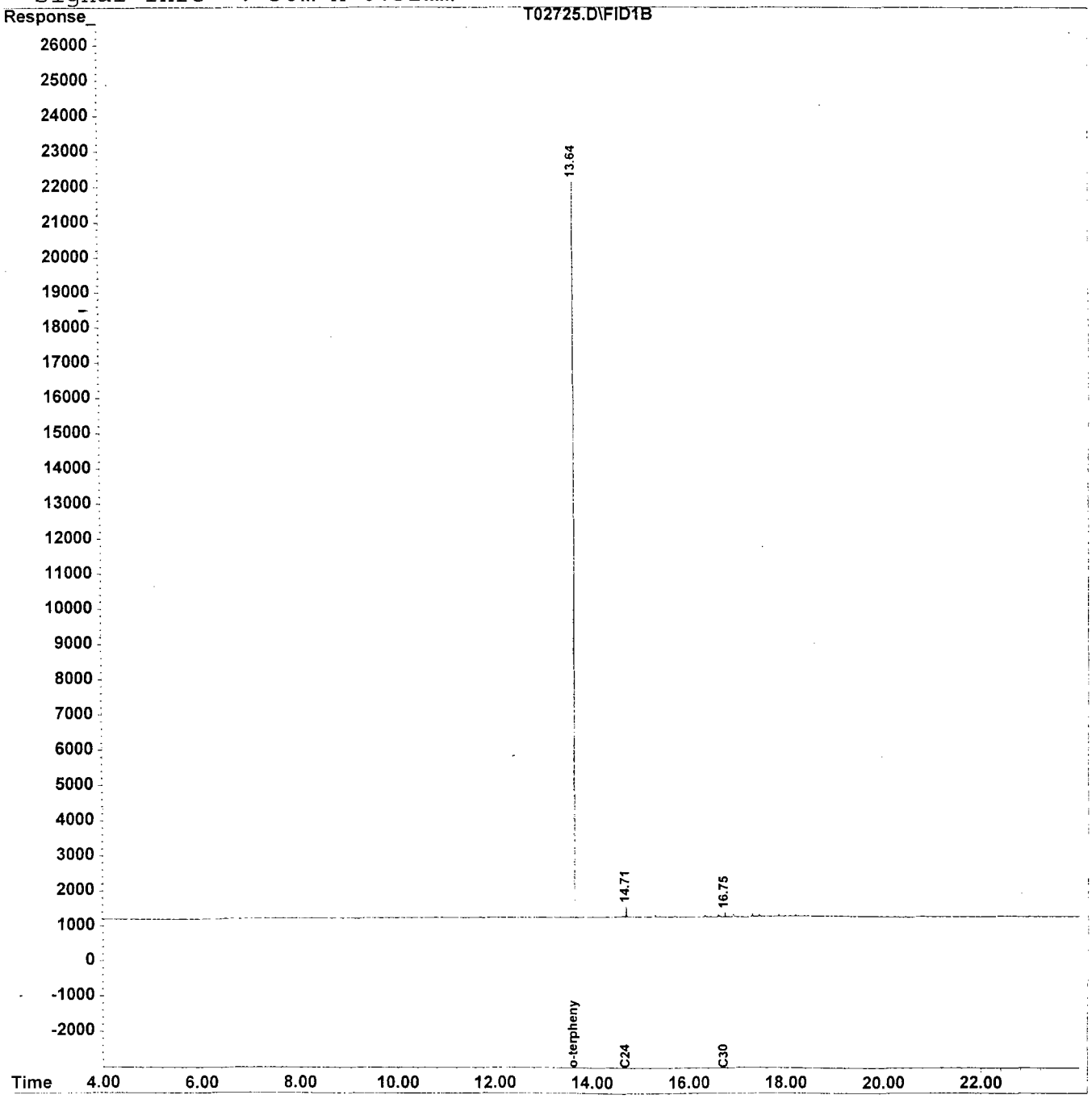
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\971016\T02725.D Vial: 30
Acq On : 17 Oct 97 11:10 am Operator: DEINHARDT
Sample : 3063.07 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 17 11:37 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Multiple Level Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\971016\T02726.D Vial: 31
Acq On : 17 Oct 97 11:52 am Operator: DEINHARDT
Sample : 3063.08 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 20 15:05 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Initial Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds					
21) s o-terphenyl	13.64	196105	12.537	mg/L	
Spiked Amount 10.000	Recovery	=	125.37%		
Target Compounds					
1) t C8	0.00	0	N.D.	mg/L	
2) t C10	0.00	0	N.D.	mg/L	
3) t C12	0.00	0	N.D.	mg/L	
4) t C14	0.00	0	N.D.	mg/L	
5) t C16	0.00	0	N.D.	mg/L	
6) t C18	0.00	0	N.D.	mg/L	
7) t C20	0.00	0	N.D.	mg/L	
8) t C22	13.78	1021	0.071	mg/L	
9) t C24	14.71	5646	0.397	mg/L	
10) t C26	0.00	0	N.D.	mg/L	
11) t C28	0.00	0	N.D.	mg/L	
12) t C30	16.61	1277	0.104	mg/L	
13) t C32	17.45	1824	0.160	mg/L	
14) t C34	0.00	0	N.D.	mg/L	
15) t C36	0.00	0	N.D.	mg/L	
16) t C38	0.00	0	N.D.	mg/L	
17) t C40	0.00	0	N.D.	mg/L	
18) t c42	0.00	0	N.D.	mg/L	
19) T Pristane	0.00	0	N.D.	mg/L	
20) T Phytane	0.00	0	N.D.	mg/L	
22) t TPHC - total	13.64	1007610	67.462	mg/L	m

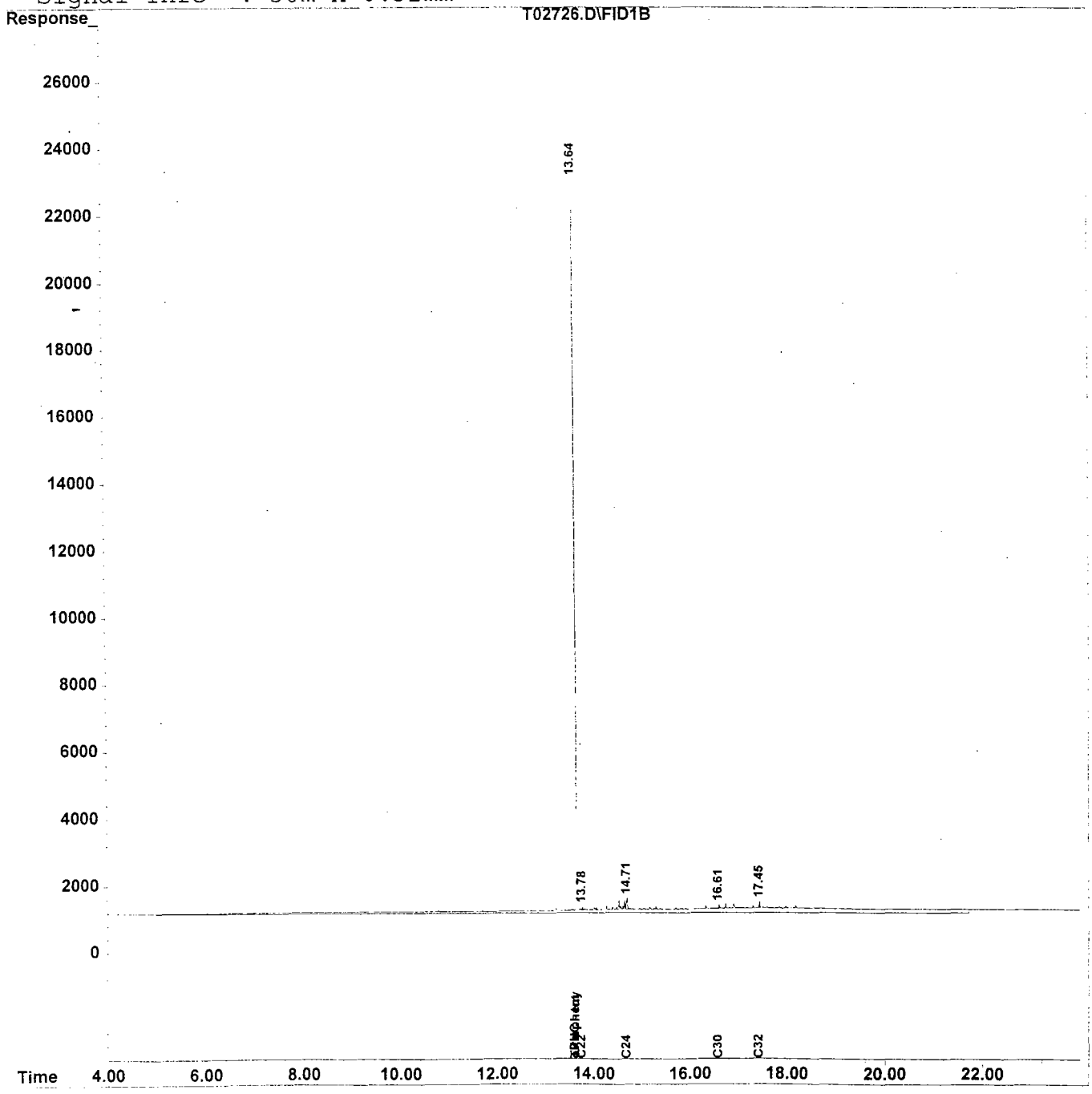
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\971016\T02726.D Vial: 31
Acq On : 17 Oct 97 11:52 am Operator: DEINHARDT
Sample : 3063.08 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 20 15:05 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Multiple Level Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\971016\T02727.D Vial: 32
Acq On : 17 Oct 97 12:35 pm Operator: DEINHARDT
Sample : 3063.09 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 17 13:02 1997 Quant Results File: TPH15.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Initial Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
21) s	o-terphenyl	13.64	192312	12.295	mg/L
Spiked Amount	10.000	Recovery	=	122.95%	
	Target Compounds				
1) t	C8	0.00	0	N.D.	mg/L
2) t	C10	0.00	0	N.D.	mg/L
3) t	C12	0.00	0	N.D.	mg/L
4) t	C14	0.00	0	N.D.	mg/L
5) t	C16	0.00	0	N.D.	mg/L
6) t	C18	0.00	0	N.D.	mg/L
7) t	C20	0.00	0	N.D.	mg/L
8) t	C22	0.00	0	N.D.	mg/L
9) t	C24	14.71	2823	0.199	mg/L
10) t	C26	0.00	0	N.D.	mg/L
11) t	C28	0.00	0	N.D.	mg/L
12) t	C30	0.00	0	N.D.	mg/L
13) t	C32	0.00	0	N.D.	mg/L
14) t	C34	0.00	0	N.D.	mg/L
15) t	C36	0.00	0	N.D.	mg/L
16) t	C38	0.00	0	N.D.	mg/L
17) t	C40	0.00	0	N.D.	mg/L
18) t	c42	0.00	0	N.D.	mg/L
19) T	Pristane	0.00	0	N.D.	mg/L
20) T	Phytane	0.00	0	N.D.	mg/L
22) t	TPHC - total	0.00	0	N.D.	mg/L

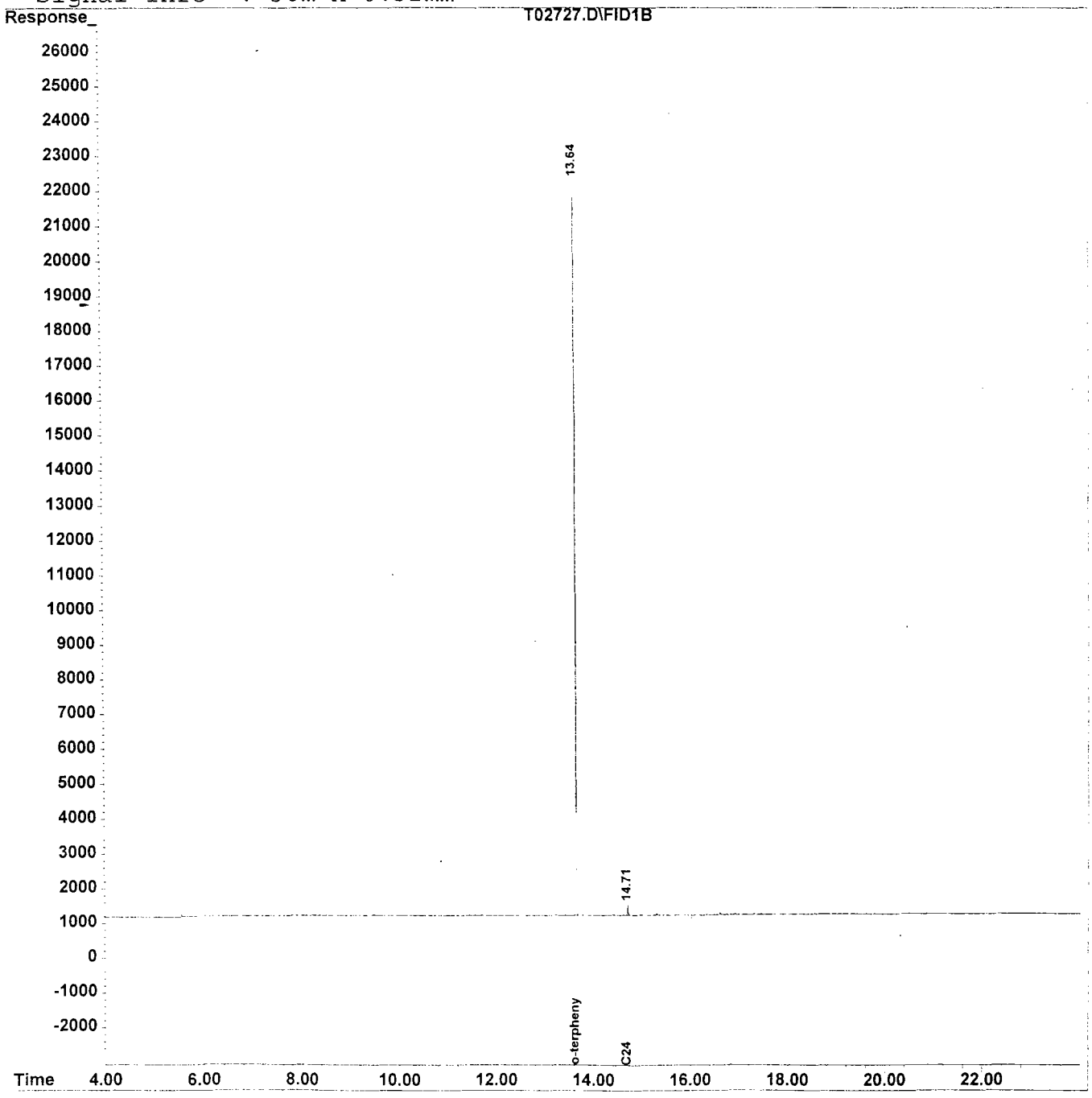
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\971016\T02727.D Vial: 32
Acq On : 17 Oct 97 12:35 pm Operator: DEINHARDT
Sample : 3063.09 Inst : FID/TCD
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Oct 17 13:02 1997 Quant Results File: TPH15.RES

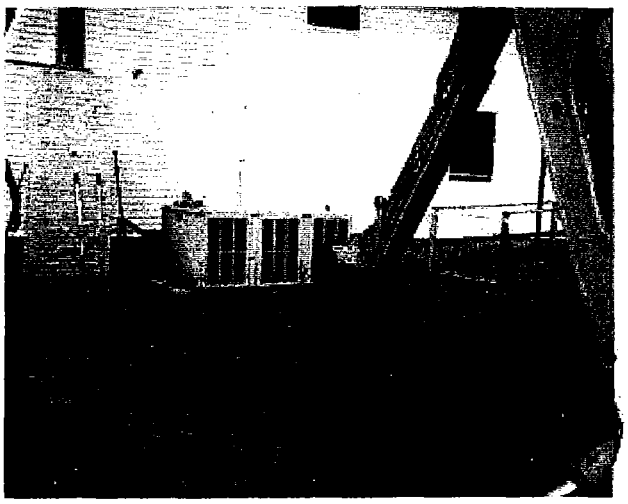
Quant Method : C:\HPCHEM\1\METHODS\TPH15.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Fri Aug 22 07:39:41 1997
Response via : Multiple Level Calibration
DataAcq Meth : TPH15.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



APPENDIX F

PHOTOGRAPHS



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B. 787 10-14-97

B. 787 10-14-97

OCTOBER 14, 1998

PHOTOGRAPHIC LOG

UST NO. 81533-124

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Engineers, Managers, Scientists & Planners
VALLEY FORGE, PA.