AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 | 7

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0010	22-Jan-2004	W25PHS-3171-0862	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
US ARMY ENGINEER DISTRICT, PHILADELPHIA CONTRACTING DIVISION WANAMAKER BUILDING 100 PENN SQUARE EAST PHILADELPHIA PA 19107-3390	W912BU	**See Item 6**	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)			
		X	9A. AMENDMENT OF SOLICITATION NO. DACA61-03-R-0009
		X	9B. DATED (SEE ITEM 11) 07-Jul-2003
			10A. MOD. OF CONTRACT/ORDER NO.
CODE	FACILITY CODE		10B. DATED (SEE ITEM 13)

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [ ] is extended, [X] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)
DESIGN/BUILD AIR FREIGHT TERMINAL DOVER AIR FORCE BASE, DELAWARE – STEP TWO

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS.
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

[ ] A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

[ ] B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

[ ] C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

[ ] D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)
THIS AMENDMENT DOES NOT EXTEND THE STEP TWO PROPOSAL DUE DATE OF 20 FEBRUARY 2004, 4:00 PM LOCAL TIME.

(CONTINUED ON NEXT PAGE)

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY (Signature of Contracting Officer)	16C. DATE SIGNED

14. DESCRIPTION OF AMENDMENT (continued)

a. SPECIFICATIONS:

1. Section 00010: Delete Section 00010 in its entirety and substitute revised Section 00010 annotated Amendment No. 0010 attached hereto.

2. Section 00800: Delete Section 00800 in its entirety and substitute revised Section 00800 annotated Amendment No. 0010 attached hereto.

3. Section 01000: Delete Section 01000 in its entirety and substitute revised Section 01000 annotated Amendment No. 0010 attached hereto.

4. Section 01010, Chapter B: Add new pages B-1a and B-1b annotated Amendment No. 0010 attached hereto.

5. Section 01012: Delete page 2 in its entirety and substitute revised page 2 and new page 2a annotated Amendment No. 0010 attached hereto.

6. Appendix A: Delete page 12 of Appendix A in its entirety and substitute revised page 12 annotated Amendment No. 0010 attached hereto.

7. Appendix C: Delete Appendix C in its entirety and substitute revised Appendix C annotated Amendment No. 0010 attached hereto.

8. Insert the following attached Appendices: Appendix N – Geotechnical Report and Appendix O – Contaminated Soils Report annotated Amendment No. 0010 attached hereto.

9. Make the following pen and ink changes in Section 01010:

    a. Section 01010, Part II, Paragraph A.4.a.3), delete the phrase "(tornadoes, etc.)"

    b. Section 01010, Part III, Paragraph B.4.a, change the second sentence to read: "All air handlers, chillers, and compressors shall be provided by either TRANE, YORK, or CARRIER, and all HVAC direct digital controls supplied by TRANE SUMMIT; Emergency Generator shall be supplied by ONAN; Fire Alarm Panel, Transceiver and Antenna shall be supplied by MONACO."

    c. Section 01010, Chapter B15, Performance, Paragraph A.1., add a paragraph g.: "Provide a structural standing seam metal roof warranty similar in verbiage to the sample in the warranty section of UFC Specification 07416."

d. Section 01010, Chapter B23, Paragraph B.2.a.2), change this paragraph to read: "Doors and frames to be metallic-coated with finish color Eagle Feather Tan, ICI Devoe Color: BLK, IP32 YOX IB39 OXR19."

e. Section 01010, Chapter B23, Paragraph B.3.c, change this paragraph to read: " Color of finish to be Eagle Feather Tan, ICI Devoe Color – BLK, IP 32 YOX IB39 OXR19."

f. Section 01010, Chapter D, Paragraph F.1.g.4), change "Chapter 00830" to "Section 01780".

g. Section 01010, Chapter D, Paragraph F.3.f., change "Chapter 00830" to Section 01780".

h. Section 01010, Chapter D, ParagraphF.3.g., change "Chapter 00830" to "Section 00800".

i. Section 01010, Chapter D21, Products, Paragraph A.1., add a paragraph d.: "Polyvinyl chloride (PVC)." Delete paragraph A.2.a. under "Products".

j. Section 01010, Chapter D21, Performance, Paragraph B.1, add after "Provide" the word "dedicated".

k. Section 01010, Chapter D3, Paragraph A, add a paragraph 5: "HVCA warranty to be a 5–year extended warranty for components. Do not include labor."

l. Section 01010, Chapter D3, paragraph A.4.a.3), delete paragraph and replace with: "Mold Prevention: Provide substantiation in accordance with requirements from Air Force ETL 43-02 on mold prevention."

m. Section 01010, Chapter D3, Products, Paragraph A, change to read: "HVAC System Type (all systems shall be Trane, or, York, or Carrier):"

n. Section 01010, Chapter D33, Products, Paragraph A, change to read: "Refrigeration Units (all units shall be Trane, or York, or Carrier):"

o. Section 01010, Chapter D33, Products, Paragraph B.2. add before "propylene" the words "food grade".

p. Section 01010, Chapter D34, Performance, Paragraph A., add a paragraph 4: "Do not use humidifiers in administrative areas."

q. Section 01010, Chapter D35, Performance, Paragraph e.3. add before "propylene" the words "food grade".

r. Section 01010, Chapter D36, Paragraph A.1.b, change the last sentence to read: "All controls and components shall be Tran Tracer DDC system as provided by TRANE SUMMIT."

s. Section 01010, Chapter D36, Paragraph D.1a.1), change to read: "Design Development: Identification of a system manufactured by Trane."

t. Section 01010, Chapter D41, Performance, Paragraph B.2.b., change "bright red finish" to "finish to match interior finishes".

u. Section 01010, Chapter D43, Products, Paragraph A.1.a, change to read: " Monaco Enterprises, Inc., Monaco M-2 non-addressable fire alarm panel."

v. Section 01010, Chapter D43, Products, Paragraph A.1.b, change to read: "Monaco Enterprises Inc. transceiver, antenna, and lightning arrestor."

w. Section 01010, Chapter D51, Performance, Paragraph A.2., change "generator" to "two generators". Also add a sentence: "Building 582 generator and Building 585 generator shall be salvaged and turned over to the DRMO."

x. Section 01010, Chapter D51, Products, Paragraph A.3.a.1), change to read: "Emergency generator by Onan/Cummins."

y. Section 01010, Chapter D52, Paragraph F.1.a.4), change to read: "Connection Method: Provide "three winding Wye-Wye transformer" IAW AFJMAN 32-1080, pg. 8-11."

z. Section 01010, Chapter D53, Paragr4aph B.6: "Provide exterior GFI duplex receptacles, at least two per building elevation."

aa. Section 01010, Chapter D71, Products, Paragraph C.12, add: "Contractor shall comply with NFPA70, Art. 314.3."

bb. Section 01010, Chapter D93, Paragraph A.1, add paragraph e: "Comply with NFPA 77."

cc. Section 01010, Chapter D94, Paragraph A.3, delete reference to ETL 87-6, insert: "Mil HDBK 1004-10 & AFI 32-1054."

dd. Section 01010, Chapter E12, "Cover Purchase Description", Page 12, Paragraph 3.1.6, change "(MBSC)" to "(MPSC)".

ee. Section 01010, Chapter E12, "Cover Purchase Description", Page 12, Paragraph 3.1.1.1, last line, change: "bail transfer conveyor" to "BTC".

ff. Section 01010, Chapter E12, "Cover Purchase Description", Page 20, Paragraph 3,2,3,1, change in 4th line, change: "unlock able" to "unlockable."

gg. Section 01010, Chapter E12, "Cover Purchase Description", Page 23, Paragraph 3.2.4, delete the last sentence to the paragraph.

hh. Section 01010, Chapter E12, "Cover Purchase Description", Page 24, Paragraph 3.3.1.1, 5ht line, add: "or MPETV" after "ETV."

ii. Section 01010, Chapter E12, "Cover Purchase Description", Page 33, Paragraph 3.3.5, 2nd line, replace "MIL-HDBK 1008C" with "UFC 3-600-01."

jj. Section 01010, Chapter E12, "Cover Purchase Description", Page 34, Paragraph 3.4, 4th line, replace "which includes at least 15 working days (30 days for the equipment shop drawings)" with "of 21 days."

kk. Section 01010, Chapter E12, "Cover Purchase Description", Page 35, Paragraph 3.4.5. 3rd line, change: "Appendix G" to "Appendix H."

ll. Section 01010, Chapter E12, "Cover Purchase Description", Page 35, Paragraph 3.5, under F, 2nd line, change: "12" to "20" and in 3rd line change: "6" to "10."

mm. Section 01010, Chapter E12, "Cover Purchase Description" Page 39: Delete "Figure 1 Cargo Processing Center, Dover AFB Delaware" and "Under Revision". For figure I see Page 11.

nn. Section 01010, Chapter E12, "Cover Purchase Description", Page 44, Paragraph 4.3.3, 2nd line, change: "Appendix G" to "Appendix H."

oo. Section 01010, Chapter E12, "Cover Purchase Description", Page 44, Paragraph 4.3.3, delete item number 7.

pp. Section 01010, Chapter E12, "Cover Purchase Description", Page 45. Paragraph 4.4.4, Item number 19, change: "MIL-HDBK-1008C" to "UFC 3-600-01."

qq. Section 01010. Chapter G, Paragraph B.4.c.3),a), change to read: "Paving, rather than Landscaping."

10. Make the following pen and ink changes in Section 01012:

a. Section 01012, Paragraph 5.0, Distribution List, change "CECE" to "A7CA". and for AFMC-LSO/LOE move "1" from full size to half size drawings and add a "1" in the CD column.

b. Section 01012, Paragraph 223.4.1.4 should be "22.4.1.4".

c. Section 01012, Paragraph 13.2.1, deletes reference to the new Pavilion site. The Government will construct a new pavilion at an as yet to be determine location.

11. Make the following pen and ink change in Section 01060: Paragraph 1.2, change "OSHA 200" to "OSHA 300".

12. Make the following pen and ink change in Section 01330: Add the following paragraph 1.4: "SUBMITTAL QUANTITIES: The contractor shall submit no less than six (6) complete copies of each submittal item except in the case of information only submittals. For information only submittals the contractor shall submit three (3) complete copies."

13. Make the following pen and ink change in Section 01451: Paragraph 3.6, add the following sentence at the end of the first paragraph: "Daily CQC reports are to be completed and delivered to the Government by 12:00 PM the work day immediately following the workday covered by the individual report."

14. Make the following pen and ink change in Section 01701: Paragraph 1.2.1.d, change "08700" to "00800".

15. Make the following pen and ink changes in Section 13280: Paragraph 3.11.2, change the third sentence to read: " Asbestos-containing waste shall be disposed of at an EPA, state and local approved landfill in the State of Delaware."

16. Make the following pen and ink changes in Appendix A:

    a. Appendix A, Paragraph 1.2, 3rd paragraph, last line, change "Refrigerator" to "Ball Transfer."

    b. Appendix A, Paragraph 3.2.2.3, 4th line, change: "north end of aisle stop" to "south end of aisle stop."

    c. Appendix A, Paragraph 3.2.2.3, 5th line, change: "south end of aisle stop" to "north end of aisle stop."

    d. Appendix A, Paragraph 3.2.2.3.1, 2d line, change: "north" to "south" and 4th line, change: ""south" to "north."

    e. Appendix A, Paragraph 3.2.10, 1st line, insert: "and overhead" between "Floor-mounted" and "ETV."

    f. Appendix A, Paragraph 3.4.8, delete: "If the ETV is idle for longer than 1 minute the ETV shall be placed in a sleep mode to conserve energy", and replace with: "After a specified time period has passed with no control activation on either

console, the ETV shall enter a "sleep" mode. The time period shall be adjustable between 0 and 30 minutes on minimum 60-second intervals."

g. Appendix A, Paragraph 3.4.10, 4th line, change: "Appendix B" to "Appendix F."

h. Appendix A, Paragraph 3.4.10.6, 6th line, delete: "When the overhead door the powered interfacing conveyor passes through is open, pallet transfer shall conform to Appendix C (Indexing through the Door Interface)."

17. Make the following pen and ink changes in Appendix B:

a. Appendix B, Paragraph 3.1, 3rd line, insert: "MPSCs and" before "MPBUCs".

b. Appendix B, Paragraph 3.2.5.5.3, 6th line change: "50" to "70."

c. Appendix B, Paragraph 3.4.5, 10th line change: "10 minutes on minimum 10-second intervals" to "30 minutes on minimum 60-second intervals."

d. Appendix B: At the end of Appendix B delete the "TECHNICAL PROPOSAL QUESTIONNAIRE" section.

b. <u>DRAWINGS:</u>

1. Drawing Number CS1.01, Index, "Site & 3D Massing" and "Rendering (3 Sheets)", make the following pen and ink change to add note: "The Site, 3D Massing, and Rendering are provided as a possible design and are for information only. Offerors shall not submit any drawings, sketches or renderings. Offerors will be evaluated solely on the rated factors and sub-factors listed in Section 00110."

2. Drawing Number A1.01, make the following pen and ink change to add note: "There shall be forklift access to the ETVs from the east side of the building between the two sets of 22 staging docks. This will require an opening in the lower level of the east side storage bays for the forklift to pass through."

c. Please acknowledge receipt of this amendment on Standard Form 1442 (SOLICITATION, OFFER AND AWARD) as Amendment Number 0010. Failure to acknowledge all amendments may be cause for rejection of your proposal.

SECTION 00010 – SUPPLIES OR SERVICES AND PRICES

PRICE SCHEDULE

Item No.	Description	Qty	Unit Price	Amount
BASE BID				
0001	All costs in connection with design and design reviews related to the Air Freight Terminal and related design of demolition work, Dover AFB, DE, complete as shown on drawings and as specified except as noted below for items 0001A, 0001B and 0001C. This item includes the design of the common heating and cooling system for the Defense Courier Service, Freight Transfer Facility (FTF) and Cargo Development Facility (CDF).	N/A	LS	$_____
0001A	All costs in connection with design and design reviews related to the MMHS in the main AFT building.	N/A	LS	$_____
0001B	All costs in connection with the design and design reviews related to the MMHS in the Outsized Cargo Facility.	N/A	LS	$_____
0001C	All costs in connection with the design and design reviews related to the Defense Courier Service (DCS) Facility except for shared facilities listed in bid item 0001.	N/A	LS	$_____
0002	All costs in connection with construction of the Air Freight Terminal, including utilities to points 5 feet outside of the building lines complete as shown on drawings and as specified, except for items 0002A, 0002B, 0003, 0003A, 0004, 0005, 0006, 0007, 0008, 0009, 0010, 0010A, 0010B, 0010C, 0011, 0012, 0013, 0014, 0015, 00016, and 0017.	N/A	LS	$_____
0002A	All costs in connection with purchase and installation of dock levelers, as shown on drawing A1.01 (Appendix J).	24	$_____	$_____
0002B	All costs in connection with purchase and installation of truck levelers, as shown on drawing A1.01 (Appendix J).	2	$_____	$_____
0003	All costs in connection with construction of all utilities			

Item No.	Description	Qty	Unit Price	Amount
	beyond points 5 feet outside the building lines, except for communications (see Note below) (except that the underground conduit for communications is part of this bid item) and all site work complete as shown on drawings and as specified, except for items 0004, 0005, 0006, 0007, 0008, 0009, 0009A, 0009B, 0010, 0011, 0011A, 0011B, 0012, 0013, 0014, 0015, 0016, and 0017.	N/A	LS	$_____
0003A	All costs in connection with purchase and installation of truck levelers for concrete rolling stock loading ramp, as shown n drawing A1.03 (Appendix J).	2	$_____	$_____
0004	All costs in connection with purchase, haul and placement of satisfactory structural fill for the main Air Freight Terminal building which includes fill for bid items 0002, 0002B, 0003, 0003A, and 0006.	N/A	LS	$_____
0005	All costs in connection with removal and disposal of structurally unsatisfactory excavated soil which also includes unsatisfactory soil from bid items 0002, 0002B, 0003, 0003A, and 0006.	N/A	LS	$_____
0006	Installation of emergency generator.	N/A	LS	$_____
0007	Demolition of existing buildings and facilities outlined below, except for Item 0008.			
0007A	Demolition of existing Building 504	N/A	LS	$_____
0007B	Demolition of existing Building 505, Bay 0 and northern section of the Pallet Storage and Racking System and east covered Staging Area	N/A	LS	$_____
0007C	Demolition of existing Building 510	N/A	LS	$_____
0007D	Demolition of existing Building 581	N/A	LS	$_____
0007E	Demolition of existing Building 582	N/A	LS	$_____
0007F	Demolition of existing Building 583	N/A	LS	$_____
0007G	Demolition of existing Building 585	N/A	LS	$_____

Item No.	Description	Qty	Unit Price	Amount
0007H	Demolition of existing Facility 66223	N/A	LS	$_____
0007I	Demolition of existing Facility 67585	N/A	LS	$_____
0007J	Demolition of existing Facility 506	N/A	LS	$_____
0008	Asbestos Abatement			
0008A	Building 504	N/A	LS	$_____
0008C	Building 510	N/A	LS	$_____
0008D	Building 582	N/A	N/A	$_____
0008E	Building 583	N/A	LS	$_____
	TOTAL BASE BID AMOUNT			$_____

OPTIONS

OPTION #1				
0009	All costs in connection with purchase and installation of 2 automated elevated transfer vehicles (ETVs), the ETV storage enclosure, and the storage conveyors, Item no. 0010 includes the roofs, stairs, exterior shells, and the overhead doors for the ETV enclosure. The foundation costs for the following: ETV storage enclosure, ETV storage racks and rail shall be included in bid item 0002.	N/A	LS	$_____
0009A	All costs in connection with purchase and installation of the staging dock conveyors. The costs for the canopies and foundations associated with the staging dock conveyors shall be included in bid item 0002.	N/A	LS	$_____
0009B	All costs in connection with purchase and installation of the lifts, the lift conveyors, the lift transfer conveyors, the ALOC/Code J conveyors, the ball transfer conveyor system, and the sortation conveyor system. The costs for the lift pits, and the canopy and foundations associated with the ALOC/Code J conveyors shall be included in bid item 0002.	N/A	LS	$_____
00010	All costs in connection with construction of the Outsized			

Item No.	Description	Qty	Unit Price	Amount
	Cargo Facility, including the FTF and CDF, common HVAC plant/mechanical room for the FTF, CDF, and DCS; and associated utilities to points 5 feet outside the building lines complete as shown on the drawings and as specified, except for new fill – see item 0012, and disposal of unsatisfactory soil – see item 0013, and except for items 0010A, 0011, 0016, and 0017.	N/A	LS	$_____
0010A	All costs in connection with purchase and installation of truck levelers, as shown on drawing A1.03 (Appendix J).	2	$_____	$_____
0011	All costs in connection with construction of all utilities, associated with the Outsized Cargo Facilities, beyond points 5 feet outside the building lines, except for communications (see Note below) and all site work complete as shown on drawings and as specified and except for new fill – see item 0012, and disposal of unsatisfactory soil – see item 0013.	N/A	LS	$_____
0012	All costs in connection with purchase, haul, and placement of satisfactory structural fill for the outsized cargo facility, FTF, DCS, and CDF which includes fill for bid items 0010, 0010A, 0011, and 0016.	N/A	LS	$_____
0013	All costs in connection with removal and disposal of structurally unsatisfactory excavated soil for the outsized cargo facility, FTF, DSC, and CDF which includes unsatisfactory fill for bid items 0010, 0010A, 0011, and 0016.	N/A	LS	$_____
0014	Demolition of Building 505, Bays 1, 2, 3, 4, 5, associated covered storage areas adjacent to bays on the flight line side of the building, exterior overhead crane to include supporting structure, exterior loading ramp, and the Administrative Area on the truck side of the building.	N/A	LS	$_____
0015	Asbestos Abatement, Building 505 Admin Area	N/A	LS	$_____
	TOTAL FOR OPTION #1			
OPTION #2				
0016	All costs, except as noted in items 0010, 0012, and 0013 for the construction of the DCS, and associated utilities to points 5 feet outside the building lines complete as	N/A	LS	$_____

Item No.	Description	Qty	Unit	Price	Amount
	shown on the drawings and as specified.				
0017	All costs in connection with purchase and installation of the multi-pallet ETV (MPETV), the multi-pallet storage conveyors, the multi-pallet build-up conveyors, motorized pallet conveyor from FTF and DCS, and the 2 overhead bridge cranes. The costs for the supporting structure for the bridge cranes, the overhead canopy, and the dock/foundation for the oversized cargo area, including the MPETV storage racks and rails, shall be included under bid item 0010.	N/A	LS		$_____
	TOTAL FOR OPTION #2				
OPTION #3					
0018	Emergency Generator, less installation.	N/A	LS		$_____

NOTES:

Government will provide communications lines from nearest tie-in to the building. Communications lines will be in AFT contractor furnished buried conduits.

For the DCS, this RFP includes a complete design for a separate structure. The contractor's designer shall use this as a basis for re-design of the DCS as part of a combined structure: Outsized Cargo Facility, FTF, DCS, and Cargo Development Facility (CDF). However, due to the secure nature of the FTF and DCS functions these two facilities will not share toilet and break room facilities, nor with the Outsized Cargo Facility and the Cargo Development Facility (CDF). However, a common heating and cooling system shall serve the DCS, FTF and CDF.

The Army will procure this facility through a selection process in accordance with the provisions set forth in this Request for Proposal (RFP). When a contract is awarded, it will be a "Firm Fixed Price Contract."

The Congress, in authorizing and funding this contract, has established certain cost limitations for the project. The current estimated limit for the complete design and construction of this project, less the automated and mechanized material handling systems, is $50,000,000. Total includes applicable Option No. 2 bid items And Option No. 3.. The current estimated limit for the automated and mechanized material handlings systems (total for Items 0009, 0009A, 0009B and 0011B) is $20,000,000. There are no expectations of additional funding. Proposals that exceed this funding limit after

evaluating the options may be rejected. Submission of desirable alternative features exceeding the minimum requirements may be considered as long as award can be made with the established funds.

For the DCS, the total cost limit for the design and construction is $1,320,000.

Any proposal that is materially unbalanced as to prices may be rejected. An unbalanced proposal is one which is based on prices significantly less than the cost for some work and prices which are significantly overstated for other work and can also exist where only overpricing or under pricing exists. A proposal may be rejected if the Contracting Officer determines that the lack of balance poses an unacceptable risk to the Government.

Failure to insert prices for each item, to include bid options in the bid schedule may cause the proposal to be rejected.

SECTION 00800

SPECIAL CONTRACT REQUIREMENTS.

SCR-1 52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (Apr 1984)

(a) The Contractor shall be required to (1) commence work under this contract within 10 calendar days after the date the Contractor receives the notice to proceed, (2) prosecute the work diligently, and (3) design and construct the entire work. The times stated for completion shall include final cleanup of the premises. **The Contracting Officer may elect to exercise in writing Option Numbers 1 and 3 within 120 calendar days after the Contractor receives the Notice to Proceed for the Base Bid and for Option Number 2 within 365 calendar days after the Contractor receives the Notice to Proceed for the Base Bid. These options do not extend the period of performance of the contract. Option work shall be completed concurrently with the Base Bid work. The time stated for completion shall include final cleanup of the site.**

Sequence of Work:

1. Prepare design and construction documents for the project.
2. **Construct new Aircraft Wash Rack and Oil/Water Separator/Lift Station between existing Buildings 706 and 711. Relocate Facility Number 507 (Fuel tank, VIL key pump, and computer line) directly south of Facility Number 509. Once these facilities are completed/relocated, demolish the existing Facility Numbers 66223 and 583.**
3. Demolish existing Buildings 504, 506, 510, 581, 582, 585, Facility 67585.
4. Demolish Bay 0, northern section of the Pallet Storage and Racking System and east covered Staging Area of existing Building 505 to provide a cleared site for construction of the new AFT (Air Freight Terminal).
5. Construct new main AFT Building (North Administration Building to ALOC/Code “J” Dock) along with associated paving and utilities to have an operational building. **Include the relevant Mechanical Material Handling System (MMHS) which is Option Number 1, as outlined in the Price Schedule in Section 00010.**
6. Allow the Government 21 days to vacate the remaining portion of existing Building 505, except Bays 4 and 5, and occupy the new main AFT Building.
7. Demolish the Bays 1, 2 and 3, Administration structure, Pallet Storage and Racking System structure, and covered loading docks of existing Building 505, to construct the new Outsized Cargo Facility. This would allow the facility to have continued access to a 35-ton bridge crane. **When Bays 1, 2, and 3 are demolished, ensure sufficient electrical power is left to sustain operations in Bays 4 and 5 to include the cranes, MPETV, finger docks, roller system, and any other system components. Remove and process sprung structure in accordance with Section 01000.**
8. Construct the new Outsized Cargo Facility, and attached Defense Courier Service, Freight Transfer and Cargo Deployment Facilities, along with associated paving and utilities to have an operational building. **Include the relevant MMHS, which is part of Option Number 2, as outlined in the Price Schedule in Section 00010.**
9. Allow the Government 21 days to vacate Bays 4 and 5 of Building 505 and occupy the new Outsized Cargo Facility, and the Defense Courier Service, Freight Transfer and Cargo Deployment Facilities.
10. Demolish the remainder of Building 505.
11. Complete the installation of the utilities and pave the remainder of the site.

Duration of Construction: 36 months

(b) Liquidated damages for failure to complete the work within the two time periods specified above is addressed in paragraph SCR-15 of Section 00800, “Special Contract Requirements.”

(c) Provisions stipulated for conducting test on heating and air condition systems shall be performed prior to Government occupancy of completed phases.

(d) Provisions stipulated for planting and maintenance of grass are excluded from the completion time stated above.

(End of Clause)

SCR-2 52.236-1 PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984)

The Contractor shall perform on the site, and with its own organization, work equivalent to at least 15 percent of the total amount of work to be performed under the contract, not including design work. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government. Identify what parts of the project will be “self-performed” by in-house forces and the related cost for each part, as defined below. If sufficient information is available at the time your offer is prepared, state (within this Organization factor narrative) the percentage of work you will self-perform. If sufficient information is not available during preparation of this narrative, state that the information is in the Pro-Forma requirements.

Computation Sheet. Provide and illustrate the calculation for “percent of self-preformed work”, in accordance with the definitions below. Use the form attached hereinafter.

The following are definitions concerning self-performance of work by the Prime Contractor.

“Self-performance of work” generally includes mobilization and utilization of owned or rented plant and equipment to be operated by the prime contractor’s own employees; only those materials which will be both purchased and installed by the prime’s own forces; labor associated with those aforementioned materials or equipment; only those supplies to directly support work performed by the contractor’s own employees; and the contractor’s own job overhead costs.

The following is NOT self-performed work for purposes of the clause: Prime contractor markups for profit, general and administrative overhead, bonds, or other indirect costs on self-performed or subcontractors; purchase of materials for installation by subcontractors.

”On the site” includes the construction site(s) as well as off-site fabrication plant or other facilities necessary to manufacture assemblies or provide materials to be incorporated into the construction project.

“Total amount of work to be performed under the contract” is comprised of all direct (variable, fixed, one-time and semi-variable) costs to the contractor, including jobsite overhead costs, to construct the project. It generally includes all self-performed work, as defined above, and cost of all supplies, materials and subcontracts. It does not include design costs, home or branch office overhead costs or prime contractor markup for bond, profit, etc.”

(End of Clause)

FORMAT FOR CALCULATION OF SELF-PERFORMED WORK, DESIGN-BUILD CONTRACTS (for all Contracts, except 8(a))

Use a format similar to the following to identify and calculate cost of the work to be self-performed. Refer to the definition pertaining to “Self-performance of work”, “On the site” and “Total amount of work to be performed under the contract”. Include this information in the envelope for Volume II (pro Forma

Requirements), if undetermined until the specified deadline for proposal submission. Otherwise include it in Volume I (Performance Capability) in TAB A;

A. Clearly describe the work to be self-performed: _____

_____

_____

B. Show Calculation of Self-Performed Work:

B.1 Total Bid Price: $_____

B.2 Subtract Design Cost: ($_____)

B.3 Subtract G&A, home office overhead, prime contractor's Markup for profit, bond, state use tax, etc. ($_____)

B.4 Remainder is "Total amount of work to be performed Under the Contract". ($_____)

B.5 "Work to be self-performed": ($_____)
(Includes mobilization and utilization of owned or rented plant and equipment to be operated by the prime contractor's own employees; only those materials, which will be both purchased and installed by the prime's own forces; labor associated with those aforementioned materials or equipment; only those supplies to directly support work performed by the contractor's own employees; and the contractor's own job overhead costs.)

B.6 %Self-performed Work = Line B.5/Line B.4 x 100% = ($_____)

(End of Clause)

SCR-3 PROPOSED BETTERMENTS – AUG 1997

(a) The minimum requirements of the contract are identified in the Request for Proposal. All betterments offered in the proposal become a requirement of the awarded contract.

(b) A "Betterment" is defined as any component or system, which exceeds the minimum requirements, stated in the Request for Proposal. This includes all proposed betterments listed in accordance with the "Proposal Submission Requirements" of the Solicitation, and all Government identified betterments.

(c) "Government identified betterments" include the betterments identified on the "List of Accepted Project Betterments" prepared by the Proposal Evaluation Board and made part of the contract by alteration, and all other betterments identified in the accepted Proposal after award.

(End of Clause)

SCR-4 KEY PERSONNEL, SUBCONTRACTORS AND OUTSIDE ASSOCIATES OR CONSULTANTS - AUG 1997

In connection with the services covered by this contract, any in-house personnel, subcontractors, and outside associates or consultants will be limited to the individuals or firms that were specifically identified and agreed to during negotiations. The contractor shall obtain the Contracting Officer's written consent

before making any substitution for these designated in-house personnel, subcontractors, associates, or consultants.

(End of Clause)

SCR-5 RESPONSIBILITY OF THE CONTRACTOR FOR DESIGN - FEB 2000

(a) The Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, and other non-construction services furnished by the Contractor under this contract. The Contractor shall, without additional compensation, correct or revise any errors or deficiency in its designs, drawings, specifications, and other non-construction services and perform any necessary rework or modifications, including any damage to real or personal property, resulting from the design error or omission.

(b) Neither the Government's review, approval or acceptance of, nor payment for, the services required under this contact shall be construed to operate as a waiver of any rights under this contract or of any cause of action arising out of the performance of this contract. The Contractor shall be and remain liable to the Government in accordance with applicable law for all damages to the Government caused by the Contractor's negligent performance of any of these services furnished under this contract.

(c) The rights and remedies of the Government provided for under this contract are in addition to any other rights and remedies provided by law.

(d) If the Contractor is comprised of more than one legal entity, each entity shall be jointly and severally liable thereunder.

(End of Clause)

SCR-6 WARRANTY OF CONSTRUCTION WORK – AUG 1997

(a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (1) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

(b) This warranty shall continue for a period of 1 year from the date of final acceptance of the work. If the Government takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date the Government takes possession. At any time subsequent to the acceptance by the Government of a completed installation under this contract, which installation is required to be covered by a specified warrant under the terms of the various sections of the specifications, the Base Commander will be the authorized party for the purpose of implementing the provisions of such warranties on behalf of the Government.

(c) The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Government-owned or controlled real or personal property, when that damage is the result of--

(1) The Contractor's failure to conform to contract requirements; or

(2) Any defect of equipment, material, or workmanship.

(d) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for 1 year from the date of repair or replacement.

(e) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage.

(f) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the Government shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense. See paragraph (l), Warranty Payment, below.

(g) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall--

(1) Obtain all warranties that would be given in normal commercial practice:

(2) Require all warranties to be executed, in writing, for the benefit of the Government, if directed by the Contracting Officer; and

(3) Enforce all warranties for the benefit of the Government, if directed by the Contracting Officer.

(h) In the event the Contractor's warranty under paragraph (b) of this clause has expired, the Government may bring suit at its expense to enforce a subcontractor's, manufacturer's, or supplier's warranty.

(i) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defects of material furnished by the Government nor for the repair of any damage that results from any defect in Government-furnished material or design.

(j) This warranty shall not limit the Government's rights under the Inspection and Acceptance clause of this contract with respect to latent defects, gross mistakes, or fraud.

(k) The Contractor shall furnish the following items to the Contracting Officer upon completion of installation of equipment but prior to the Joint or Final Inspection:

(1) A real property list for all installed mechanical, plumbing, and electrical equipment.

(2) The Contractor shall submit for approval at the completion of construction a list of equipment-in-place. This list shall be up-dated and kept current throughout construction, and shall be jointly inspected for accuracy and completeness by the ACO and a responsible representative of the Contractor prior to submission of each monthly payment estimate. A sample form showing minimum data required is provided at the end of this section. The equipment-in-place list shall be comprised of all equipment falling under one or more of the following classifications:

(a) Each piece of equipment listed on the mechanical equipment schedule.
(b) Each electrical panel.
(c) Each transformer.
(d) Each piece of equipment.
(e) Each piece of equipment that contains a manufacturer’s serial number on the name plate.

In addition the list shall include equipment covered by a manufacturer’s warranty under the terms and conditions of the contract, including, but not limited to:

(a) The specific contact point at the prime Contractor with complete address and telephone number. If contact for warranty action is other than the prime Contractor, furnish specific procedure for contact.
(b) The period during which each warranty is in effect assuring that each subcontractor or supplier warranty that extends beyond the normal one-year period is listed.

(3) Copy of all warranty documents.

(l) Warranty Payment: Warranty work is a subsidiary portion of the contract work, and has a value to the Government approximating 1.0% of the contract amount. The contractor shall assign a value of that amount in the breakdown for progress payments in the Contract Clause: Payments Under Fixed-Price Construction Contracts.

(End of Clause)

SCR-7 SEQUENCE OF DESIGN-CONSTRUCTION (FAST TRACK)

(a) After receipt of the Contract Notice to Proceed (NTP) the Contractor shall initiate design, comply with all design submission requirements as covered under Division 01 General Requirements, and obtain Government review of each submission. The contractor may begin construction on portions of the work for which the Government has reviewed the final design submission and has determined satisfactory for purposes of beginning construction. The ACO will notify the Contractor when the design is cleared for construction. The Government will not grant any time extension for any design re-submittal required when, in the opinion of the ACO, the initial submission failed to meet the minimum quality requirements as set forth in the Contract.

(b) If the Government allows the Contractor to proceed with limited construction based on pending minor revisions to the reviewed Final Design submission, no payment will be made for any in-place construction related to the pending revisions until they are completed, resubmitted and are satisfactory to the Government.

(c) No payment will be made for any in-place construction until all required submittals have been made, reviewed and are satisfactory to the Government.

(End of Clause)

SCR-8 CONSTRUCTOR'S ROLE DURING DESIGN – JUN 1998

The Contractor's construction management key personnel shall be actively involved during the design process to effectively integrate the design and construction requirements of this contract. In addition to the typical required construction activities, the constructor's involvement includes, but is not limited to actions such as: integrating the design schedule into the Master Schedule to maximize the effectiveness of fast-tracking design and construction (within the limits allowed in the contract), ensuring constructability and economy of the design, integrating the shop drawing and installation drawing process into the design, executing the material and equipment acquisition programs to meet critical schedules, effectively interfacing the construction QC program with the design QC program, and maintaining and providing the design team with accurate, up-to-date redline and as-built documentation. The Contractor shall require and manage the active involvement of key trade subcontractors in the above activities.

(End of Clause)

SCR-9 RECOMMENDED INSURANCE COVERAGE AND INSURANCE REQUIREMENTS

The Design-Build Contractor's attention is invited to the contract requirements concerning "RESPONSIBILITY OF THE CONTRACTOR FOR DESIGN" and "WARRANTY OF CONSTRUCTION WORK". These requirements vest in the Contractor complete responsibility for the professional quality, technical accuracy, and coordination of all design, drawings, specifications and other work or materials furnish by his in-house or consultant forces. The Design-Build Contractor must correct and revise any errors or deficiencies in his work, notwithstanding any review, approval, acceptance or payment by the

Government. The Contractor must correct and change any work resulting from his defective design at no additional cost to the Government. The requirements further stipulate that the Design-Build Contractor shall be liable to the Government for the damages to the Government caused by negligent performance. Though not a mandatory requirement, this is to recommend that the Design-Build Contractor investigate and obtain appropriate insurance coverage for such liability protection.

The following insurance requirements shall be provided in conjunction with the requirements of Contract Clause: "Insurance – Work on a Government Installation".

a. General Liability Insurance (Comprehensive form of policy): Bodily Injury Liability - $500,000 per occurrence.

b. Automobile Liability Insurance (Comprehensive form of policy): Bodily Injury Liability - $200,000 per person and $500,000 per accident. Property Damage Liability - $20,000 per accident.

c. Workmen's Compensation and Employer's Liability Insurance: Compliance with applicable workmen's compensation and occupational disease statutes is required. Employer's liability coverage in the minimum amount of $100,000 is also required.

d. Asbestos Abatement Contractor Liability Insurance: $500,000 per occurrence minimum.

(End of Clause)

SCR-10 TRAINING – FEB 2000

The Contractor shall provide operational and maintenance training for all systems furnished under this contract for the operating and maintenance personnel. The system manufacturer shall conduct the training, where feasible. All operation and maintenance (O&M) manuals shall be submitted and approved prior to conducting the training and shall be used during training. The Contractor shall videotape the training session on VHS tapes and provide the tapes to the Government. Included herein are requirements for compiling and submitting the O&M data.

O&M data shall be separated into distinct systems and within each distinct system, further separated by the following disciplines: Air Cargo Handling System, Mechanical, Electrical, Fire Detection, and Architectural/General. O&M manuals for any particular system shall include narrative and technical descriptions of the interrelations with other systems. This narrative shall include a description on how the system works with notable features of the system, including normal and abnormal operating conditions. The explanation of the system is to be short and concise with reference to specific manufacturer's equipment manuals for details. Provide overall system schematic with narrative for each discipline. If the quantity of material is such that it will not fit within one binder then it shall be divided into volumes, as required (see paragraph Binders).

1. O&M manuals shall be prepared for each individual facility of multi-facility projects.

2. **Six** complete bound copies of the final O&M data as approved shall be required, and distribution as directed by the Contracting Officer. The requirement for three copies of the O&M manual shall supersede and replace any requirements for a lesser amount of manuals which may be indicated in some specifications.

3. O&M Manual and Data Submittal: To establish and assure uniform O&M manual format, the Contractor shall submit and receive Contracting Officer approval on one complete system prior to submission for remaining systems.

3.1 The Contracting Officer will require 20 calendar days for review of submitted O&M manual(s) or data.

3.2 O&M data on equipment or systems shall be submitted so all data will be approved and bound in the O&M manuals in the required quantity by the time the project reaches 90 percent completion. Failure to furnish approved, bound manuals in the required quantity by the time the project is 90 percent complete, will be cause for the Contracting Officer to hold or adjust the retained percentage in accordance with Contract Clause, "Payment Under Fixed Price Construction Contracts". For equipment or system requiring personnel training and/or acceptance testing, the final O&M data must be approved by the Contracting Officer prior to the scheduling of the training and/or testing.

3.3 Binders:

3.3.1 Construction and Assembly: Manuals shall be in 3 ring binders, sliding posts or screw-type aluminum binding posts (three screws) with spine, but only one type shall be used for all manuals (per task order). The manuals shall be hardback covered, cleanable, plastic, not over three (3) inches thick and designed for 8-1/2 x 11 inch paper.

3.3.2 Marking: Each binder shall have the following information, as a minimum, printed on both the spine and cover; or printed on insert in plastic sleeve of notebook binder. BUILDING OR FACILITY NAME, IDENTIFICATION NUMBER (Building No.), LOCATION, ANDSYSTEM (Mechanical, Electrical, etc). Contractor's name and address as well as title and contact number shall be printed on the inside of the front cover.

3.3.3 Color: Color of binder and larkings shall be the option of the Contractor except that; (a) labeling color shall contrast with binder color, and (b) colors shall be the same for all manuals on a particular task order.

3.4 Content: The O&M manuals shall be structures to address each of the following topics:

Warning Page: A warning page shall be provided to warn of potential dangers (if they exist), such as high voltage, toxic chemicals, flammable liquids, explosive materials, carcinogens, or high pressures. The warning page shall be placed inside the front cover, in front of the title page.

Index: Each manual shall have a master index at the front identifying all manuals and volumes and subject matter for each. Following the master index, each manual shall have an index of its enclosures listing each volume, tab numbers, etc., as necessary to readily refer to a particular operating or maintenance instruction. Rigid tabbed fly leaf sheets shall be provided for each separate product, equipment or system in the manual. All pages shall be numbered with the referenced number included in the index.

3.5 Warranties: In addition to the general warranty required by the contract, the O&M manuals shall include any specific warranties normally required by other sections of the TECHNICAL SPECIFICATIONS and other warranties normally provided with the particular piece of equipment or system. Extended warranties normally provided by manufacturers that are beyond the warranty of construction shall be specifically noted. The O&M manuals shall also

include a specific warranty section itemizing all standard and extended warranty items. The warranty list shall contain the information indicated below. Warranties will not begin until the facility is accepted by the Government. Copy of warranty shall be included in the manual.

WARRANTY INFORMATION

Project Title
Contract Number

General Contractor's Name, Phone Number

ITEM DESCRIPTION	START DATE	END DATE	O & M REFERENCE LOCATION
(in alphabetical order)			
Descriptive Name, Manufacturer's/ Warrantor's Name, Address & Phone No.			

3.5.1 Utility systems shall cover the items required by the specific specification section.

3.5.2 Architectural/General O&M Data shall include the following:

3.5.2.1 Building Products, Applied Materials, and Finishes: Include product data with catalog number, size composition, and color and texture designations. Provide information for reordering custom manufactured products. Data shall include, but not be limited to, information on carpet, floor tile, vinyl wall finishes, builder's hardware, etc.

3.5.2.2 Moisture-protection and Weather-exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

3.5.2.3 Additional Requirements: As specified in individual specifications sections.

3.5.3 Data Identification: Catalog data shall be marked to clearly identify pertinent data by highlighting the data with pointers or crossing out all nonpertinent data.

3.5.4 Drawings: All drawings in the manuals shall be of such size that will require only one fold made right to left. All larger size drawings shall be inserted into a separate pocket in the required location in the manual. All drawings shall be of a microfilm quality.

3.5.5 Posted Data: The Contractor shall provide posted data for equipment or systems in addition to O&M manuals, and as required by the TECHNICAL SPECIFICATIONS Sections. The data shall consist of as-built schematic of all wiring, controls, piping, etc., as necessary for the operation of the equipment or system, and a condensed typewritten description of the system. The posted data may include all necessary interrelation with other equipment and systems. The data may be presented in one or several frames, under glass or sheet acrylic glazing, for clarity and convenience of location. The framed data presentation and outline shall be acceptable to and posted at locations designated by the Contracting Officer. The data shall be posted prior to requesting the final inspection.

3.5.6 Framed Instructions: Typewritten instructions, framed under glass or sheet acrylic glazing, explaining equipment or system prestart checkout, startup, operations and shutdown procedures, safety precautions, preventive maintenance procedures, and normal operation checks for satisfactory performance of the equipment of systems shall be posted in conjunction with the data. The framed instruction presentation and outline shall be acceptable to the Contracting Officer prior to posting and shall be posted prior to requesting the final inspection.

3.6 Payment: Approval and acceptance of the final O&M manuals shall be accomplished before final payment is made to the Contractor.

3.7 Checklist: Contractor shall complete and initial a copy of the O&M Manual Check List which is shown in the "Instructions and Information for Contractors" manual and forward it along with ENG Form 4025 as part of the O&M Manual submittal to the Contracting Officer for approval.

(End of Clause)

SCR-11 DESIGN CONFERENCES – JUN 2000

(a) Pre-Work: As part of the Pre-Work Conference conducted after contract award, key representatives of the Government and the Contractor will review the proposal and the design review procedures specified herein, discuss the preliminary design schedule and provisions for phase completion of the D-B documents with construction activities (fast tracking), as appropriate, meet with key Corps of Engineers Design Review personnel and Using Agency points of contact and any other appropriate pre-design discussion items.

(b) Initial Design Coordination Meeting/Requirements Charrette: After award of the contract, the Contractor shall visit the site and conduct extensive interviews, and problem solving discussions with the individual users, base personnel, Air Force and/or Air Mobility Command Personnel, and Corps of Engineers personnel to acquire all necessary site information, review user options, and discuss user needs. The Contractor shall document all discussions. The requirements may be finalized as direct result of this meeting and the design will be started.

(c) Pre 15% submittal/design charrette meeting: Conferences to be held at Scott AFB, HQ AMC. Purpose of the meeting will be to discuss macro-scale design issues, architectural direction and design issues. This meeting should be held as soon after the initial meeting as possible, once the A-E has had time to absorb the requirements and consider some design approaches.

(d) Design Review Conferences: Review conferences will be held at Dover AFB for each design submittal. The Contractor will bring the personnel that developed the design submittal to the review conference. The conferences will take place the week after the review is complete.

(End of Clause)

SCR-12 VALUE ENGINEERING AFTER AWARD – JUNE 1999

(a) In reference to Contract Clause 52.248-3, "Value Engineering – Construction", the Government may refuse to entertain a "Value Engineering Change Proposal" (VECP) for those "performance oriented" aspects of the Solicitation documents which were addressed in the Contractor's accepted contract proposal and which were evaluated in competition with other offerors for award of this contract.

(b) The Government may consider a VECP for those "prescriptive" aspects of the Solicitation documents, not addressed in the Contractor's accepted contract proposal or addressed but evaluated only for minimum conformance with the Solicitation requirements.

(c) For purposes of this clause, the term "performance oriented" refers to those aspects of the design criteria or other contract requirements which allow the Offeror or Contractor certain latitude, choice of and flexibility to propose in its accepted contract offer a choice of design, technical approach, design solution, construction approach or other approach to fulfill the contract requirements. Such requirements generally tend to be expressed in terms of functions to be performed, performance required or essential physical characteristics, without dictating a specific process or specific design solution for achieving the desired result.

(d) In contrast, for purposes of this clause, the term "prescriptive" refers to those aspects of the design criteria or other Solicitation requirements wherein the Government expressed the design solution or other requirements in terms of specific materials, approaches, systems and/or processes to be used. Prescriptive aspects typically allow the Offerors little or no freedom in the choice of design approach, materials, fabrication techniques, methods of installation or other approach to fulfill the contract requirements.

(End of Clause)

SCR-13. PARTNERING – FEB 2000

In order to most effectively accomplish this contract, the Government proposes to form a partnership with the Contractor to develop a cohesive building team. It is anticipated that this partnership would involve the Users, operators, and other parties deemed appropriate by the Government**,** the Contractor, primary subcontractors and designers and the Corps of Engineers. This partnership would strive to develop a cooperative management team drawing on the strengths of each team member in an effort to achieve a quality project within budget and on schedule. This partnership would be bilateral in membership and participation will be totally voluntary. Any cost associated with effectuating this partnership, excluding travel and lodging cost of Government personnel, will be borne by each party. Activities are expected to include one or more brainstorming sessions among potential partners pursuant to a Memorandum-of-Understanding that will detail the bylaws of partnering. Bylaws will establish, for example, an effective means of addressing clarifications or issues that may develop during the design-build process, to include real time Alternate Dispute Resolution procedures to effectively address those issues that are not more readily resolved. Effective partnering is expected to be beneficial to all parties.

(End of Clause)

SCR-14 PERFORMANCE EVALUATION OF CONTRACTOR

a. As a minimum, the Contractor's performance will be evaluated upon final acceptance of the work. However, interim evaluations may be prepared at any time during contract performance when determined to be in the best interest of the Government.

b. The format for the evaluation will be DD Form 2626, and the Contractor will be rated either outstanding, satisfactory, or unsatisfactory in the areas of Contractor Quality Control, Timely Performance, Effectiveness of Management, Compliance with Safety Standards. The Contractor will be advised of any unsatisfactory rating, either in an individual element or in the overall rating, prior to completing completion of the evaluation, and all Contractor comments will be made part of the official record. Performance Evaluation Reports will be available to all DOD Contracting offices for their future use in determining Contractor responsibility, in compliance with DFARS 236.201 (c) (1). (CENAP)

(End of Clause)

SCR-15 LIQUIDATED DAMAGES – CONSTRUCTION (APR 1984)

a. If the Contractor fails to complete the work within the time specified, or any extensions thereof, the Contractor shall pay to the Government as liquidated damages $3,500.00 for each calendar day of delay.

b. If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increase costs occasioned the Government in completing the work.

c. If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted. (FAR 52.212-5)

(End of Clause)

SCR-16 CONTRACT DRAWINGS, MAPS AND SPECIFICATIONS (DEC 1991)

a. The Government will provide the Contractor, without charge, a CD (read only format) containing all contract drawings (existing site plan and existing building plans) and specifications except for publications incorporated into the technical provisions by reference;

b. The Contractor shall –

(1) Check all drawings furnished immediately upon receipt;

(2) Be responsible for verifying existing conditions shown on the drawings.

c. Omissions from the drawings or specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work, but shall be performed as if fully and correctly set forth and described in the drawings and specifications. (DFARS 252.236-7001)

(End of Clause)

SCR-17 PHYSICAL CONDTIONS (Apr 1984)

Data and information furnished of referred to below is for the Contractor's information. The Government will not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor. (FAR 52.236-4)

a. Weather Conditions. The climate of the area is referred to as "continental" by climatologists, characterized by cold winters and moderately hot summers. Complete weather records and reports may be obtained from the local U.S. Weather Bureau Office nearest to the work site. The Contractor shall satisfy himself as to the hazards likely to arise from weather conditions during the construction period.

b. Transportation Facilities: U.S. Highway 113 and State Routes 1 and 10 serve the locality of the proposed work. The Contractor shall make his own investigation of available routes and load limits of bridges. Roads within the Military Reservation may be used by the Contractor subject to the approval of Base Authorities. Such roads, when used by the Contractor, shall be maintained throughout the contract period and shall be restored to at least the condition which existed prior to the start of the work. The Contractor shall also be responsible for the construction of any temporary haul roads and bridges required for execution of the contract work. All temporary construction shall be removed by the Contractor and the area restored to the condition which existed prior to the start of work. **During the**

sequences 1 to 5 of construction, 8th Street shall be used as the construction entrance to the job site.

c. Location. The site of the work is located at Dover Air Force Base, located 4.5 miles south of metropolitan Dover in the State of Delaware. The site of the work is on a military reservation and all rules and regulations issued by the Commanding Officer covering general safety, security, smoking policy, and sanitary requirements, etc., shall be observed by the Contractor.

d. Magnitude of the Contract Work. The estimated value of the contract work is over $70,000,000.

e. Inspection of the Site. Prospective bidders are invited to visit the site of work to acquaint themselves with the site conditions and any problems incidental to the prosecution of the work. A site inspection will be held on 28th January, 2004 starting at 1000hrs from the U.S. Army Corps of Engineers Resident Office, located in Room 1 of Building 302, 13th and Atlantic Streets, Dover Air Force Base, Delaware. Arrangements for inspection of the site shall be made through Mr. Tom Lavender of the Resident Office, telephone 302 677-4777. Due to security procedures to obtain access to Dover AFB, it is necessary for prospective bidders to assemble at an off base location where a bus will take bidders to the site inspection location. **An Air Force bus will be at the Blue Hen Corporate Center just north of Dover AFB on Route 113 just before 1000hrs to carry visitors to the site. The bus will carry the visitors back to the Blue Hen Corporate Center upon completion of the site inspection.**

f. Hours of Work. The Contractor shall provide at least 24 hours advanced notification to establish when on-site work will commence and prior to restarting on-site work following any discontinuances lasting longer than five normal workdays. Notification shall be provided by phone, in person, or in writing, and shall be given directly to the ACO. Work shall only be performed between 0730 hrs and 1630 hrs daily, Monday through Friday, excluding Federal legal holidays as outlined by Public Law Number 98-144 (or days not worked on Dover Air Force Base due to observance of such holidays). Unless otherwise specifically authorized herein or in writing by the Contracting Officer, the scheduling of work for times other than as set forth above, will not be permitted.

g. Interruption of Utilities.

(1) No utility services shall be interrupted by the Contractor to make connections, to relocate, or for any purpose without approval of the Contracting Officer. Power outages and limited utility interruptions for hookups will be permitted in accordance with a schedule arranged in advance of the interruption. The Contractor shall be responsible for notifying and coordinating all temporary outages with the Contracting Officer at least five working days in advance of the intended outage.

(2) Power outages and limited utility interruptions for hookups will be permitted in accordance with a schedule arranged in advance with the Contracting Officer. The Contractor shall be responsible for notifying and coordinating all outages with the Administrative Contract Officer (ACO) at least 17 working days in advance of the intended outage. The request shall be include the following information:

(a) Nature of Utility (Gas, Water, Electric, etc.)

(b) Size of line and location of shutoff

(c) Buildings and services affected.

(d) Hours and date of shutoff.

(e) Estimated length of time service will be interrupted.

(3) Services shall not be shut off until receipt of approval of the proposed hours and date from the Contracting Officer.

(4) Shutoffs which will cause interruption of Government work operations as determined by the Contracting Officer shall be accomplished during regular non-work hours or on non-work days of the Using Agency without any additional cost to the Government.

(5) Operation of valves on water mains will be by Government personnel. Where shutoff of water lines interrupts service to fire hydrants of fire sprinkler systems, the Contractor shall arrange his operations and have sufficient material and personnel available to complete the work without undue delay or to restore service without delay in the event of an emergency.

(6) Flow in gas mains which have been shut off shall not be restored until a Utility Company inspector has determined that all items serviced by the gas line have been shut off.

h. Alterations to Utilities. Where changes and relocations of utility lines are noted to be performed by others, the Contractor shall give the Contracting Officer at least thirty days' written notice in advance of the time that the change or relocation is required. In the event that, after the expiration of thirty days after the receipt of such notice by the Contracting Officer, such utility lines have not been changed or relocated and delay is occasioned to the completion of the work under this contract, the Contractor will be entitled to a time extension equal to the period of time lost by the Contractor after the expiration of said thirty day period. Any modification to existing or relocated lines required as a result of the Contractor's method of operation shall be made wholly at the Contractor's expense and no additional time will be allowed for delays incurred by such modifications.

i. Street Closing. When operations in connection with contract work necessitate the closing of streets, it shall be the Contractor's responsibility to arrange at least 28 working days in advance with the Contracting Officer for such street closings and to provide appropriate barricades, signs, markers, flares, and other devices as may be required by the ACO for traffic guides and public safety.

j. National Threat Level. Dover Air Force Base is subject to varying threat conditions. At higher threat conditions, access to work site may be limited.

(End of Clause)

SCR-18 AVAILABILITY AND USE OF UTILITY SERVICES (APR 1984)

a. The Government will make all reasonable required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. Unless otherwise provided in the contract, the amount of each utility service consumed will be paid by Dover Air Force Base. The Contractor shall carefully conserve utilities furnished by the Base at no charge.

b. The Contractor, at its expense and in workmanlike manner satisfactory to the Contracting Officer, shall install and maintain all necessary connections and distribution lines except that only Base personnel may make connections to the Base electrical distribution system, connections to Chesapeake Utility's gas lines shall be coordinated with that company, and only the local telephone company may make connections to their distribution lines. Before final acceptance of the completed project by the Government, the Contractor shall remove or arrange to have removed by the appropriate agency, all temporary connections, distribution lines, meters, and associated paraphernalia. (FAR 52.236-14)

c. Electric service to Contractor-furnished office or storage facilities will be charged at the current rate

prescribed by Air Force regulations. The service connection shall be made through a Contractor furnished kilowatt hour meter appropriate for the circumstances. Contractor is also responsible for all costs associated with telephone services; telephone service will not be Government furnished.

(End of Clause)

SCR-19 IDENTIFICATION OF EMPLOYEES

The Contractor shall be responsible for furnishing an identification badge/card to each employee prior to the employees work on-site, and for requiring each employee engaged on the work to display such identification as may be approved and directed by the Contracting Officer. All prescribe identification shall immediately be delivered to the Contracting Officer for cancellation upon the release of any employee. When required by the Contracting Officer, the Contractor shall obtain and submit fingerprints of all persons employed or to be employed on the project (CENAP)

(End of Clause)

SCR-20 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (MAR 1995)

a. This statement shall become operative only for negotiated contracts where cost or pricing data is requested, and for modifications to sealed bid or negotiated contracts where cost or pricing data is requested. This clause does not apply to terminations. See FAR 52-231-5001, Basis for Settlement of Proposal and FAR Part 49.

b. Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by the Contractor or sub-contractors at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial or series for which the Government can determine both ownership and operating costs from the Contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment from the Contractor's accounting records, cost for the equipment shall be based upon the applicable provisions of EP 1110-1-8, "Construction Equipment Ownership and Operating Expense Schedule," Region II. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the Contracting Officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retrospective pricing, the schedule in effect as of the time work was performed shall apply.

c. Equipment rental costs are allowable, subject to the provisions of FAR 31.205 (d) (ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated leasees.

d. When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the Contracting Officer will request that the Contractor submit either certified cost or pricing data, or partial/limited data, as appropriate. This data shall be submitted on Standard Form 1411, "Contractor Pricing Proposal Cover Sheet."

(End of Clause)

SCR-21 CERTIFICATE OF COMPLIANCE

Any certificate required for demonstrating proof of compliance of materials with specifications requirements shall be executed in triplicate. Each certification shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if, after test are performed on selected samples, the material is found not to meet the specific requirements. (CENAP)

(End of Clause)

SCR-22 TIME EXTENSIONS FOR UNUSALLY SEVERE WEATHER (OCT 1989)

a. This clause specifies the procedure for determining the time extensions for unusually severe weather in accordance with the Contract Clause entitled “Default (Fixed-Price Construction)”. In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

(1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month based on historic data.

(2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor’s progress schedule must reflect thee anticipated adverse weather delays in all weather dependent activities. For the purpose of this contract, unusually severe weather is defined as daily precipitation equal to or exceeding 0.5 inches and/or maximum daily temperature not exceeding 32 degrees F.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY
WORK DAYS BASED ON A 5 DAY WORK WEEK AT DOVER AFB

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
4	2	2	2	2	2	2	2	2	2	1	2

c. Upon acknowledgement of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor shall record on the daily CQC report, the occurrence of adverse weather and resultant impact to normal scheduled work. Actual adverse weather days must prevent work on critical activities for 50 percent or more of the Contractor’s scheduled work day. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph b, above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the contract clause entitled: “Default (Fixed Price Construction)”. (ER 415-1-15)

(End of Clause)

SCR-23 PAYMENT FOR MATERIALS DELIVERED OFF-SITE

Pursuant to Contract Clause entitled: "Payments Under Fixed-Price Construction Contracts," materials delivered to the Contractor at locations other than the site of the work may be taken into consideration in making payments if included in payment estimates and if all conditions of the Contract Clauses are fulfilled. Payment for items delivered to locations other than the work site will be limited to those materials which have been approved, if required by the specifications; those materials which have been fabricated to the point where they are identifiable to an item of work required under this contract. Such payment will be made only after receipt of paid or receipted invoices with cancelled check showing title to the items in the prime Contractor's name and including the value of materials and labor incorporated into the item. (CENAP)

(End of Clause)

SC-24 U.S. ARMY CORPS OF ENGINEERS SAFETY AND HEALTH REQUIREMENTS

U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1 and its changes are available at http://www.hq.usace.army.mil/soh/hqusace_soh.htm. The Contractor shall be responsible for complying with the current edition and all changes posted on the web as of the effective date of the solicitation. (USACE)

(End of Clause)

EQUIPMENT-IN-PLACE LIST

CONTRACT NO.: _____

Specification Section: _____ Paragraph No. _____

ITEM DESCRIPTION: _____

Item Number: _____

Serial Number: _____

Model Number: _____

Capacity: _____ Replacement Cost _____

ITEM LOCATION:

Building Number: _____ Room Number: _____

or Column Location: _____

MANUFACTURER INFORMATION:

Manufacturer Name: _____

Trade Name (if different from item name): _____

Manufacturers Address: _____

_____

Telephone Number: _____

WARRANTY PERIOD: _____

CHECKED BY: _____

SECTION 01000

GENERAL
(SPECIAL WORK REQUIREMENTS AND RESTRICTIONS)

1.0 WORK SCHEDULE

1.1 Work shall be performed between 0730hrs and 1630hrs daily, Monday through Friday, excluding federal legal holidays as outlined in Public Law Number 98-144 (or the days not worked on Dover AFB due to the observance of such holidays). Unless otherwise specifically authorized herein or in writing by the Contracting Officer, the scheduling of work times other than as set forth above, is not permitted.

1.2 Power outages and limited utility interruptions for hookups will be permitted in accordance with a schedule arranged in advance with the Contracting Officer. The Contractor shall be responsible for notifying and coordinating all outages with the Administrative Contract Officer (ACO) at least 17 working days in advance of the intended outage.

1.3 A portion of the demolition and construction will be performed within the Restricted Area of the base. The Contractor shall coordinate with Base Security, through the Base Civil Engineer (BCE), regarding the relocation of the Restricted Area jersey barriers prior to the commencement of any demolition and construction. Base Security will require at least 28 days notice prior to relocating any jersey barriers.

1.4 WLAN Equipment: Prior to the demolition work, the Contractor shall coordinate with the BCE that the Government has accomplished the following work.

1.4.1 The Government shall remove the access point, antennas, and associated support equipment from Building 582 and shall reinstall them in Building 706 (south end of flightline side of building).

1.4.2 The Government shall remove the access point, antennas, and associated support equipment from Building 585 and shall reinstall them in Building 515.

1.4.3 The Government shall remove the access point, antennas, and associated support equipment from Building 505 and reinstall them at a location to be determined.

2.0 WORK CONDITIONS

The work to be performed under this contract will be on an occupied site adjacent to existing Air Freight Terminal which will remain in operation 24 hours a day, 7 days a week during construction until demolished by new AFT contractor. Due care shall be taken to minimize disruption to occupants' daily activities. Contractor shall coordinate disruptions such as street closures with the ACO at least 28 working days in advance**.**

3.0 MATERIAL AND EQUIPMENT DISPOSAL

3.1 Salvable Materials: The following procedures shall apply to identified salvable materials. The Contractor shall exercise due care in the removal of items designated as salvable by the Government so as to protect and preserve the existing condition. Items shall be collected and turned-in to the Defense Reutilization and Marketing Officer (DRMO) located in Building 638, Dover AFB. The Contractor is responsible for preparing items for turn-in (including segregating and palletizing), and for loading, transporting to, and off-loading items at the DRMO facility. The following additional provisions shall apply.

3.1.1 The Contractor shall provide an itemized listing of salvable items to the ACO at least five working days prior to the day the items are scheduled to be turned in. This listing will be used by the Government to prepare the necessary turn-in documents for the Contractor. The Contractor shall include quantities on the listing for all salvable materials. No items will be accepted by DRMO from the Contractor unless they are accompanied by the prepared turn-in document.

3.1.2 The DRMO may refuse to accept materials that are not appropriately prepared for turn-in.

3.1.2.1 Materials for turn-in that are loaded in an orderly manner on 4'x4' pallets, with pallets situated to be accessible for handling by forklift, will be of-loaded by the DRMO. Government furnished pallets are available for pickup at the DRMO.

3.1.2.2 Materials that are not acceptably “palletized” shall be off-loaded by the Contractor at the location designated by the DRMO and stacked in a manner stipulated by the DRMO.

3.1.3 Unless otherwise stipulated herein or by the Contracting Officer, salvable items shall include:

3.1.3.1 “The metal sprung structure added to damaged bays of Building 505 is to be disassembled and turned over to the Government for reuse. The fabric skin is understood to be unsalvageable. The contractor should contact the manufacturer of the frame structure itself (Sprung, 1-800-528-9899, or www.sprung.com) for specific details and guidance on how to effect safe and successful disassembly of this structure.”

3.1.3.2 Light ballasts containing PCBs and all fluorescent tubes shall be turned in to the Base Civil Engineer at Building 1306. Offerors shall include in their proposals salvage of ballasts from buildings as listed in the “PCB Investigation and Report”. The Contractor shall provide drums and turn over ballasts and tubes in said drums.

3.1.3.3 Pole mounted transformers

3.1.3.4 Thermostats containing mercury shall be turned in to the Base Civil Engineer at Building 1306. Contractor shall provide drum(s) and turn over thermostats in said drum(s).

~~**3.1.3.5 Utility poles**~~

3.1.3.6 All mercury vapor, metal halide, and HP sodium lamps shall be turned over to the Base Civil Engineer at Building 1306. The Contractor shall provide drums and turn over lamps in said drums.

3.1.3.7 Hot water storage tanks shall be rendered unusable before being turned over to the DRMO.

3.1.3.8 Fire hydrants removed during demolition shall be turned into the DRMO and not re-used.

3.1.3.9 Transformers shall be turned into the DRMO and not re-used.

3.1.3.10 Generators: The generator at the existing Building Number 510, Fire Station and the generator in Building 585 shall be turned in to the BCE at Building Number 1306 if not already removed by the BCE prior to demolition of the Fire Station and Building 585; and; the two generators at the existing AFT and the generator at Building Number 582 shall be turned in to the DRMO at Building Number 638. All automatic transfer switches shall be turned in to the BCE at Building 1306 if not already removed by the BCE prior to demolition.

3.1.3.11 Fire Alarm Transceivers and antennas removed during demolition shall be turned over to the Base Civil Engineer and not re-used.

3.1.3.12 Fire Extinguishers and Facility “Knox Boxes” removed during demolition shall be turned over to the Base Civil Engineer and not reused.

3.1.3.13 Refer to specification Section “02220 Demolition” regarding air conditioning units and Freon.

3.1.3.14 The existing four ETVs and one MPETV in the existing AFT shall have their superstructures removed and then shall be turned in to the DRMO at Building Number 638. The superstructures shall not be turned in to DRMO.

3.1.3.15 The seven floor mounted scales located in the bays shall be turned in to DRMO at Building Number 683.

3.1.3.16 Three existing cranes (3 ton, 10 ton, and 35 ton) of the existing AFT shall be removed from their rails and turned in to the DRMO at Building Number 638. The rails and rail structural supports shall not be turned in to DRMO.

3.1.3.17 Vehicle Air Compressors

3.1.3.18 Vertical Carousel

3.1.4 Items designated for turn-in to DRMO that contain or have been coated or covered with materials that are, or which could become, hazardous if spilled or disturbed in handling, e.g. items containing asbestos, shall be cleaned to remove all such hazardous or potentially hazardous materials prior to turn-in. Cleaning shall be accomplished in accordance with applicable local, state, and federal regulations. Residue from cleaning operation shall be collected and disposed of by the Contractor in accordance with local, state, and federal regulations.

3.1.5Turn-ins shall be coordinated with the DRMO representative. Hours of DRMO operation will be specified at the pre-construction meeting.

3.1.6 Advance coordination is required when use of the DRMO forklift is contemplated for off-loading. Failure to make advance coordination may result in delayed off-loading awaiting availability of a forklift.

3.1.7 The DRMO is a controlled access facility. It is required that all persons desiring entry to the facility sign-in at the DRMO office.

3.2 Hazardous Materials: Materials classified as hazardous by federal or state environmental rules, regulations, or laws shall be handled and processed for disposal in accordance with those rules, regulations, or laws. The Contractor shall submit a list of all hazardous materials to be used throughout the term of the project along with Material Safety Data Sheets for those materials considered hazardous in accordance with the requirements of AFOSH Standard 161-21. In addition, the quantity of chemicals expended will be reported to the HAZMAT Pharmacy on a quarterly basis. The Contractor shall include the hazardous materials list as a submittal for approval by the HAZMAT Pharmacy. Approvals are required prior to bringing hazardous materials on Base. The Contractor is responsible for all such materials that are residue from Contractor furnished supplies and materials which were brought to the job site by the Contractor, and for any such materials identified herein or by the drawings. Upon contract completion, the Contractor shall notify the HAZMAT Pharmacy on all HAZMAT and HAZWASTE that is leaving the Base.

3.3 The Contractor shall also recycle concrete, untreated wood, and other demolition debris where required by Executive Order 13101.

3.4 The Contractor is responsible for the collection and disposal of all debris, rubble, residue, and waste material generated in the performance of work under this contract. All such materials shall be removed from Dover Air Force Base by the Contractor and disposed of in a State approved permitted landfill or recycled in accordance with State and federal regulations. The Contractor is not permitted to deposit any such materials in base trash collection containers or at any on-base location without prior approval from the Contracting Officer.

4.0 COORDINATION OF WORK

The Contractor shall coordinate the work of subcontractors and shall ensure the coordination of work between the various trades. In many instances the contract drawings indicate only the general location and arrangement of existing features, e.g. equipment, fixtures, piping, conduit, and outlets, and may not in all cases show, identify, or detail all materials or components. The Contractor shall study, examine, and evaluate the contract drawings to establish the work, coordination, or materials required and necessary.

5.0 CHARGES FOR UTILITY SERVICE

5.1 As outlined in FAR Clause “Availability and Use of Utility Services”, electric service to Contractor-furnished office and storage facilities will be charged at the current rate prescribed by Air Force Regulations. The service connection shall be made through a Contractor-furnished kilowatt-hour meter appropriate for the circumstances.

5.2 Contractor is responsible for all costs associated with telephone service to his office on-site. Telephone service will not be Government furnished.

f. The Structural Standing Seam Metal Roof (SSSMR) shall be warranted by the Contractor on a no penal sum basis for a period of five years against material and workmanship deficiencies; system deterioration caused by exposure to the elements; and /or inadequate resistance to specified service design loads, water leaks, and wind uplift damage. The SSSMR system covered under this warranty shall include the entire roofing system including, but not limited to, the standing seam metal roof panels, fasteners, connectors, roof securement components, and assemblies tested and approved in accordance with ASTM E 1592. In addition, the system shall consist of panel finishes, slip-sheet, insulation, vapor retarder, all accessories, components, and trim and all connections with roof panels. This includes roof penetration items such as vents, curbs, and skylight; interior or exterior gutters and downspouts; eaves, ridge, hip, valley, rake, gable, wall, or other roof system flashings installed and any other components specified within this contract to provide a weather tight roof system; and items specified in other sections of these specifications that are part of the SSSMR system. All material and workmanship deficiencies, system deterioration caused by exposure to the elements and/or inadequate resistance to specified design loads, water leaks and wind uplift damage shall be repaired as approved by the Contracting Officer. This warranty shall warrant and cover the entire cost of repair or replacement, including all material, labor, and related markups. The Contractor shall supplement this warranty with written warranties from the installer and system manufacturer, which shall be submitted along with the Contractor's warranty; however, the Contractor shall be ultimately responsible for this warranty. The Contractor's written warranty shall start upon final acceptance of the facility. It is required that the Contractor provide a separate bond in an amount equal to the installed total roofing system cost in favor of the owner (Government) covering the Contractor's warranty responsibilities effective throughout the five year Contractor's warranty period for the entire SSSMR system as outlined above.

Manufacturer's Material Warranties: The Contractor shall furnish, in writing, the following manufacturer's material warranties which cover all SSSMR system components such as roof panels, anchor clips and fasteners, flashings, accessories, and trim, fabricated from coil material:

1) A manufacturer's 20 year material warranty warranting the aluminum, zinc-coated steel, aluminum-zinc alloy coated steel or aluminum-coated steel as specified herein will not rupture, structurally fail, fracture, deteriorate, or become perforated under normal design atmospheric conditions and service design loads. Liability under this warranty shall be limited exclusively to the cost of either repairing or replacing nonconforming, ruptured, perforated, or structurally failed coil material

2) A manufacturer's 20 year exterior material warranty on the factory colored finish warranting that the finish, under normal atmospheric conditions at the site, will not crack, peel, or delaminate; chalk in excess of a numerical rating of eight, as determined by ASTM D 4214 test procedures; or change color in excess of five CIE or Hunter Lab color difference (delta E) units in accordance with ASTM D 2244. Liability under this warranty is exclusively limited to refinishing with an air-drying version of the specified finish or replacing the defective coated material.

3) A roofing system manufacturer's 20 year, non-prorated, system weather tightness warranty.

3.1 Demo Design Submittal (100%). This submittal is provided to allow the contractor to concentrate initial efforts for the demo portion of the project. By allowing this work to be separated, the contractor is given the opportunity to fast track and begin construction on the demo work prior to completion of the site and building designs. This submittal shall consist of the following:

3.1.1 Design analysis, developed to 100%

3.1.2 100% complete drawings

3.1.3 100% demo and abatement specifications

3.1.4 Environmental permits, as required. **However, the Dover AFB Base Civil Engineer will submit only one sediment and erosion control permit application to the Delaware Department of Natural Resources and Environmental Control (DNREC), as prepared by the Air Freight Terminal Contractor. This permit application shall include all temporary sediment and erosion control measures during demolition and construction as well as all permanent sediment and erosion control measures. Therefore, if the Air Freight Terminal Contractor chooses to fast track preparation of the demolition plans and specifications, the Contractor shall also fast track the site storm water design and the site temporary and permanent sediment and erosion control plans and specifications.** When environmental permits are not required, the Contractor shall provide a statement with justification to that effect.

3.2 First Site/Utility and Building Design Submittal (15%). This submittal is intended to insure that the contractor’s concept for the site layout and building exterior and interior layout meet the needs and expectations of the Air Force and that the design is proceeding in accordance with the terms of the solicitation and the contractor's original proposal as well as in a timely manner. This submittal shall consist of the following:

3.2.1 Design analysis, developed to 15%

3.2.1.1 Include also, narrative on permanent sediment and erosion control.

3.2.2 15% complete drawings to include on CD

3.2.2.1 Schematic Site Plan

3.2.2.2 Schematic Floor Plan

3.2.2.3 Furniture Plan

3.2.2.4 Elevations

3.2.2.5 Single Line Perspective Sketch

3.2.3 List of Specifications

3.3 Second Site/Utility and Building Design Submittal (35%). This submittal is intended to insure that the contractor’s design is proceeding in accordance with the terms of the solicitation and the contractor's original proposal as well as in a timely manner. See Section 01012, paragraph 22.4 for details. This submittal shall consist of the following:

3.3.1 Design analysis, developed to 35%

3.3.2 35% complete drawings to include on CD

3.3.3 Outline Specifications. Provide catalogue cuts of all proposed major building materials, i.e. Metal panels, roof system, windows, translucent system, HVAC, plumbing and lighting.

3.3.4 Draft Comprehensive Interior Design CID

3.3.5 Responses to Government's 15% review comments

chain between a tugging vehicle and the hitch on the ETV. The hitch and ETV frame shall show no signs of bending, deflection, or twisting when the ETV with maximum load is being towed with the brakes released.

3.2.8.4. VEHICLE SUPPORT WHEELS

The wheels shall have a minimum diameter of 15-3/4 inches. Wheels shall be either forged of plate or bar stock steel. Wheel material shall be AISI 4140 steel or equivalent as approved by the COTR. Rims shall be heat treated to Rockwell C-50 minimum. The vehicle shall have double-flanged wheels. Methods to control, correct, and maintain wheel alignment shall be provided so the wheels remain parallel. The Contractor shall remove, inspect, and reinstall all wheel bearings immediately following the 30th day of the reliability demonstration test. If the bearings show signs of abnormal wear, the MPETV fails the reliability demonstration test.

3.2.9. CRANE RAILS AND SUPPORTING STRUCTURE

All drawings, calculations, specifications, and details for the crane rail installation and the crane rail supporting structure shall be submitted with the Engineering Design and Construction Shop Drawings as specified in Appendix H. The crane rail and supporting structure shall conform to Figure A1 in all locations where maintenance vehicle access is not required.

3.2.9.1. CRANE RAILS

The ETV shall be supported by one floor-mounted and one ceiling-mounted crane rail. Crane rails shall support and guide both ETVs during horizontal travel within the operating aisle. Minimum **floor-mounted** crane rail size shall be ASCE 105 pounds per yard. **Minimum overhead crane rail size shall be ASCE 105 pounds per yard.** The **floor-mounted** crane rail shall be installed above the concrete so the top and sides of the crane rail are exposed as shown on Figure A1 except as noted in 3.2.9.2. for maintenance vehicle access. The crane rails shall be designed and installed in accordance with AISC M016 and CMAA 70. The crane rails shall meet the distance and elevation tolerances specified in CMAA 70. The contractor shall provide independent certification that the crane rails comply with the maximum tolerances specified in CMAA 70. The maximum deflection of the crane rail shall be 0.03 inch due to operation of the ETV with maximum load. The minimum length for any crane rail section shall be 10 feet. The ends of the crane rails shall be cut at a 45-degree angle at all bolted connections. The ETV shall be supported by the pallet storage enclosure structure.

3.2.9.2. MAINTENANCE VEHICLE ACCESS

Maintenance vehicle access areas shall permit 4K and 10K forklifts to drive over the crane rail and adjacent to all sides of each ETV as specified in Appendix C (Forklift Access for ETV Maintenance). The maintenance vehicle access areas shall include access to the center of the ETV aisle from the middle of the east side of the pallet

APPENDIX C

FOR A

ETV-PALLET STORAGE ENCLOSURE

FOR THE

AIR CARGO HANDLING SYSTEM

AT THE

NEW AIR FREIGHT TERMINAL

AT

DOVER AIR FORCE BASE, DELAWARE

DATE: 24 December 2003

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1. SCOPE

This appendix establishes the minimum performance, design, fabrication, installation, and test requirements for an elevating transfer vehicle-pallet storage enclosure (ETV-PSE) for the new air freight terminal at Dover Air Force Base (AFB), Delaware. The work shall be completed in accordance with this appendix, the Cover Purchase Description (PD), and Appendix H for Construction. This appendix covers all equipment, materials, and labor necessary to complete installation of the system.

2. APPLICABLE DOCUMENTS

Applicable documents shall be in accordance with Section 2 of the Cover PD.

3. REQUIREMENTS

3.1. SYSTEM DESCRIPTION

The ETV-PSE shall provide environmental protection for the ETVs, storage conveyors (SCs), cargo, all utilities used in the ETV-PSE, and the portions of the lift transfer conveyors (LTCs) and staging dock conveyors (SDCs) inside the ETV-PSE. The ETV-PSE shall be either mounted directly to the conveyor rack (i.e., a rack-supported enclosure) or a separate enclosure surrounding the storage conveyors. The ETV-PSE shall be a four level system, a lower and three upper levels. The ETV-PSE shall include an in-rack sprinkler and lighting system and a roof-mounted sprinkler and lighting system.

3.2. INTERFACES

3.2.1. PALLET TRANSFER

When the overhead doors are open, the ETV-PSE shall not interfere with pallet transfer on any conveyor. Pallets loads, including those with up to 4 inches of overhang, shall not snag on any component of the ETV-PSE. The ETVs shall be able to travel to any interfacing conveyor without interference from the ETV-PSE.

3.2.2. HEIGHT CLEARANCE

All conveyors in and beneath the ETV-PSE shall have a minimum of 124 inches of clear height as measured from the top of the rollers to the lowest overhead obstruction (i.e., sprinkler heads, conveyor frames, bottom of rollers of next higher level, structural members, overhead doors, lights, roof, etc.).

3.2.3. AIR TERMINAL BUILDING

The wall between the ETV-PSE and the air terminal building shall be a shared wall.

3.2.4. FORKLIFT ACCESS FOR ETV MAINTENANCE

Forklift access shall be provided on both ends of the ETV aisle and near the middle of the north side for ETV maintenance. Sloped or ramped concrete shall be provided to permit forklifts to travel over the crane rail as specified in Appendix A. Bracing, door frames, and other obstructions (other than the access stairs, walkway to the stair-ladders, the stair-ladders, and columns) shall be a minimum of 12 feet above the surrounding ground where forklifts will operate. The Contractor shall provide sloping surfaces or ramps capable of supporting fully loaded forklifts if necessary for the forklift to travel from the existing grade to the ETV-PSE foundation.

3.2.4.1. **NORTH** FORKLIFT ACCESS

With the North ETV (ETV2) in the north maintenance access area, 4K and 10K forklifts shall be able to enter the ETV-PSE on the north end and the east side of the ETV-PSE and drive up to the EYV along its entire length on both sides.

3.2.4.2. **SOUTH** FORKLIFT ACCESS

With the South ETV (ETV1) in the south maintenance access area, 4K and 10K forklifts shall be able to enter the ETV-PSE on the south end and the west side of the ETV-PSE and drive up to the EYV along its entire length on both sides.

3.2.4.3. INTERIOR FORKLIFT ACCESS

With the ETVs in the maintenance access areas, 4K and 10K forklifts shall access the ETV aisle between the ETVs through an overhead door located near the middle of the **East** side of the ETV-PSE and drive up to the interior end of both ETVs. No portion of the ETV-PSE shall restrict forklift access to the overhead door near the middle of the **East** side of the ETV-PSE.

3.2.5. ETV REPLACEMENT ACCESS

The **North and South** ends of the aisle shall allow for ETV replacement.

3.2.5.1. ETV REPLACEMENT AND THE ETV-PSE

There shall be no structural bracing or connections preventing removal of ETVs from the **North and South** ends of the ETV-PSE. Two maintenance personnel shall require a maximum of **8 hours** to prepare the ETV and an end of the ETV-PSE for ETV removal. Two maintenance personnel shall require a maximum of **8 hours** to restore the ETV and the ETV-PSE after ETV replacement. The time does not include the time to place or remove the ETV replacement crane rails. Preparing and restoring an end of the ETV-PSE for ETV removal and replacement shall be accomplished from ground level or the permanent decking without requiring personnel to utilize portable ladders, lean over railing, climb into hazardous situations, or otherwise be placed in a dangerous position. The proposed method shall be submitted with the Engineering Design specified in Appendix G for approval. The Contractor shall provide all tools and equipment, other than common hand tools or forklifts, required for ETV replacement.

3.2.5.2. ETV REPLACEMENT CRANE RAILS

The Contractor shall provide and leave on site the crane rails, shoring, safety stops, and other support structures and connections required to completely remove one ETV from the ETV-PSE. The ETV replacement crane rails shall be left in a location near the freight terminal specified by the COTR.

3.2.6. ETV SHUTDOWN INTERFACE

During automatic (man-less) operation of the ETV, if any door not controlled by the ETV is opened, then the ETV shall come to an emergency stop.

3.3. STRUCTURAL CHARACTERISTICS

3.3.1. DESIGN CRITERIA

The ETV-PSE shall be designed to withstand all static and dynamic loading conditions encountered at Dover AFB. Design and construction of the ETV-PSE shall comply with this specification and all applicable requirements of the International Building Code, AFM 88-3, AFM 88-15, the entire US Army Corps of Engineers Technical Instruction TI 809-XX series, ASCE 7, and RMI 97. Design and construction shall also comply with all applicable requirements of Federal, State, Air Force, Dover AFB, and municipal laws, codes, and regulations. In case of conflict, the most stringent requirement shall prevail. The design, materials, installation, workmanship, fabrication, assembly, and erection of all structural and miscellaneous steel for the support structures shall be in accordance with AISC M016, including all specifications and codes contained or referenced therein. The design and construction of the ETV-PSE shall comply with the Cover PD and **Appendix H** unless otherwise specified herein.

3.3.1.1. LOADING CALCULATIONS

Stamped calculations from a registered Professional Engineer shall be provided with the Engineering Design showing that the structure meets all loading requirements. Two sets of calculations shall be provided. The first set shall include all conditions except hurricane force winds and shall be calculated with all overhead doors open. The second set shall include all conditions including hurricane force winds and shall be calculated with all overhead doors closed.

3.3.1.2. SEISMIC LOADS

The ETV-PSE shall be designed to withstand seismic forces in compliance with provisions of code, seismic use group IIIE, Site Seismicity: Minimum short period special acceleration (0.2 sec) of 0.20g. Minimum 1-second period special accleration of 0.07g.

3.3.1.3. WIND AND RAIN LOADS

The ETV-PSE shall be designed to withstand wind loads of 25 PSF. The ETV-PSE shall be designed to withstand rain and blowing rain.

3.3.1.4. CONVEYOR AND PALLET LOADS

The ETV-PSE shall be designed to withstand all conveyor and pallet dead loads. The ETV-PSE shall also be designed to withstand all conveyor and pallet live loads resulting from the transfer of pallets.

3.3.1.5. ETV LOADS

The ETV-PSE shall be designed to withstand all static and dynamic loads from the ETVs, including, but not limited to, dead load, live load, and the side loading from the ETV extractor acting on interfacing conveyors. ETV load calculations shall be similar to AISC M016 as specified for cranes.

3.3.1.6. TRANSFER OF STRUCTURAL LOADS

The ETV-PSE shall be structurally connected to the new freight terminal. Drawings and calculations shall be provided showing the shared wall, maximum transferred loads, and the maximum deflection of each connecting component.

3.3.2. DESIGN AND CONSTRUCTION

The ETV-PSE shall be designed and constructed as specified herein and in **Appendix H** (Engineering Design and Construction Shop Drawings). The Engineering Design shall include structural designs and calculations, drainage calculations, fire protection calculations, electrical calculations, lighting calculations, and other documents required to substantiate the design and allow for review by Government personnel.

3.3.3. FABRICATION

Material shall be fabricated and assembled in the manufacturer's plant to the greatest practical extent. All plant connections shall be welded if feasible. A minimum of two bolts shall be used at each structural field connection.

3.3.4. FOUNDATION

A new foundation shall be provided to support the ETV-PSE. Calculations substantiating the foundation to be used shall be submitted as specified in **Appendix H** (Engineering Design). Drainage provisions to prevent the accumulation of water on the ETV-PSE floor shall be provided as specified in Appendix A and **Appendix H**.

3.3.5. COLUMNS

All columns shall have base plates designed to accept a minimum of four 1-inch diameter anchor bolts. Columns shall be anchored to the foundation using anchors of

1-inch minimum diameter. Columns subject to uplift forces shall be anchored with cast-in-place bolts in the foundation. Stamped loading calculations as specified in 3.3.1.1. shall be provided showing that uplift and shear forces on the anchors under maximum wind and seismic loads do not exceed the pull-out forces and shear strength of the anchors.

3.3.5.1. COLUMN SPACING AT THE END OF THE ETV AISLES

The column spacing in the maintenance areas along the ETV aisle shall be double the normal spacing for maintenance access.

3.3.5.2. COLUMN LABELS ALONG THE ETV AISLE

Letters and numbers shall be provided on the two columns nearest the operating aisle of each conveyor. The letters and numbers shall be painted, attached with an adhesive designed to last the life of the system, or by another method approved by the COTR. Letters and numbers shall be a minimum of four inches high, shall be a contrasting color to the column for maximum visibility, and shall be positioned vertically on the column. The color choices shall be submitted to the COTR for approval. Letters and numbers for each conveyor shall be placed on both column faces adjacent to the conveyor ~~**as shown on Figure 1**~~ so the operator can see the numbers when approaching from either direction. The column labels shall be visible to ETV operators traveling in the ETV aisle with pallets in position on the conveyors in the ETV-PSE.

3.3.5.3. COLUMN NUMBERING ALONG THE ETV AISLE

All conveyors along the ETV shall have an alphanumeric label that begins with the letter A, B, C, or D. The first character shall indicate the conveyor elevation. “A” shall be the lower level conveyors, “B” shall be the 2nd level conveyors, “C” shall be the 3rd level conveyors, and “D” shall be the top level conveyors. The second, third, and fourth characters shall indicate relative **North-South** position of the conveyor. All conveyors on the **East** side of the system shall be numbered with odd numbers beginning with the number '001' at the **North** end and continuing up until the last pallet position on the **South** end is reached. All conveyors on the **West** side shall be numbered with even numbers beginning with the number '002' at the **North** end and continuing up until the last pallet position on the **South** end is reached. All pallet positions on the lower position shall have the same third, fourth, and fifth numbers as the pallet positions directly above it. Pallet lift transfer conveyor locations shall also have a "PL" label. Staging dock conveyor locations shall also have a "SDC" label.

3.4. ROOFING

Calculations shall be provided with the Engineering Design showing the roof drainage design is adequate. The ETV-PSE roof shall cover and provide environmental protection for the ETV over the full range of ETV travel, the ETV maintenance areas, and all conveyors within the ETV-PSE. The roof shall resist uplift loads, wind loads,

and other applicable loads. Roofing shall provide a dry, leak proof environment within the ETV-PSE. The ETV-PSE roof shall prevent water, snow, and ice from entering the ETV-PSE or the air freight terminal. The roof warranty shall match the roof warranty for the air freight terminal. Roofing shall comply with the requirements of and match the roofing used on the new freight terminal except that a slope of 1:12 or greater may be used for the ETV-PSE. Screens or another method approved by the COTR for preventing birds from having access to the underside of the roof and the roof supports shall be provided.

3.4.1. ROOF DRAINAGE

Roof drainage shall be accomplished through roof gutters located along the edges of the ETV-PSE and down spouts located at low points. Gutters and down spouts shall comply with the requirements of and match the gutters and downspouts used on the new freight terminal. Down spouts shall not interfere with vehicle traffic or impede the transfer of pallets and material. Quantity, size, and location of gutters and down spouts shall be determined based on the maximum rain intensity in a five-minute period to be expected once in 10 years. The gutters and downspouts shall be designed so that water is immediately removed from the top of the ETV-PSE without overflowing.

3.4.2. ROOF ACCESS

Ladders in accordance with the Cover PD (Ladders) shall be provided to access the roof of the ETV-PSE. There shall be a minimum of two roof access ladders in the ETV-PSE, one at the **North** end and one on the opposite side of the aisle on the **South** end. The ladders shall be internal to the ETV-PSE and shall be accessible from the end-of-aisle platforms on the upper level. An access hatch shall open onto the roof. The access hatch shall be lockable from the inside and shall be watertight when closed. A sill on the roof shall prevent water on the roof from entering the ETV-PSE when the hatch is opened. All roof access ladders shall be caged. There shall be a safety tie-off or similar safety hardware to protect personnel entering the roof. The roof shall support a 250-pound person without damage or deformation.

3.5. DRAINAGE SYSTEM

Calculations shall be provided with the Engineering Design showing the water drainage plan is adequate. Roof water from the ETV-PSE shall drain through down spouts and away from the air freight terminal and the ETV-PSE. The drainage system design shall include all portions of the freight terminal and the ramp and surrounding pavements and grounds that drains onto the site of the ETV-PSE. The new drainage system shall prevent water from flowing across or standing on the floor of the ETV-PSE. Roof drainage shall tie into an underground storm drain and shall not spill out onto the ground.

3.5.1. DRAIN LINES

Drain lines shall be run underground and tie into existing storm drain lines. All drainage

lines run underground shall provide cleanouts or other forms of access. The COTR shall approve the type, number, and location of the cleanouts.

3.5.2. STORM WATER COLLECTORS

Ditches and trenches used to collect surface water for drainage shall have grating installed over the entire opening. The grating and supports shall be capable of supporting the maximum wheel loads from K-loaders and 10K forklifts without permanent deformation. The grating shall be removable, but shall be mechanically retained in place to prevent slippage when driven over.

3.6. ENCLOSURE WALLS

Calculations shall be provided with the Engineering Design showing the walls can withstand all design loads. Walls and doors shall be integrated with the roof to provide a complete, waterproof enclosure for the ETV-PSE when the doors are closed. The walls shall completely cover the sides and ends except for door openings.

3.7. DOORS

Coiling overhead doors, forklift access doors, ETV replacement doors, and personnel doors shall be provided on the ETV-PSE. ~~**The doors shall interface with the walls to completely cover the sides and ends as shown on Figures 2 through 4.**~~ Walls and doors shall be integrated with the roof to provide a complete, waterproof enclosure when the doors are closed. When open, doors shall provide the clearances specified in 3.2. and its subparagraphs. Door tracks, jambs, and other door components shall clear the door openings and shall not interfere with the specified clearances. All motorized doors located on the outside of the ETV-PSE shall provide proper environmental protection for the motor and all electrical components. Doors shall be fused or otherwise tied into the fire protection system where required. If fire rated doors are required for fire protection, they shall comply with NFPA 80 **and UFC 3-600-01**.

3.7.1. OVERHEAD DOORS

There shall be overhead doors provided for the SDCs and the LTCs and for forklift access. The overhead doors shall comply with the requirements for the Air Freight Terminal coiling overhead doors, except as modified herein.

3.7.1.1. OVERHEAD DOOR MANUAL OPERATION

The overhead doors shall be provided with a manual operation mode (i.e., crank or auxiliary chain) for immediate emergency manual operation. The manual operation hardware shall not interfere with pallet transfer when in use or when stowed. Manual operation shall be possible without placing the operator in a hazardous situation and shall not affect operation of the door raised limit switch used to control operation of the conveyor. Disconnection of components, adjusting the limit switch, and similar activities shall not be permitted or required during manual operation. The motor shall be

replaceable without disturbing the door position limit switches.

3.7.1.2. OVERHEAD DOOR LIMIT SWITCH

The SDC doors shall have a limit switch to sense whether or not the overhead door is fully raised for proper operation of the conveyor.

3.7.1.3. OVERHEAD DOOR CONTROLS

The ~~**SDC**~~ doors shall be controlled from the ETV as specified in Appendix A and shall also have a control panel mounted inside the ETV-PSE near the door. Limit switches shall be provided to stop the doors at the fully raised and lowered positions automatically and shall prevent over travel in either direction. The bottom edge of the door shall have a sensing device that immediately reverses the door and raises the door to the full open position when an obstruction is encountered during lowering.

3.7.2. STAGING DOCK CONVEYOR DOORS

The SDC doors shall be overhead doors as specified in 3.7.1.. Each SDC door shall be wide enough to span two SDCs allowing for a minimum of 4 inches of pallet overhang from the edge of the conveying surface. The SDC doors shall divide the conveyor into two sections and the door shall not contact the conveyor. The SDC doors shall either extend down to the ground or down to the top of a wall section just below the conveyor.

3.7.3. **LIFT** TRANSFER CONVEYOR DOORS

The **lift** transfer conveyor (**LTC**) doors shall be overhead doors as specified in 3.7.1.. Each TC door shall be wide enough to span a **LTC** allowing for a minimum of 4 inches of pallet overhang from the edge of the conveying surface. The **LTC** doors shall divide the conveyor into two sections and the door shall not contact the conveyor. The **LTC** doors shall either extend down to air terminal floor.

3.7.4. FORKLIFT ACCESS DOORS

Forklift access doors shall be provided along the north and south ends and the east and west sides of the ETV-PSE. The forklift access doors shall be overhead doors as specified in 3.7.1.. Bollards or similar mechanical protection shall be provided around all forklift access doors. The forklift access doors shall have a control panel mounted inside the ETV-PSE near the door. The forklift access door in the middle of the **east** side of the ETV-PSE will normally be kept closed and will only be opened when forklift access is required.

3.7.5. ETV REPLACEMENT DOORS**/PANELS**

Overhead doors/removal panels or a similar method approved by the COTR shall be provided to permit ETV removal and replacement from the north and south ends of the ETV-PSE. The doors/removal panels shall meet the requirements

specified in paragraph 3.2.5 for ETV removal and replacement.

3.7.6. PERSONNEL DOORS

A minimum of **three (3)** personnel doors shall be provided in the ETV-PSE. Additional doors shall be provided as required in NFPA 101. The doors along the **east** side shall open onto the SDC platforms. These exterior personnel doors shall **meet** the same requirements as similar doors for the air freight terminal except as modified herein. Each door shall be equipped with a window to allow personnel an unobstructed view of what is on the other side of the door. The doors shall be lockable to prevent unauthorized entry and shall not prevent emergency egress even when locked. The doors shall use the same keying system as the freight terminal doors. Personnel doors will remain closed except when in use.

3.8. VENTILATION

Ventilation requirements shall conform to ASHRAE Standard 62, NFPA 90A, and U.S. Army Corps of Engineers Technical Manuals TM 5-810-1 and TM 5-815-3. Ventilation of the ETV-PSE shall maintain the warmest air temperature inside the ETV-PSE at no more than 10 degrees Fahrenheit above the outside air temperature. This temperature differential shall be maintained in summer with TCs, SDCs, and most forklift access doors both open and closed (security requirements may require the doors to be closed). The ventilation system shall provide a minimum of 4 air changes per hour. Ventilation shall be accomplished by fans, vents, ventilators, louvers, dampers, etc. as approved by the COTR. Ventilation hardware shall not rattle due to wind loads. The ventilation methods shall prevent entry of water into the ETV-PSE. Bird screens shall be provided across all ventilation openings. Ventilation systems shall be fused and connected to the fire protection system as required.

3.9. LIFE SAFETY

The ETV-PSE shall conform to the life safety requirements of NFPA 101. Emergency lights with battery power shall be provided for stair-ladders, stairs, ladders, walkways, and platforms used as escape paths. Illuminated LED exit signs shall be provided to direct personnel to personnel doors. Personnel doors shall be able to be opened from inside the ETV-PSE when locked from the outside.

3.10. FIRE PROTECTION SYSTEM

The ETV-PSE shall include a fire protection system. The fire protection system shall consist of roof sprinklers, in-rack sprinklers, and a fire alarm system including all assemblies, fittings, attachments, etc. that are necessary to accomplish complete sprinkler protection. Ground control roof vents, wall vents, fused or automatically closing doors, and similar fire safety devices shall be provided as required due to the closed nature of the ETV-PSE. Sprinkler heads, piping, and other fire protection components shall be located so not to be susceptible to damage or interfere with normal operations in the ETV-PSE. Bollards, guardrails, or other mechanical

protection shall be provided to the satisfaction of the COTR for all fire protection items located in areas subject to damage. Identification signs shall be provided to identify all operational components and their operating positions. Training on the setup, operation, testing, and resetting of all fire protection system components shall be provided. The fire protection system shall be compatible with and also comply with all requirements for the freight terminal fire protection system except as modified herein.

3.10.1. STANDARDS AND CALCULATIONS

The fire protection system shall conform to MIL-HDBK 1008C. The sprinkler system shall conform to NFPA 13 and NFPA 230. All appendices of NFPA 13 shall be considered to be a part of the main body of the standard. All advisory provisions including those listing in appendices shall be considered mandatory (i.e., all "shoulds" shall be considered "shalls"). Reference to the authority having jurisdiction shall be interpreted to mean the COTR. Hydraulic calculations of the sprinkler system design shall be submitted with the Engineering Design, including whether or not a pump house is necessary. The fire suppression design and hydraulic calculations shall be sealed by a qualified registered Professional Engineer or a R.M.E. (NICET Level IV) technician. Hydraulic calculations shall be as outlined in NFPA 13 and NFPA 230 except that calculations shall be performed by computer using software specifically designed for fire protection systems design. Software that uses k-factors for typical branch lines shall not be acceptable. Calculations shall be taken back to the water supply source unless water supply data is otherwise indicated. Calculations shall substantiate that the design area indicated is the hydraulically most demanding. Items stored on the conveyors are classified as fully encapsulated class IV commodities. To allow for future water supply degradation, a 5 pound per square inch safety margin shall be provided between the ETV-PSE sprinkler system demand pressure and water supply pressure at the calculated combined roof-level and ETV-PSE design flow rate.

3.10.2. SPRINKLER SYSTEM

The Contractor shall provide a dry-pipe sprinkler system, including all assemblies, fittings, and attachments. Both in-rack and roof-level sprinklers shall be provided. The sprinkler system shall provide complete sprinkler protection of the entire ETV-PSE. As a minimum, one sprinkler head shall be provided over each conveyor on the each level of the ETV-PSE. Roof-level sprinklers shall be provided for the ETV-PSE. The roof-level sprinklers in the ETV-PSE shall cover the upper level conveyors, all walkways and platforms, the maintenance area, and the ETV aisle. Threaded pipe shall be used for all branch lines and where feasible. Schedule 10 pipe shall be used where possible. The sprinkler system shall include an alarm check valve, pressure alarm switch, pressure gauges, bypass valves, testing valves, main drain, low point drains, fire department connection, inspector test connection, backflow prevention assembly, and other components as required for a fully operational system. Spare sprinkler heads, fuses, detectors, and lamps shall be provided. The number of spare heads shall be a minimum of 10 percent of the total number of sprinkler heads used for each type of head used. The spares and at least one wrench and other tools required for operation and maintenance of the sprinkler system shall be provided in a suitable metal or plastic

cabinet.

3.10.3. FIRE ALARM AND NOTIFICATION

The fire alarm and detection system shall be a complete, supervised, fire alarm system. The system shall be activated into the alarm mode by actuation of any alarm initiating device. The system shall remain in the alarm mode until the initiating device is reset and the fire alarm control panel is reset and restored to normal. The alarm and detection system shall tie into and interface with the fire notification and fire alarm systems for the freight terminal. As a minimum, fire alarm pull boxes shall be provided at each personnel door. Fire alarm pull boxes shall be located approximately 48 inches above the ground or walkway in an easily accessible location. Visual and audible alarms shall be provided both inside and outside the ETV-PSE. The audible alarm shall be similar to the audible alarm used in the air freight terminal. An alarm silence feature that does not clear the alarm status shall be provided. A low pressure alarm shall also be provided.

3.10.4. PUMP HOUSE

If required, a pump house shall be provided to boost water pressure and flow to meet NFPA requirements. If required, the location of the pump house shall be approved by the COTR. The pump shall have a minimum pressure of 150 pounds per square inch. The water supply and all piping to the ETV-PSE shall be underground except where exposed in the pump house. Shut off valves, test valves, pressure gauges, flow gauges, recorders, and similar devices shall be provided as required by NFPA and for maintenance and testing. The pump controller shall be an automatic type designed for fire pump service. The controller shall have auto start, auto stop, and push-button stop operating modes. The fire pump, controller, and all associated hardware and equipment shall be approved by the COTR.

3.11. PERSONNEL PATHWAYS

3.11.1. CONTINUOUS WALKWAYS

Continuous walkways shall be provided on all levels between the fixed pallet stops on the storage conveyors and the edge of the ETV-PSE in accordance with Figure 1 of the Cover PD. If applicable, walkways shall also be provided on all levels between columns when there is no conveyor between the columns but there are conveyors on the other side of the columns. The continuous walkways, including decking and fall protection, shall conform to the Cover PD (Platforms and Walkways). Continuous walkways shall be minimum **48** inches wide at the narrowest point. The continuous walkways, including handrails, shall interface with the personnel doors to the air freight terminal and to the staging dock conveyor platforms to maintain a continuous walking surface.

3.11.2. PERSONNEL TRAVEL BETWEEN LEVELS

3.11.2.1. STAIR-LADDERS

Four stair-ladders shall be provided between levels in the locations shown on Figure1 of the Cover PD to allow personnel to travel between levels. The stair-ladders shall conform to Figure 1 of the Cover PD. The tread surface shall be open grating or other non-skid surface providing high traction even when wet. The treads shall deflect less than 0.12 inch under a 250-pound load. Handrails shall be provided 35 inches +/- 2 inches above the leading edge of the tread. Handrails shall be minimum 1.25 inches in diameter. The stair-ladders shall be removable to allow forklift access for ETV maintenance.

3.11.2.2. LOWER LEVEL STAIR-LADDER WALKWAY

A walkway connecting the lower level continuous walkway to the stair-ladders shall be provided as shown on Figure 1 of the Cover PD. This walkway shall be considered an extension of the continuous walkway and shall meet all requirements listed in 3.11.1. for continuous walkways. In addition, the lower level stair-ladder walkway shall be removable to allow forklift access to the ETV for maintenance. This walkway shall be in sections, each weighing less than 70 pounds, or shall be designed to be removed and replaced by forklifts. The sections shall be removed and reattached to the continuous walkway with common hand tools.

3.11.3. ACCESS STAIRS

Four stairways shall be provided in the locations shown on Figure 1 of the Cover PD to allow personnel to travel between the lower level and ground level. The access stairs shall conform to the Cover PD (Stairways).

3.11.4. MAINTENANCE ACCESS AREA

Two ladders shall be provided in the locations shown on Figure 1 of the Cover PD to allow personnel to travel between the continuous walkway and ground level at the maintenance vehicle access area near the middle of the **east** side. The ladders shall conform to the Cover PD. The ladders shall not interfere with forklift access to the ETV aisle. A rope, chain, or similar barricade shall be placed across the **west** end of the maintenance access opening to prevent personnel from accidentally walking into the ETV aisle. The barricade shall be removable and shall have a warning sign near the middle. The warning sign shall state "AUTHORIZED PERSONNEL ONLY" or similar.

3.11.5. END-OF-AISLE PLATFORM

Four end-of-aisle platforms shall be provided on the upper levels between the last conveyor and the end of the aisle in accordance with Figure 1of the Cover PD. The edge of the end-of-aisle platform adjacent to the ETV aisle shall align with the conveyors along the aisle. The end-of-aisle platforms, including decking and fall protection, shall conform to the Cover PD. The portion adjacent to the conveyors shall be a hinged cover plate as specified in Appendix F.

3.11.6. PERSONNEL SAFETY

Fasteners, hardware, and other ETV-PSE components shall not create safety hazards for personnel working inside or outside the ETV-PSE. In particular, all exposed sharp fasteners shall be protected against accidental contact by personnel walking on conveyors, continuous walkways, stair-ladders, access stairs, end-of-aisle platforms, and the ground.

3.12. MATERIALS

Materials for the ETV-PSE and foundation shall conform to the latest editions of the specified codes and standards.

3.12.1. CONCRETE

Concrete shall conform to Appendix H. Concrete used in the ETV aisle and beneath the ETV-PSE in forklift access areas shall be suitable for forklift traffic.

3.12.2. STRUCTURAL STEEL

Structural steel shapes and plates shall, as a minimum, conform to ASTM A36. Structural steel tubing shall conform to ASTM A500, Grade B. Structural steel pipe shall conform to ASTM A53, Type E or S, Grade B.

3.12.3. HIGH STRENGTH BOLTS

High strength bolts, nuts, and washers shall conform to ASTM A325, Type 1. High-strength bolts shall be a minimum 3/4-inch diameter and shall have one hardened washer under the turned element (nut or bolt head). The use of interference body bolts shall not be permitted. The bolt heads and nuts shall be marked with the manufacturer's identification mark, strength, grade, and type specified by the ASTM specification. High-strength bolts shall be plated.

3.12.4. COMMON BOLTS

Common bolts, nuts, and washers (other than high-strength) shall conform to ASTM A307, Grade A. Common bolts shall be minimum 3/4-inch diameter. All common bolts shall be plated.

3.12.5. NUTS

If not specified in the bolt standard, nuts shall conform to ASTM A563, Grade DH for high strength bolts and ASTM A563, Grade A for common bolts. All nuts shall be plated.

3.12.6. MISCELLANEOUS ITEMS

All miscellaneous items not specifically described, but required for completion of the work shall be of the standard types and shall be furnished in the sizes and quantities

required for work.

3.12.7. EXPANSION JOINTS

Expansion joints or similar protection shall be provided as required for the structure, roof, walls, foundation, sprinkler system, and electrical conduit.

3.12.8. MOISTURE PROTECTION

Waterproofing shall be installed as necessary to exclude water from the ETV-PSE. Where pipes, conduit, or other items pass through the areas to be waterproofed, the waterproofing shall be installed after the flashing around these items has been installed. The flashing installed shall be lapped and mapped into the waterproofing in such a manner that will guarantee a waterproof joint.

3.13. AESTETICS

The ETV-PSE shall provide a pleasing environment to work in and near. The roof and walls shall have straight, flat surfaces. The roof and walls shall provide an even-colored surface free from holes, marks, cracks, protrusions, or other damage and defects. The ETV-PSE shall be architecturally compatible with the air freight terminal.

3.14. ELECTRICAL CHARACTERISTICS

3.14.1. LIGHTING

Lights shall be on a separate circuit breaker and in a separate panel from the equipment in the ETV-PSE. A lighting power panel shall be located near the main equipment distribution panel for the system. The lights shall be designed to remain on 24 hours per day every day. The design and calculations for the lighting system shall be submitted with the Engineering Design. All equipment required to access all light fixtures in a safe manner for maintenance shall be provided. All lighting shall comply with the IES Lighting Handbook.

3.14.1.1. PERSONNEL PATH LIGHTING

In-rack lighting shall be provided to yield a minimum of 20 foot-candles at the walking surface along all continuous walkways, stair-ladders, access stairs, platforms, and along the conveying surface of all powered conveyors inside the ETV-PSE.

3.14.1.2. ETV AISLE LIGHTING

Lighting along the full length of the ETV aisle shall yield a minimum of 30 foot-candles at ground level. The lights shall be easily replaceable from a maintenance platform on the ETV. The lights shall be metal halide or other type fixture approved by the COTR.

3.14.1.3. EMERGENCY LIGHTING

Emergency lights, egress lighting, and illuminated exit signs shall be provided as specified in NFPA 101 and 3.9.

3.14.1.4. LIGHT SWITCHES

Switches for the ETV-PSE lights shall be located at each personnel door into the ETV-PSE. There shall be separate switches for the overhead lights and for the in-rack lights at each location. All light switches shall be toggles so the lights can be turned off and on from each location without needing to travel to the other light switches.

3.14.2. RECEPTACLES

Receptacles shall be on a separate circuit breaker and in a separate panel from the equipment in the ETV-PSE. A minimum of 56 duplex receptacles conforming to the Cover PD shall be provided. Two receptacles shall be provided at each end of the ETV aisle on each level, one on each side of the ETV aisle. The other 10 receptacles per level shall be equally spaced along the aisle with 5 receptacles on each side of the aisle (for a total of 7 receptacles equally spaced along each side of each level). Receptacles shall be located on the columns farthest away from the aisle at a height of 30 inches +/- 6 inches above the continuous walkways. The receptacles shall be capable of operating portable electric tools that draw 15 amperes. The receptacles shall be powered from a separate circuit than the lights. The COTR shall approve the location of all receptacles.

3.14.3. LIGHTNING PROTECTION

A lightning protection system conforming to NFPA 780 shall be provided. The lightning protection system shall consist of air terminals, roof conductors, down conductors, ground connections, and grounds electrically interconnected to form the shortest distance to ground. Air terminals at the corners of the ETV-PSE shall be set no more than 24 inches from the corners of the roof.

4. QUALITY ASSURANCE PROVISIONS

4.1. INSPECTIONS

The system shall be inspected to verify that it meets all the requirements of sections 1, 2, and 3 of this appendix and the Cover PD, the Engineering Design, and the Construction Shop Drawings. These inspections shall be completed as part of the system checkout test and again as a part of the quality conformance test.

4.2. TESTS

The tests specified in the Engineering Design and Construction Shop Drawings shall be performed on the system. In addition, the following tests shall be performed on the system as part of the system checkout test and again as a part of the quality conformance test.

No.	Paragraph	Test
1.	3.2.1.	Operate one ETV at a time and go to all interfacing conveyors. If the ETV-PSE interferes with ETV travel at any position the ETV-PSE fails this test.
2.	3.2.2.	Test to ensure that all conveyors in and beneath the ETV-PSE have a minimum of 124 inches of clear height. Using a 108-inch long x 88-inch wide by 124-inch tall test load, move the test load over every conveyor inside and beneath the ETV-PSE. If the test load snags or touches any overhead obstruction, the ETV-PSE fails this test.
3.	3.2.4. 3.11.2.1. 3.11.2.2.	Move both ETVs to the ETV maintenance access areas. Drive a 10K forklift in the ETV-PSE on both ends of the ETV aisle. Access the ETVs from both the east and west ends and from the south side and drive along the full length and width of the ETVs. Access the interior side of each ETV by entering the ETV-PSE through the door in the middle of the south side. Repeat both tests with a 4K forklift. If either forklift could not access the entire ETV on both sides and ends for both ETVs, the ETV-PSE fails this test.
4.	3.2.5.	Two contractor personnel shall prepare the east ETV and the east end of the ETV-PSE for ETV removal. The same two personnel shall then restore the east ETV and the east end of the ETV-PSE to return the ETV to normal operations. Actual removal of the ETV is not necessary if it is obvious that removal of the ETV is unobstructed. Repeat ETV preparations on the west ETV to ensure it can also be removed. If the time to prepare for removal or restoration exceeds 120 minutes or if personnel are placed in hazardous situations during the process, the ETV-PSE fails this test.
5.	3.11.6.	Walk along all conveyors, walkways, and stairways beneath and adjacent to the ETV-PSE. Walk along the ground in all areas beneath and adjacent to the ETV-PSE that have a clear height of 48 inches or more. If exposed fasteners hazardous to personnel are encountered in any area, the ETV-PSE fails this test.
6.	3.14.1.	Measure the lighting along the personnel pathways, ETV aisle, and beneath the SDC canopy to verify it meets the requirements. If the lighting does not meet the minimum specified, the ETV-PSE fails this test.

4.3. CERTIFICATIONS

The Contractor shall provide certifications as specified below, in the Engineering Design, and on the Construction Shop Drawings. The certification shall be from the manufacturer of the item, the installer of the item, an independent testing laboratory, or a registered Professional Engineer.

No.	Paragraph	Certifications
1.	3.3.1.	The ETV-PSE is designed and constructed in accordance with the International Building Code, AFM 88-3, AFM 88-15, the entire US Army Corps of Engineers Technical Instruction TI 809-XX series, ASCE 7, RMI 97, AISC M016, and all applicable Federal, State, Air Force, Dover AFB, and municipal laws, codes, and regulations.
2.	3.3.1.2.	Provide certified calculations from a Professional Engineer showing the ETV-PSE is designed in accordance with the International Building Code and AFM 88-3 **in compliance with provisions of code, seismic use group IIIE, Site Seismicity: Minimum short period special acceleration (0.2 sec) of 0.20g. Minimum 1-second period special acceleration of 0.07g.**
3.	3.3.1.3.	Provide certified calculations from a Professional Engineer showing the ETV-PSE is designed to withstand **105-mph wind**.
4.	3.3.4.	Provide certified calculations from a Professional Engineer showing the foundation will support the maximum design loads.
5.	3.3.5.	Provide certified calculations from a Professional Engineer showing the anchors can resist the design pull-out and shear forces.
6.	3.4.	Provide a copy of the roof warranty.
7.	3.4. 3.6.	The roof, walls, and doors provide a dry, leak proof environment and a watertight enclosure.
8.	3.4.1.	Provide certified calculations from a Professional Engineer showing the roof drainage system is designed to handle maximum rain intensity in a five minute period to be expected once in 10 years.

9.	3.8.	Provide certified calculations from a Professional Engineer showing compliance with ASHRAE Standard 62, NFPA 90A, and U.S. Army Corps of Engineers Technical Manuals TM 5-810-1 and TM 5-815-3.
10.	3.10.1.	Provide certified calculations from a Professional Engineer showing that the fire protection system meets all requirements of NFPA 13 and NFPA 230.
11.	3.12.2.	Structural steel shapes and plates conform to ASTM A36.
12.	3.12.2.	Structural steel tubing conforms to ASTM A500, Grade B.
13.	3.12.2.	Structural steel pipe conforms to ASTM A53, Type E or S, Grade B.
14.	3.12.3.	High-strength bolts, nuts, and washers conform to ASTM A325, Type 1.
15.	3.12.4.	Common bolts, nuts, and washers (other than high-strength) conform to ASTM A307, Grade A.
16.	3.12.5.	Nuts conform to ASTM A563, Grade A.

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APPENDIX N

GEOTECHNICAL REPORT

FOR THE

AIR CARGO HANDLING SYSTEM

AT THE

NEW AIR FREIGHT TERMINAL

AT

DOVER AIR FORCE BASE, DELAWARE

DATE: 21 JANUARY 2004

Schnabel
Schnabel Engineering North, LLC

Amendment No. 0010
1504 Woodlawn Drive
Baltimore, Maryland 21207

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January 9, 2004

Mr. David Fox, AIA
Whitney, Bailey, Cox & Magnani
849 Fairmount Avenue, Suite 100
Baltimore, Maryland 21286

Subject: Data Report, Geotechnical Engineering Study, Air Freight Terminal, Dover Air Force Base, Dover Delaware (SE Reference No. 03141063.00)

Dear Mr. Fox:

Submitted herewith are four copies of our geotechnical data report for the above referenced project. This report has been prepared in accordance with our agreement dated September 30, 2003.

1.0 SCOPE OF SERVICES

The objective of our geotechnical engineering study was to evaluate the subsurface conditions at the project site and provide subsurface information for use in the design-build bid package. The study included the performance of thirty-two test borings and soil laboratory testing. This geotechnical engineering data report includes the test boring data, soil laboratory data, and comments regarding the subsurface conditions, including the geology, water levels, soil test results and soil stratification.

These services were performed under the supervision of a professional engineer registered in the State of Delaware. Services with respect to environmental assessments, cost or quantity estimates, plans, specifications, construction observation and testing, and a final geotechnical study were not included in our scope of services.

2.0 SITE AND PROJECT DESCRIPTION

The site is located at the Dover Air Force Base in Dover, Delaware. The area is generally bounded by Atlantic Boulevard to the south, 8th Street to the west, and 19th Street to the east. The existing air freight terminal is located at the site. Smaller buildings and pavements are scattered through the site. Based on available topographic information, the site is relatively flat with ground surface grades between EL 18 and EL 21.

The project consists of the demolition of the existing air freight terminal and construction of a new terminal. The new terminal will be about 1,000-feet by 350-feet in plan dimension. The majority of the terminal will be one story high and will be used to sort and temporarily store the freight. A four level pallet storage system with an Elevated Transfer Vehicle (ETV) system is planned for the terminal. This area will be along the northern side of the terminal and will be about 45-feet wide extending the length of the terminal. We understand that the ETV system is a machine used to transport and stack the pallets. Loading docks will be constructed along the north and south sides of the terminal.

We understand that up to four feet of fill will be required to reach the floor slab level for most of the building. However, we understand that the north loading dock and four level pallet storage area will be at about existing grades.

An oversize cargo building is planned east of the new terminal. This building will be located with in the footprint of the existing terminal. The new building will be about 180-feet by 250-feet in plan dimension. The building will be one level, except for a two level pallet storage with an ETV system in the center of the building. Loading docks are planned on the north and south sides of the building.

3.0 SUBSURFACE EXPLORATION AND DATA ANALYSIS

3.1 Subsurface Exploration

In order to evaluate the subsurface conditions on the site, thirty-two test borings were drilled by American Geotech, Inc., Materials Testing, Inc, and Uni-Tech Drilling Company under the general observation of Schnabel Engineering between November 5 and December 8, 2003, and January 6 through 9, 2004. The test boring logs and a location plan are included in Appendix B.

3.2 Generalized Subsurface Strata

The subsurface investigations performed for this study indicated the following generalized soil strata underlie the site to the depth investigated:

Stratum A: (Fill)	Below the surficial coverings to depths of 4 to over 16-feet in all the borings.	Black, brown, white, tan and gray; Sand, Silt, Gravel, Clay and Concrete Fragment **FILL**; trace geotextile, rock fragments, asphalt and organic matter; variable consistencies/densities (N = 2 to 60).

Stratum B: (Columbia Formation)	Below Stratum A to depths of 36 to 41.5-feet or the boring termination depths. (Not encountered in B-1 or B-4).	Gray, white, tan, orange, black and brown; **SAND** (SP, SP-SM, SM, SC), **SILT** (ML), and Sandy **LEAN CLAY** (CL); with various amounts of gravel; very loose to dense and consistencies of stiff to very stiff (N=2 to 38).
Stratum C: (Calvert Formation)	Below Stratum B in borings B-3, B-4A, B-9A, B-10A, B-11A, and B-12A.	Gray, orange, yellow and brown; **CLAY** (CL, CH); and **SILT** (ML) with variable amounts of sand; consistencies of soft to stiff (N= 3 to 15).

The above stratification is shown on the attached boring logs in Appendix B. Most of the site contains asphalt and/or concrete pavements. The pavements generally consisted of either asphalt over a stone base, asphalt over concrete, or concrete. Total asphalt and concrete pavement thickness varied between 2.5 to 30-inches. An up to 6-inch depth of stone base was observed under the pavements at some boring locations. The approximate thicknesses are shown on the boring logs. A topsoil thickness of about 1-inch was observed at borings B-1, B-2, B-13, B-13A and B-17. The test borings indicate the approximate topsoil depths based on our visual identification procedures.

A Pocket Penetrometer was used in the test borings to assess the soil consistency. The test results are shown on the test boring logs. The tests are described in the Subsurface Investigation Procedures located in Appendix B.

The symbols indicated on the test boring logs represent the Unified Soil Classification System (ASTM D-2487) group symbols based on visual observation of the specimens recovered. Criteria for visual identification of soil specimens are given in Appendix A of this report. Numbers after the description of the soil strata indicate the minimum and maximum penetration resistance, or N value, in each stratum. The Standard Penetration Test and N value are explained in the Test Boring Notes in Appendix B.

3.3 Geology

The Dover Air Force Base is located within the Atlantic Coastal Plain Physiographic Province of Central Delaware. The Atlantic Coastal Plain is characterized by a wedge of sediments dipping to the east with increasing depth. The surface topography of the Atlantic Coastal Plain sediments typically has little relief and is primarily unconsolidated. These sediments lie on top of crystalline basement rock at depths of several feet in northern Delaware up to approximately 11,000 ft below sea level in southern Delaware (Benson, 1990). The exact nature of the basement rock is unknown since no borehole has ever penetrated below the overburden sediments in central or southern Delaware (Benson and Pickett, 1986).

Specifically, the site is underlain by Stratum A Existing Fill soils. These soils were likely placed during previous site grading. Stratum A is underlain by the Stratum B Columbia Formation. Based on geologic mapping of the area (Pickett and Benson, 1983), the Columbia Formation consists of a roughly 20 to 35 ft thick layer of fine to coarse sands, silts, and clays under the site. The layers within the Columbia are generally reddish-orange to tan, fine to coarse sands with silt, which may contain localized clay lenses. The Columbia Formation is underlain by the Stratum C Calvert Formation. The Calvert Formation is described as a gray to bluish and greenish gray sandy silt.

3.4 Water Levels

Water level readings were taken during drilling, at the completion of drilling and up to one day after drilling. Water levels are indicated on the test boring logs in Appendix B.

Water was encountered during drilling at most of the borings at depths of 7 to 20-feet (EL 13 to EL 1). Water was not encountered in B-21 and P-2 to P-4 during drilling.

Water levels were also recorded up to one day after drilling in some of the borings. Water was observed at depths 6 to 11-feet (EL 10 to EL 13.5) in borings were long term readings were obtained. Boring P-4 was dry during long term readings. The borings caved at depths of about 7 to 16-feet (EL 6 to EL 12.5).

Fluctuation in the location of groundwater levels should be anticipated depending on variations in construction activities, precipitation, surface runoff, utility leakage, evaporation, site development, etc.

3.5 Soil Laboratory Testing

Soil laboratory testing was performed on selected jar, bag, and tube samples obtained from the test borings. The tests included moisture content, classification and gradation analysis of the Strata A, B and C soils. Consolidation testing was performed on two samples from Strata A and C. Unconsolidated Undrained Triaxial Compression tests were performed on the Stratum C soils. California Bearing Ratio and moisture-density relation testing was performed on the Stratum A soils. Results of the soil laboratory testing are included in Appendix B. The moisture content results are shown on the test boring logs in Appendix B.

4.0 GENERAL AND LIMITATIONS

We have prepared this report for the use of your office and the design professionals for use in the design-build package in accordance with generally accepted geotechnical practices. Schnabel has endeavored to comply with generally accepted geotechnical engineering practice common to the local area, and makes no other warranty, express or implied.

The analyses and recommendations contained in this report are based on the data obtained from the referenced subsurface explorations. The borings indicate subsurface conditions only at the specific locations and times, and only to the depths penetrated. They do not necessarily reflect strata variations that may exist between such locations.

This report has been prepared to assist the design professionals in the design and preparation of drawings and specifications for this project. It should be made available to prospective bidders for informational purposes. We recommend that the project specifications contain the following statement:

> "A geotechnical engineering report has been prepared for this project by Schnabel Engineering. This report is for informational purposes only and should not be considered part of the contract documents. The opinions expressed in this report are those of the geotechnical engineer and represent his interpretation of the subsurface conditions, tests, and the results of analyses which he has conducted. Should the data contained in this report not be adequate for the contractor's purposes, the contractor may make his own exploration, tests, and analyses prior to bidding. Contractors desiring to conduct additional subsurface explorations prior to bidding should contact the architect for arrangements to enter the project site."

Soil samples obtained from the test borings were delivered to the Fort Mifflin Soils Laboratory in Philadelphia, PA.

Amendment No. 0010

We appreciate the opportunity to be of service to you for this phase of this project. We look forward to providing any requested additional geotechnical consulting services for this project. We trust that we served your needs and expectations. If you have any questions regarding this study or need additional information, please feel free to call us.

Sincerely,

SCHNABEL ENGINEERING NORTH, LLC

Jeffrey Y. Sewell, P.E.
Senior Engineer

Allen W. Cadden, P.E.
Principal

JYS:KD:AWC:mc

Appendix A: Laboratory Test Results

Identification of Soils
Summary of Laboratory Test Results (2 sheets)
Unconsolidated Undrained Triaxial Compression Tests (4 sheets)
Tube Log Results (4 sheets)
Consolidation Test Reports (10 sheets)
Gradation Results (7 sheets)
Moisture-Density Relation (2 sheets)
California Bearing Ratio Test (2 sheets)

Appendix B: Subsurface Investigation Report

Vicinity Map
Test Boring Location Plan
Subsurface Investigation Procedures
General Notes for Test Boring Logs
Amendment No. 0010
Test Boring Logs (32)

APPENDIX A
Laboratory Test Results

Identification of Soils
Summary of Laboratory Test Results (2 sheets)
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Gradation Results (7 sheets)
Moisture-Density Relation (2 sheets)
California Bearing Ratio Test (2 sheets)

IDENTIFICATION OF SOIL

Amendment No. 0010

I. DEFINITION OF SOIL GROUP NAMES ASTM D2487-93

			Symbol	Group Name
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels – More than 50% of coarse fraction retained on No. 4 sieve Coarse, 3/4 to 3" Fine, No. 4 to 3/4"	Clean Gravels Less than 5% fines	GW	Well graded gravel
			GP	Poorly graded gravel
		Gravels with Fines More than 12% fines	GM	Silty gravel
			GC	Clayey gravel
	Sands – 50% or more of coarse fraction passes No. 4 sieve Coarse, No. 10 to No. 4 Medium, No. 40 to No. 10 Fine, No. 200 to No. 40	Clean Sands Less than 5% fines	SW	Well graded sand
			SP	Poorly graded sand
		Sands with Fines More than 12% fines	SM	Silty sand
			SC	Clayey sand
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silts and Clays – Liquid Limit less than 50 Low to medium plasticity	Inorganic	CL	Lean clay
			ML	Silt
		Organic	OL	Organic clay
				Organic silt
	Silts and Clays – Liquid Limit 50 or more Medium to high plasticity	Inorganic	CH	Fat clay
			MH	Elastic silt
		Organic	OH	Organic clay
				Organic silt
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor		PT	Peat

II. DEFINITION OF MINOR COMPONENT PROPORTIONS

Minor Component	Approximate Percentage of Fraction by Weight
Adjective Form	
Gravelly, Sandy	30 % or more coarse grained
With	
Sand, Gravel	15% or more coarse grained
Silt, Clay	5% to 12% fine grained
Trace	
Sand, Gravel	Less than 15% coarse grained
Silt, Clay	Less than 5% fine grained

III. GLOSSARY OF MISCELLANEOUS TERMS

SYMBOLS:	Unified Soil Classification Symbols are shown above as group symbols. Use A Line Chart for laboratory identification. Duel symbols are used for borderline classifications.
BOULDERS & COBBLES:	Boulders are considered rounded pieces of rock larger than 12 inches, while cobbles range from 3 to 12 inch size.
DISINTEGRATED ROCK:	Residual rock material with Standard Penetration Resistance (SPT) of more than 60 blows per foot, and less than refusal. Refusal is defined as a SPT of 100 blows for 2-inches or less penetration.
ROCK FRAGMENTS:	Angular pieces of rock, distinguished from transported gravel, which have separated from original vein or strata and are present in a soil matrix.
QUARTZ:	A hard silica mineral often found in residual soils.
IRONITE:	Iron oxide deposited within a soil layer forming cemented deposits.
CEMENTED SAND:	Usually localized rock-like deposits within a soil stratum composed of sand grains cemented by calcium carbonate or other materials.
MICA:	A soft plate of silica mineral found in many rocks, and in residual or transported soil derived therefrom.
ORGANIC MATERIALS (Excluding Peat):	Topsoil – Surface soils that support plant life and which contain considerable amounts of organic matter; Organic Matter – Soil containing organic colloids throughout its structure; Lignite – Hard, brittle decomposed organic matter with low fixed carbon content (a low grade of coal).
FILL:	Man-made deposit containing soil, rock and often foreign matter.
PROBABLE FILL:	Soils which contain no visually detected foreign matter but which are suspect with regard to origin.
LENSES:	0 to ½ inch seam of minor soil component.
LAYERS:	½ to 12 inch seam of minor soil component.
POCKET:	Discontinuous body of minor soil component.
COLOR SHADES:	Light to dark to indicate substantial difference in color.
MOISTURE CONDITIONS:	Wet, moist, or dry to indicate visual appearance of specimen.

Schnabel

Schnabel Engineering

Summary of Soil Laboratory Results

Contract Number: 03141063.00
Project Name: Air Freight Terminal, Dover AFB

BORING NO.	DEPTH (ft.)	STRATUM	SAMPLE TYPE	DESCRIPTION OF SOIL SPECIMEN	SIEVE RESULTS		ATTERBERG LIMITS			NATURAL MOISTURE (%)	NATURAL DENSITY		REMARKS
					PERCENT PASSING NO.200	PERCENT RETAINED NO.4	LL	PL	PI		WET DEN. (pcf)	DRY DEN. (pcf)	
B-3	1.5-2.0	A	JAR	sandy, SILTY CLAY (CL-ML), brown	65.6	0.3	22	16	6	16.5			FILL
B-3	5.5-7.5	B	TUBE	POORLY GRADED SAND (SP-SM), with silt, dark gray and tan	6.7	0.0	NP	NP	NP	7.8	130.6	112.9	
B-4	3.5-5.5	A	JAR	SILTY SAND, gray	18.9	0.0				19.3			FILL
B-6	4.5-6.5	A	JAR	CLAYEY SAND (SC), gray	45.8	0.0	26	14	12	11.0			FILL
B-10	7.0-9.0	A	JAR	CLAYEY SAND (SC), trace gravel, brown	24.9	6.7	21	12	9	12.7			FILL
B-10	44.0-46.0	C	TUBE	SILT (ML), trace sand, dark gray	90.3	0.0	48	31	17	66.3	103.3	62.1	Consolidation Test
B-11	7.0-9.0	B	JAR	CLAYEY SAND (SC), trace gravel, tan	36.1	8.2	26	15	11	12.1			
B-11	7.0-9.0	B	JAR	SILTY SAND (SM), trace gravel, reddish brown	20.0	4.5				16.6			
B-11	43.0-45.0	C	TUBE	FAT CLAY (CH), trace sand, dark gray	96.4	0.0	107	29	78	56.3	103.7	66.3	Triaxial Tests
B-21	7.0-9.0	A	JAR	CLAYEY SAND (SC), trace gravel, gray	34.0	6.4	20	11	9	10.3			FILL

1. Soil tests are in accordance with applicable ASTM standards.
2. Soil classification symbols are in accordance with Unified Soil Classification System, based on testing indicated and visual identification.
3. Visual identification of samples is in accordance with the system used by the firm.
4. Key to abbreviation: LL = Liquid Limit; PL = Plastic Limit; PI = Plasticity Index; NP = Nonplastic

Amendment No. 0010

Contract Number: 03141063.00
Project Name: Air Freight Terminal
Dover AFB

SUMMARY OF SOIL LABORATORY TEST RESULTS

BORING NO.	DEPTH (ft.)	STRATUM	SAMPLE TYPE	DESCRIPTION OF SOIL SPECIMEN	SIEVE RESULTS		ATTERBERG LIMITS			NATURAL MOISTURE (%)	PROCTOR ASTM D-1557		CALIFORNIA BEARING RATIO		
					PERCENT PASSING NO.200	PERCENT RETAINED NO.4	LL	PL	PI		MAX. DRY DENSITY (pcf)	OPT. M.C. (%)	SWELL (%)	COMPACTION (%)	CBR VALUE
P-2	0.5-4.5	A	BULK	silty, clayey SAND (SC-SM), trace gravel and rock fragments, dark gray	42.7	8.2	24	17	7	10.8	126.5	9.5	0.4	95.3	12.1
P-3	0.5	A	BULK	silty, clayey SAND (SC-SM), trace gravel and rock fragments, dark brown	30.7	11.1	18	13	5	10.0	133.7	7.7	0.4	95.1	12.8

NOTES:

1. Soil tests are in accordance with applicable ASTM standards.
2. Soil classification symbols are in accordance with Unified soil classification system, based on testing indicated and visual identification.
3. Visual identification of samples is in accordance with the system used by the firm.
4. Key to abbreviation: LL = Liquid Limit; PL = Plastic Limit; PI = Plasticity Index; NP = Nonplastic

Amendment No. 0010

Schnabel Engineering

Unconsolidated Undrained Triaxial Compression Test

ASTM D2850

Project: *Air Freight Terminal*
Dover AFB
Location: *Dover, DE*

Schnabel Contract: *03141063*
Boring No.: *B-5*
Depth: *40-41 ft*
Confining Stress (psi): *20.8*

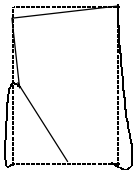
Date: *12/9/03*
Reviewed by: *CJS*

Specimen Conditions	
Diameter (in)	2.884
Height (in)	5.847
Area (in^2)	6.53
Moisture (%):	48.9
Weight (lbs)	2.37
ρ_{wet} (pcf)	107.3
ρ_{dry} (pcf)	72.1
Void Ratio	1.35
Saturation, %	99

Shear Testing Conditions	
Cell Pressure (psi):	20.8
Rate of Strain (%/min):	1.00

Soil Description: *FAT CLAY, with sand - gray*

Failure Sketch



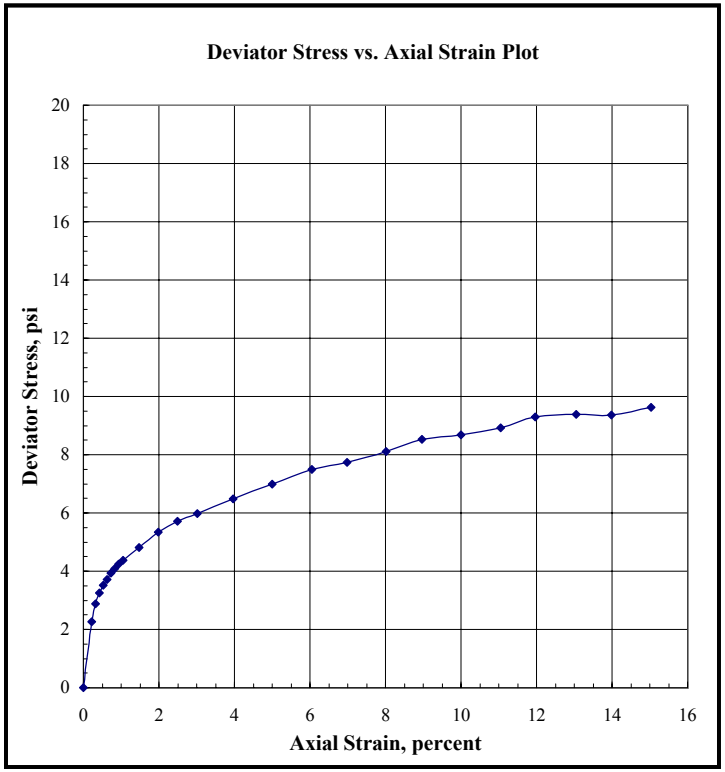
Liquid Limit: *N/A*
Plasticity Index: *N/A*
% finer that No. 200: *N/A*

Specimen Type: *Tube Sample*

Remarks: *GS assumed.*

Reading No.	Deviator Load (lbs)	Corrected Dev. Load[1] (lbs.)	Axial Displacement (in.)	Axial Strain (%)	Corrected Area[2] (in^2)	σ_1 (psi)	σ_3 (psi)	Deviator Stress (psi)
Initial	0.0	0.0	0.000	0.00	6.53	20.8	20.8	0.0
1	14.9	14.9	0.013	0.22	6.55	23.1	20.8	2.3
2	18.9	18.8	0.019	0.32	6.55	23.7	20.8	2.9
3	21.4	21.3	0.025	0.43	6.56	24.0	20.8	3.2
4	23.2	23.1	0.031	0.53	6.57	24.3	20.8	3.5
5	24.6	24.5	0.037	0.63	6.57	24.5	20.8	3.7
6	26.0	25.8	0.043	0.74	6.58	24.7	20.8	3.9
7	27.1	26.9	0.049	0.84	6.59	24.9	20.8	4.1
8	28.2	28.0	0.055	0.94	6.59	25.0	20.8	4.2
9	29.1	28.9	0.061	1.04	6.60	25.2	20.8	4.4
10	32.2	31.9	0.086	1.47	6.63	25.6	20.8	4.8
11	36.0	35.6	0.116	1.98	6.67	26.1	20.8	5.3
12	38.9	38.4	0.146	2.50	6.70	26.5	20.8	5.7
13	40.9	40.2	0.176	3.01	6.74	26.8	20.8	6.0
14	45.0	44.1	0.232	3.97	6.80	27.3	20.8	6.5
15	49.1	48.0	0.292	4.99	6.88	27.8	20.8	7.0
16	53.4	52.1	0.354	6.05	6.95	28.3	20.8	7.5
17	55.9	54.4	0.408	6.98	7.02	28.5	20.8	7.7
18	59.3	57.6	0.469	8.02	7.10	28.9	20.8	8.1
19	63.2	61.3	0.524	8.96	7.18	29.3	20.8	8.5
20	65.2	63.0	0.585	10.01	7.26	29.5	20.8	8.7
21	67.9	65.5	0.646	11.05	7.34	29.7	20.8	8.9
22	71.6	69.0	0.700	11.97	7.42	30.1	20.8	9.3
23	73.4	70.6	0.763	13.05	7.51	30.2	20.8	9.4
24	74.1	71.1	0.818	13.99	7.60	30.2	20.8	9.4
25	77.3	74.0	0.879	15.03	7.69	30.4	20.8	9.6

Notes: 1. Deviator load corrected for membrane effects.
2. Right Cylinder Correction Method



Amendment No. 0010

Schnabel Engineering

Unconsolidated Undrained Triaxial Compression Test

ASTM D2850

Project: *Air Freight Terminal*
Dover AFB
Location: *Dover, DE*

Schnabel Contract: *03141063*
Boring No.: *B-5*
Depth: *42-43 ft.*
Confining Stress (psi): *27.8*

Date: *12/9/03*
Reviewed by: *CJS*

Specimen Conditions	
Diameter (in)	2.868
Height (in)	5.847
Area (in^2)	6.46
Moisture (%):	44.9
Weight (lbs)	2.36
ρ_{wet} (pcf)	108.0
ρ_{dry} (pcf)	74.6
Void Ratio	1.27
Saturation, %	96

Shear Testing Conditions	
Cell Pressure (psi):	27.8
Rate of Strain (%/min):	1.00

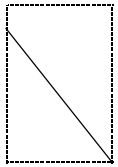
Soil Description: *FAT CLAY - gray*

Liquid Limit: *N/A*
Plasticity Index: *N/A*
% finer that No. 200: *N/A*

Specimen Type: *Tube Sample*

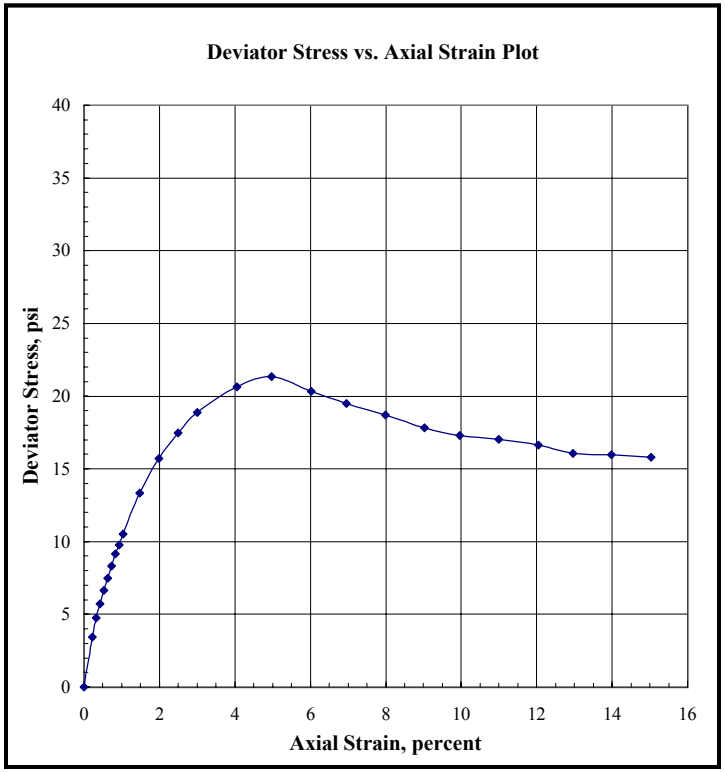
Remarks: *Gs assumed.*

Failure Sketch



Reading No.	Deviator Load (lbs)	Corrected Dev. Load[1] (lbs.)	Axial Displacement (in.)	Axial Strain (%)	Corrected Area[2] (in^2)	σ_1 (psi)	σ_3 (psi)	Deviator Stress (psi)
Initial	0.0	0.0	0.000	0.00	6.46	27.8	27.8	0.0
1	22.3	22.3	0.013	0.22	6.48	31.2	27.8	3.4
2	30.8	30.7	0.019	0.32	6.49	32.5	27.8	4.7
3	37.2	37.1	0.025	0.43	6.49	33.5	27.8	5.7
4	43.3	43.2	0.031	0.53	6.50	34.4	27.8	6.6
5	48.8	48.7	0.037	0.63	6.51	35.3	27.8	7.5
6	54.3	54.1	0.043	0.74	6.51	36.1	27.8	8.3
7	59.8	59.6	0.049	0.84	6.52	36.9	27.8	9.1
8	64.0	63.8	0.055	0.94	6.53	37.6	27.8	9.8
9	68.9	68.7	0.061	1.04	6.53	38.3	27.8	10.5
10	87.7	87.4	0.086	1.47	6.56	41.1	27.8	13.3
11	104.1	103.7	0.116	1.98	6.59	43.5	27.8	15.7
12	116.4	115.9	0.146	2.50	6.63	45.3	27.8	17.5
13	126.4	125.7	0.176	3.01	6.66	46.7	27.8	18.9
14	140.0	139.1	0.237	4.05	6.74	48.5	27.8	20.7
15	146.4	145.3	0.291	4.98	6.80	49.2	27.8	21.4
16	141.2	139.9	0.352	6.02	6.88	48.1	27.8	20.3
17	136.9	135.4	0.407	6.96	6.95	47.3	27.8	19.5
18	133.0	131.3	0.467	7.99	7.03	46.5	27.8	18.7
19	128.7	126.7	0.528	9.03	7.11	45.6	27.8	17.8
20	126.4	124.2	0.582	9.95	7.18	45.1	27.8	17.3
21	126.2	123.8	0.643	11.00	7.26	44.8	27.8	17.0
22	124.8	122.2	0.704	12.04	7.35	44.4	27.8	16.6
23	122.0	119.2	0.758	12.96	7.43	43.8	27.8	16.0
24	123.2	120.2	0.818	13.99	7.52	43.8	27.8	16.0
25	123.4	120.1	0.879	15.03	7.61	43.6	27.8	15.8

Notes:
1. Deviator load corrected for membrane effects.
2. Right Cylinder Correction Method



Schnabel
Schnabel Engineering

Unconsolidated Undrained Triaxial Compression Test

ASTM D2850

Project: *Air Freight Terminal*
Dover AFB
Location: *Dover, DE*

Schnabel Contract: *03141063*
Boring No.: *B-11*
Depth: *43-45 ft.*
Confining Stress (psi): *20.8*

Date: *12/5/03*
Reviewed by: *CJS*

Specimen Conditions	
Diameter (in)	2.883
Height (in)	5.821
Area (in^2)	6.53
Moisture (%):	49.6
Weight (lbs)	2.35
ρ_{wet} (pcf)	106.9
ρ_{dry} (pcf)	71.4
Void Ratio	1.37
Saturation, %	99

Shear Testing Conditions	
Cell Pressure (psi):	20.8
Rate of Strain (%/min):	1.00

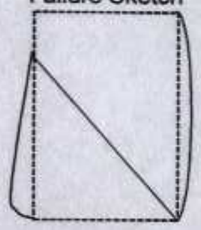
Soil Description: *FAT CLAY (CH), trace sand - dark gray*

Liquid Limit: *107*
Plasticity Index: *78*
% finer that No. 200: *96.4*

Specimen Type: *Tube Sample*

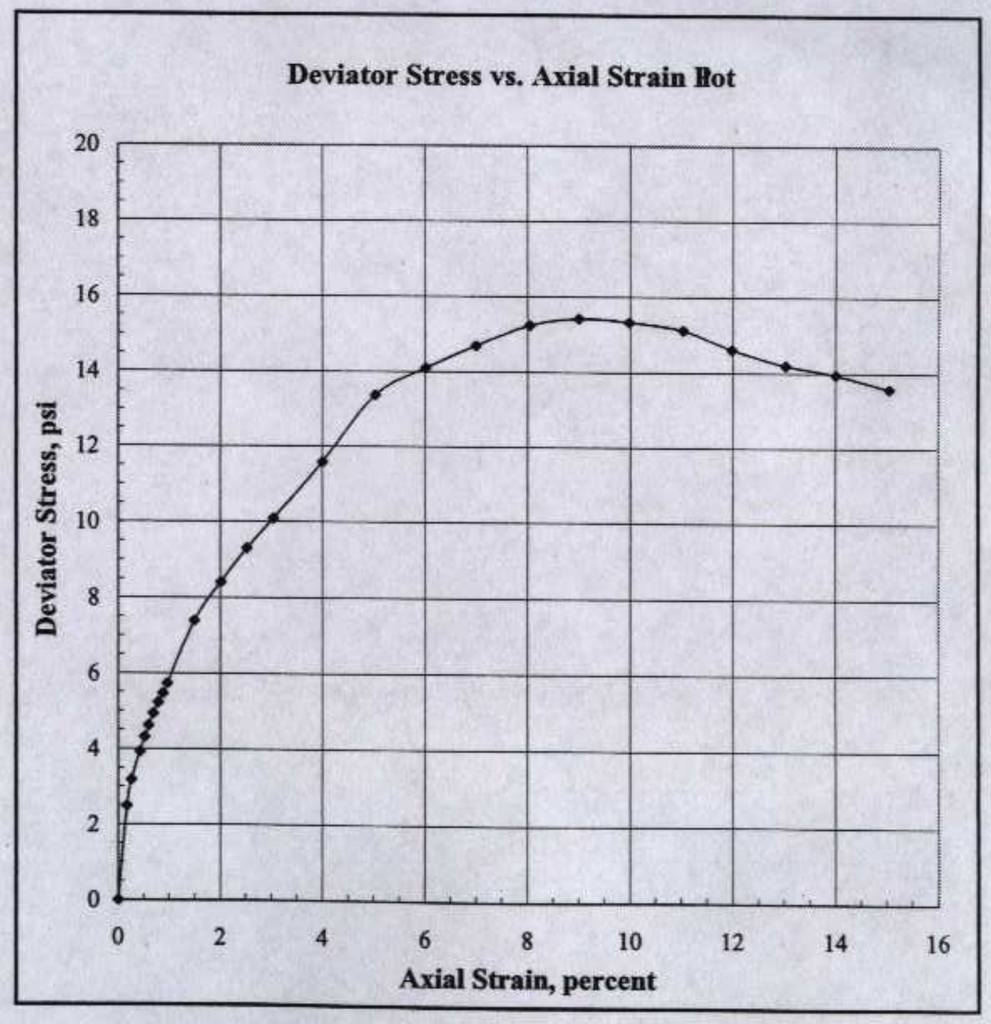
Remarks:

Failure Sketch



Reading No.	Deviator Load (lbs)	Corrected Dev. Load[1] (lbs.)	Axial Displacement (in.)	Axial Strain (%)	Corrected Area[2] (in^2)	σ_1 (psi)	σ_3 (psi)	Deviator Stress (psi)
Initial	0.0	0.0	0.000	0.00	6.53	20.8	20.8	0.0
1	16.4	16.4	0.010	0.17	6.54	23.3	20.8	2.5
2	20.9	20.8	0.015	0.26	6.55	24.0	20.8	3.2
3	25.9	25.8	0.025	0.43	6.56	24.7	20.8	3.9
4	28.4	28.3	0.030	0.52	6.56	25.1	20.8	4.3
5	30.5	30.4	0.035	0.60	6.57	25.4	20.8	4.6
6	32.6	32.5	0.040	0.69	6.57	25.7	20.8	4.9
7	34.6	34.4	0.046	0.79	6.58	26.0	20.8	5.2
8	36.2	36.0	0.051	0.88	6.59	26.3	20.8	5.5
9	38.0	37.8	0.056	0.96	6.59	26.5	20.8	5.7
10	49.3	49.0	0.087	1.49	6.63	28.2	20.8	7.4
11	56.5	56.1	0.117	2.01	6.66	29.2	20.8	8.4
12	62.9	62.4	0.147	2.53	6.70	30.1	20.8	9.3
13	68.6	67.9	0.177	3.04	6.73	30.9	20.8	10.1
14	79.7	78.8	0.233	4.00	6.80	32.4	20.8	11.6
15	93.1	92.0	0.293	5.03	6.87	34.2	20.8	13.4
16	99.3	98.0	0.350	6.01	6.95	34.9	20.8	14.1
17	104.7	103.2	0.407	6.99	7.02	35.5	20.8	14.7
18	110.0	108.3	0.468	8.04	7.10	36.0	20.8	15.2
19	112.7	110.7	0.524	9.00	7.17	36.2	20.8	15.4
20	113.4	111.2	0.581	9.98	7.25	36.1	20.8	15.3
21	113.4	111.0	0.642	11.03	7.34	35.9	20.8	15.1
22	111.1	108.5	0.697	11.97	7.42	35.4	20.8	14.6
23	109.5	106.7	0.758	13.02	7.51	35.0	20.8	14.2
24	109.1	106.1	0.815	14.00	7.59	34.8	20.8	14.0
25	107.7	104.4	0.876	15.05	7.68	34.4	20.8	13.6

Notes:
1. Deviator load corrected for membrane effects.
2. Right Cylinder Correction Method



Schnabel
Schnabel Engineering

Unconsolidated Undrained Triaxial Compression Test

ASTM D2850

Amendment No. 0010

Project: *Air Freight Terminal*
Dover AFB
Location: *Dover, DE*

Schnabel Contract: *03141063*
Boring No.: *B-11*
Depth: *43-45 ft.*
Confining Stress (psi): *27.8*

Date: *12/5/03*
Reviewed by: *CJS*

Specimen Conditions	
Diameter (in)	2.886
Height (in)	5.846
Area (in^2)	6.54
Moisture (%):	56.3
Weight (lbs)	2.29
ρ_{wet} (pcf)	103.7
ρ_{dry} (pcf)	66.3
Void Ratio	1.55
Saturation, %	99

Shear Testing Conditions	
Cell Pressure (psi):	27.8
Rate of Strain (%/min):	1.00

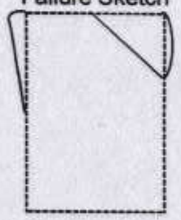
Soil Description: *FAT CLAY (CH), trace sand - dark gray*

Liquid Limit: *107*
Plasticity Index: *78*
% finer that No. 200: *96.4*

Specimen Type: *Tube Sample*

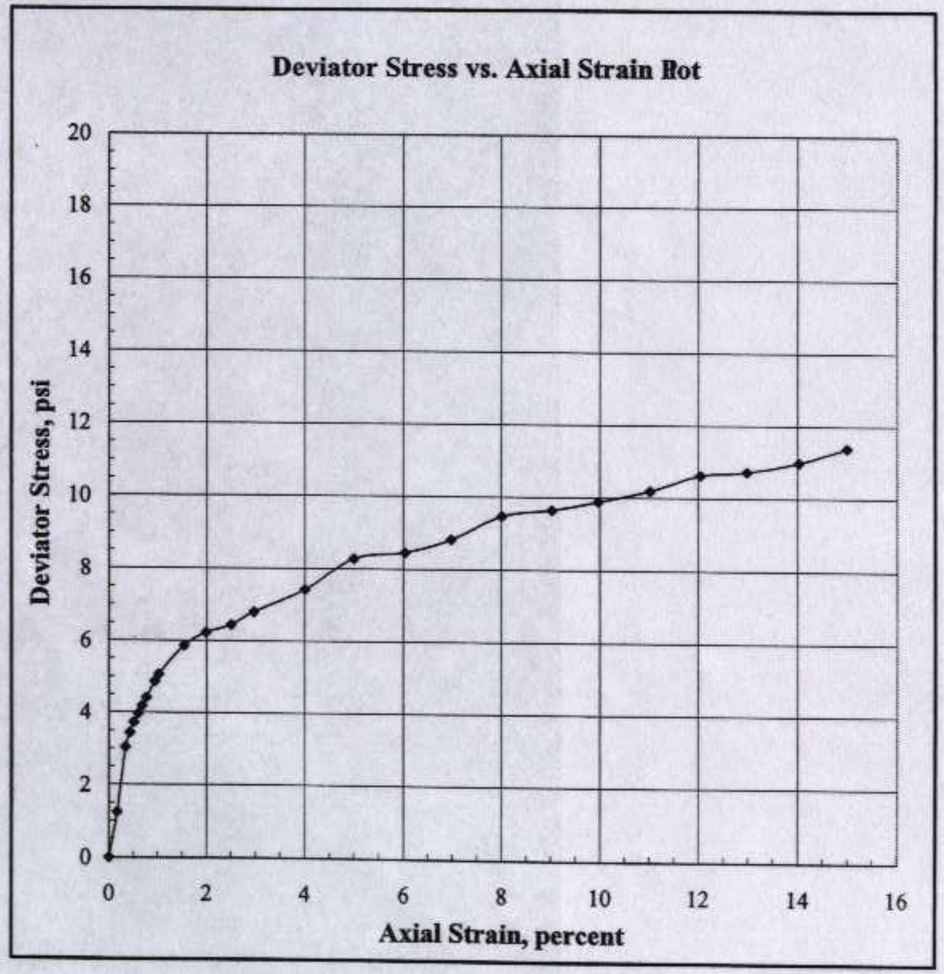
Remarks:

Failure Sketch



Reading No.	Deviator Load (lbs)	Corrected Dev. Load[1] (lbs.)	Axial Displacement (in.)	Axial Strain (%)	Corrected Area[2] (in^2)	σ_1 (psi)	σ_3 (psi)	Deviator Stress (psi)
Initial	0.0	0.0	0.000	0.00	6.54	27.8	27.8	0.0
1	8.2	8.2	0.010	0.17	6.56	29.0	27.8	1.2
2	20.0	19.9	0.020	0.34	6.57	30.8	27.8	3.0
3	22.7	22.6	0.025	0.43	6.57	31.2	27.8	3.4
4	24.6	24.5	0.030	0.51	6.58	31.5	27.8	3.7
5	26.2	26.1	0.035	0.60	6.58	31.8	27.8	4.0
6	27.7	27.6	0.040	0.68	6.59	32.0	27.8	4.2
7	29.3	29.1	0.045	0.77	6.59	32.2	27.8	4.4
8	32.4	32.2	0.055	0.94	6.61	32.7	27.8	4.9
9	33.7	33.5	0.060	1.03	6.61	32.9	27.8	5.1
10	39.3	39.0	0.090	1.54	6.65	33.7	27.8	5.9
11	42.0	41.6	0.116	1.98	6.68	34.0	27.8	6.2
12	43.8	43.3	0.146	2.50	6.71	34.2	27.8	6.4
13	46.5	45.9	0.173	2.96	6.74	34.6	27.8	6.8
14	51.5	50.6	0.234	4.00	6.82	35.2	27.8	7.4
15	58.1	57.0	0.292	4.99	6.89	36.1	27.8	8.3
16	60.2	58.9	0.353	6.04	6.96	36.3	27.8	8.5
17	63.6	62.1	0.408	6.98	7.04	36.6	27.8	8.8
18	69.2	67.5	0.468	8.01	7.11	37.3	27.8	9.5
19	71.4	69.4	0.528	9.03	7.19	37.5	27.8	9.7
20	74.1	71.9	0.583	9.97	7.27	37.7	27.8	9.9
21	77.4	75.0	0.644	11.02	7.35	38.0	27.8	10.2
22	81.8	79.2	0.704	12.04	7.44	38.4	27.8	10.6
23	83.6	80.8	0.759	12.98	7.52	38.5	27.8	10.7
24	86.8	83.7	0.820	14.03	7.61	38.8	27.8	11.0
25	91.1	87.8	0.877	15.00	7.70	39.2	27.8	11.4

Notes: 1. Deviator load corrected for rrembrane effects.
2. Right Cylinder Correctibn Method



Schnabel Engineering

Tube Log Form

Amendment No. 0010

Project: AIR FREIGHT TERMINAL
DOVER AFB

Boring: B-7

Depth: 44.5'-46.5'

Location: DOVER, DE

SEA Contract: 03141063

Wet Unit Weight (pcf): N/A

Natural Moisture Content (%):

TOP

30" TUBE LENGTH

3" VOID

1" WAX

2" FAT CLAY - DISTURBED

2" FAT CLAY "SLURRY"

FAT CLAY - DARK GRAY

19" WITH SPT OVERDRIVE INFILL CONSISTING OF WET FAT CLAY OR CLAY FINE SAND

* DISTURBED *

2.5 FAT CLAY

DEPTH: 46.5 FT

0.5" WAX

Remarks:

Schnabel Engineering

Tube Log Form

Amendment No. 0010

Project: AIR FREIGHT TERMINAL
DOVER AIR FORCE BASE

Boring: B-9

Depth: 3-5FT

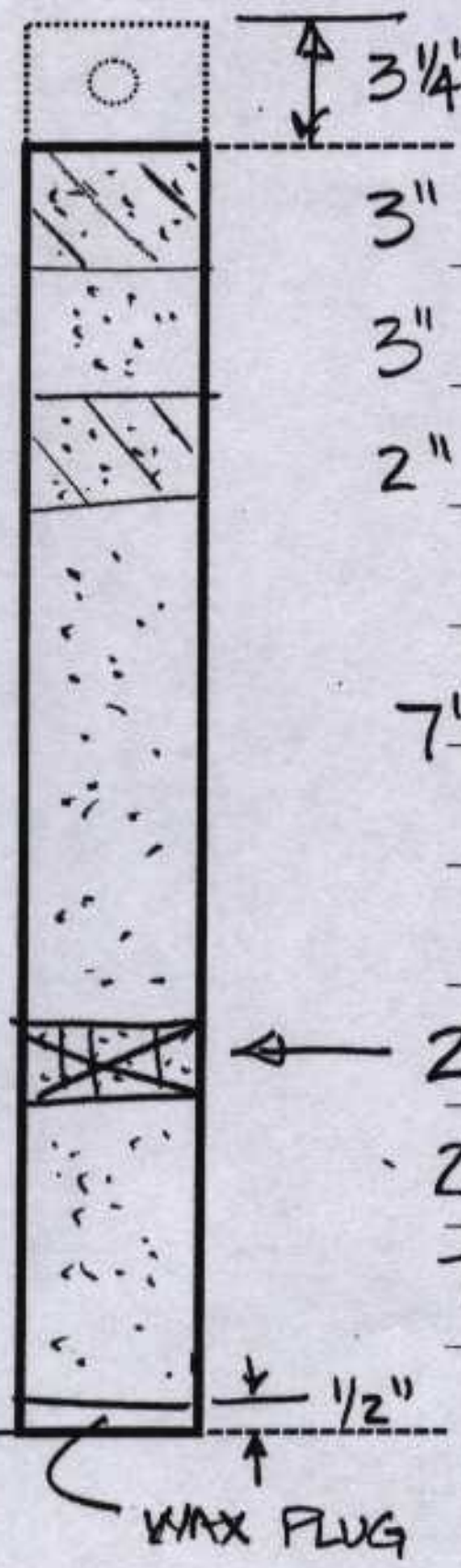
Location: DOVER, DE

SEA Contract: 031410063

Wet Unit Weight (pcf): 116.0

Natural Moisture Content (%): 10.3

TOP



3" CLAYEY SAND - MOTTLED GRAY + ORANGE BR., WAX INTRUSION

3" FINE-MED SAND - LIGHT GRAY

2" SANDY CLAY / CLAYEY SAND - MED. GRAY

7" FINE-MED. SAND, TRACE SILT - MED. GRAY
- POSSIBLE NATURAL BEDDING PLANES
- INCREASED NATURAL M.C.

2" FINE SANDY SILT - MOTTLED GRAY + BROWN

2" F-M SAND, TRACE SILT - MED. GRAY

7" FINE-MED. SAND (SP) - LIGHT GRAY

DEPTH:

Remarks:

Schnabel Tube Log Form

Schnabel Engineering

Amendment No. 0010

Project: AIR FREIGHT TERMINAL
DOVER AFB

Boring: B-10

Depth: 44-46'

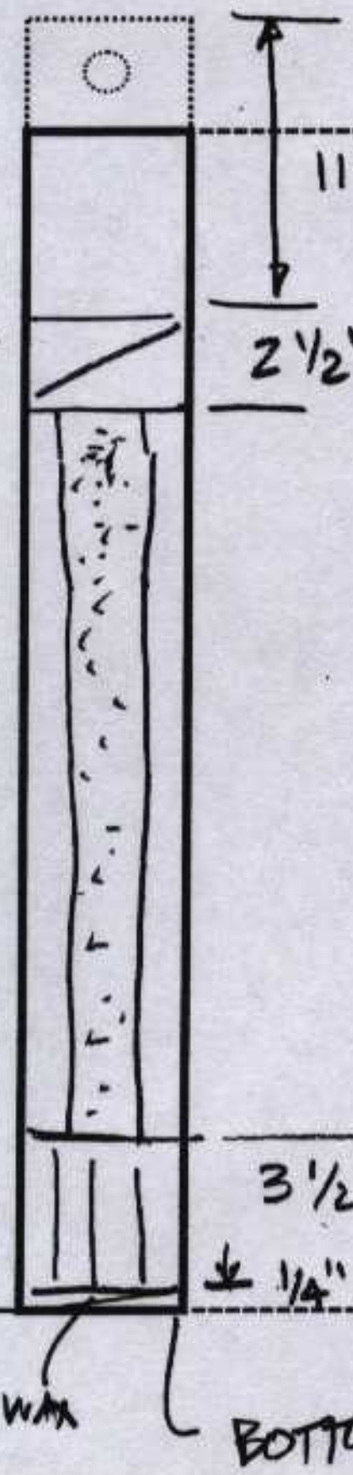
Location: DOVER, DE

SEA Contract: 031410.63

Wet Unit Weight (pcf): _____

Natural Moisture Content (%): _____

TOP



11" VOID

WAX PLUG

2 1/2" WAX PLUG

DARK SILT PERIMETER w/ ORGR F-C SILTY SAND CENTER (SPT OVERDRIVE)

3 1/2"

DEPTH: 46'

1/4" DARK GRAY CLAY/SILT

CONSOLIDATION TEST SPECIMEN

WAX

BOTTOM OF TUBE EDGE SLIGHTLY DEFORMED

Remarks:

$$\text{RECOVERY} = \frac{16.25''}{24.0''} = 0.68$$

Schnabel Engineering

Tube Log Form

Amendment No. 0010

Project: AIR FREIGHT TERMINAL
DOVER AFB

Boring: B-11

Depth: 43-45'

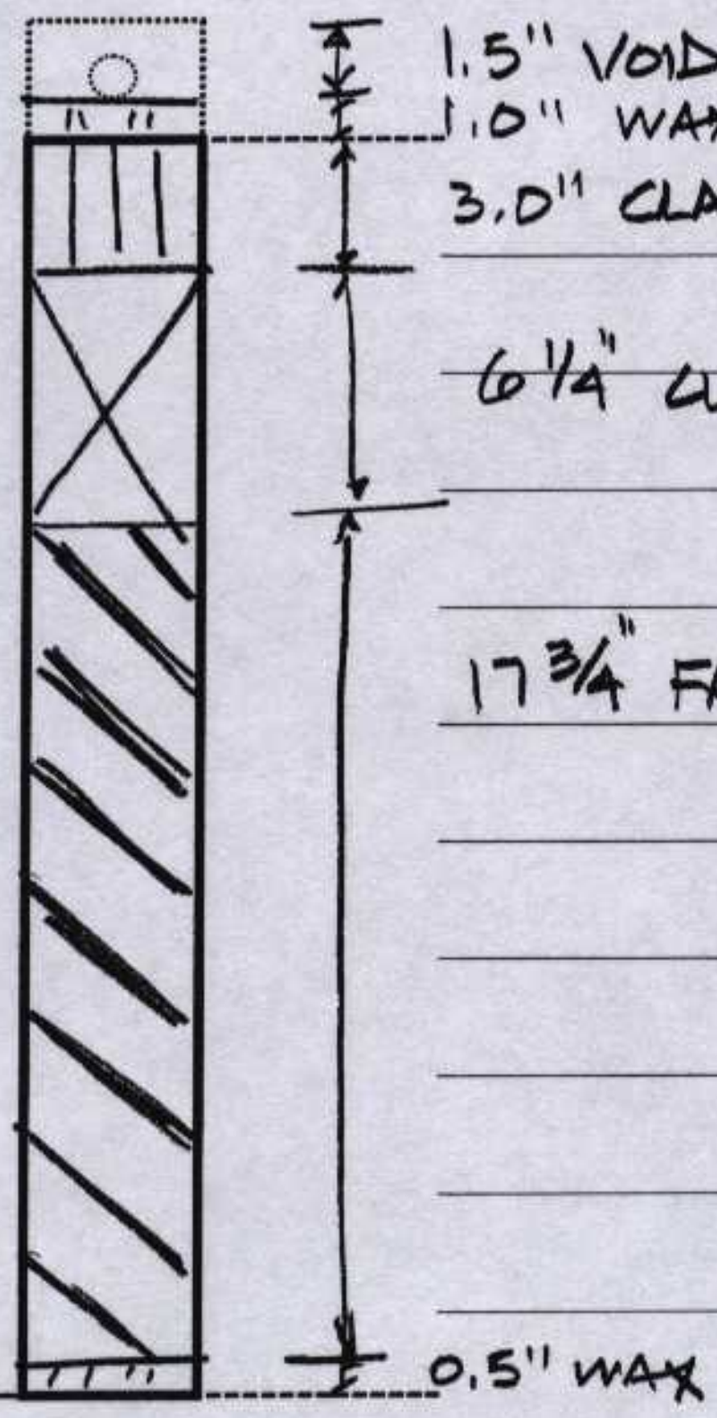
Location: DOVER, DE

SEA Contract: 03141063

Wet Unit Weight (pcf): 105.1

Natural Moisture Content (%): 54.3

TOP



1.5" VOID

1.0" WAX

3.0" CLAY - DARK GRAY, SPT OVERDRIVE DISTURBANCE

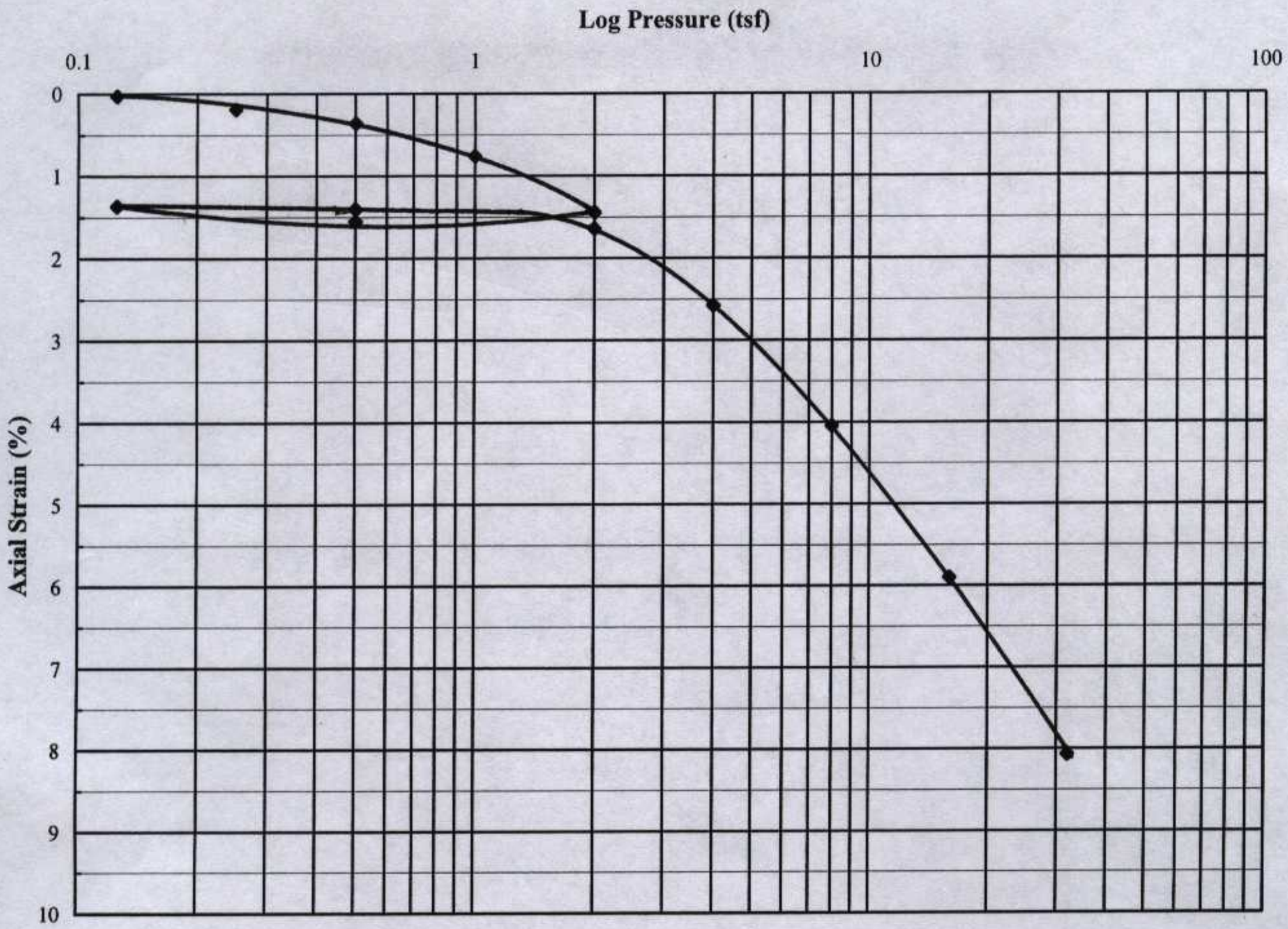
6 1/4" CLAY - DARK GRAY; NATURAL DENSITY SPECIMEN

17 3/4" FAT CLAY - DARK GRAY; UU SPECIMENS (2)
LIMITS, SIEVE, G_s

DEPTH: 45'

0.5" WAX

Remarks:



Probable Preconsolidation Pressure (Pp), tsf:	*3.0*	**Recompression Ratio (Cεr):**	*0.003*
Type of Specimen:	*Tube Sample*	**Compression Ratio (Cεc):**	*0.066*
Description:	*Fine to medium sandy SILT (FILL) - gray and brown*		
LL: *N/A*	**PI:** *N/A*	**Gs:** *2.66*	**P_o' (tsf):** *0.25*
% < No. 200:	*N/A*	**Test Method:**	*ASTM 2435, Method A*
Test Condition:	*Inundated at 0.05 tsf*		

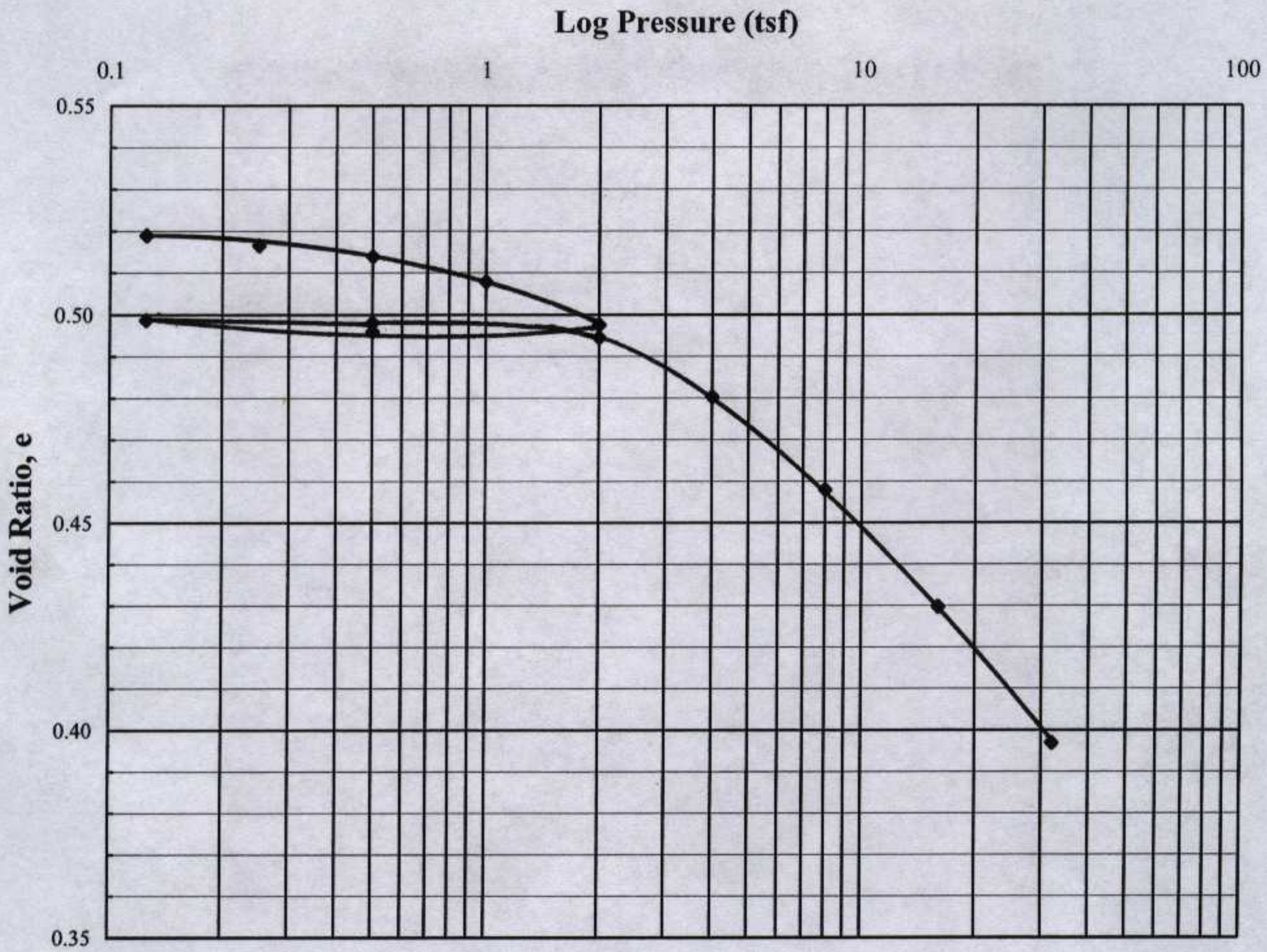
	Initial	Final
Water Content, %	*17.1*	*17.9*
Void Ratio	*0.52*	*0.40*
Saturation, %	*87*	*100*
Dry Unit Weight, pcf	*109.2*	*118.8*

Remarks:

Schnabel
Schnabel Engineering

Project:	Air Freight Terminal Dover Air Force Base		
Location:	*Dover, Delaware*		
Boring:	*B-9*	**Sample No.:**	
Depth:	*3.0-5.0 ft*	**Elevation:**	
Date:	*12/2/03*	**Schnabel No.:**	*03141063*

Consolidation Test Report



Probable Preconsolidation Pressure (Pp), tsf:	*3.0*	**Recompression Index (Cr):**	*0.004*
Type of Specimen:	*Tube Sample*	**Compression Index (Cc):**	*0.101*
Description:	*Fine to medium sandy SILT (FILL) - gray and brown*		

LL: *N/A*	**PI:** *N/A*	**Gs:** *2.66*	**P_o' (tsf):** *0.25*
% < No. 200: *N/A*		**Test Method:** *ASTM 2435, Method A*	
Test Condition: *Inundated at 0.05 tsf*			

	Initial	Final
Water Content, %	*17.1*	*17.9*
Void Ratio	*0.52*	*0.40*
Saturation, %	*87*	*100*
Dry Unit Weight, pcf	*109.2*	*118.8*

Remarks:

Project: Air Freight Terminal
Dover Air Force Base

Location: *Dover, Delaware*

Boring:	*B-9*	**Sample No.:**	
Depth:	*3.0-5.0 ft*	**Elevation:**	
Date:	*12/2/03*	**Schnabel No.:**	*03141063*

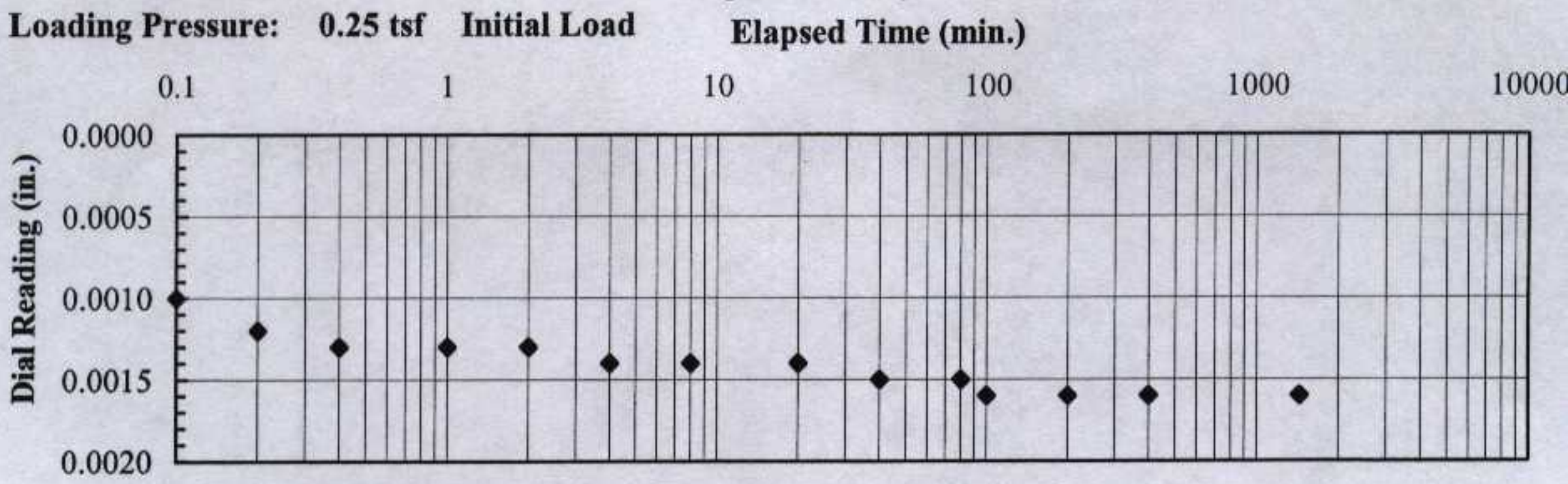
Schnabel
Schnabel Engineering

Consolidation Test Report

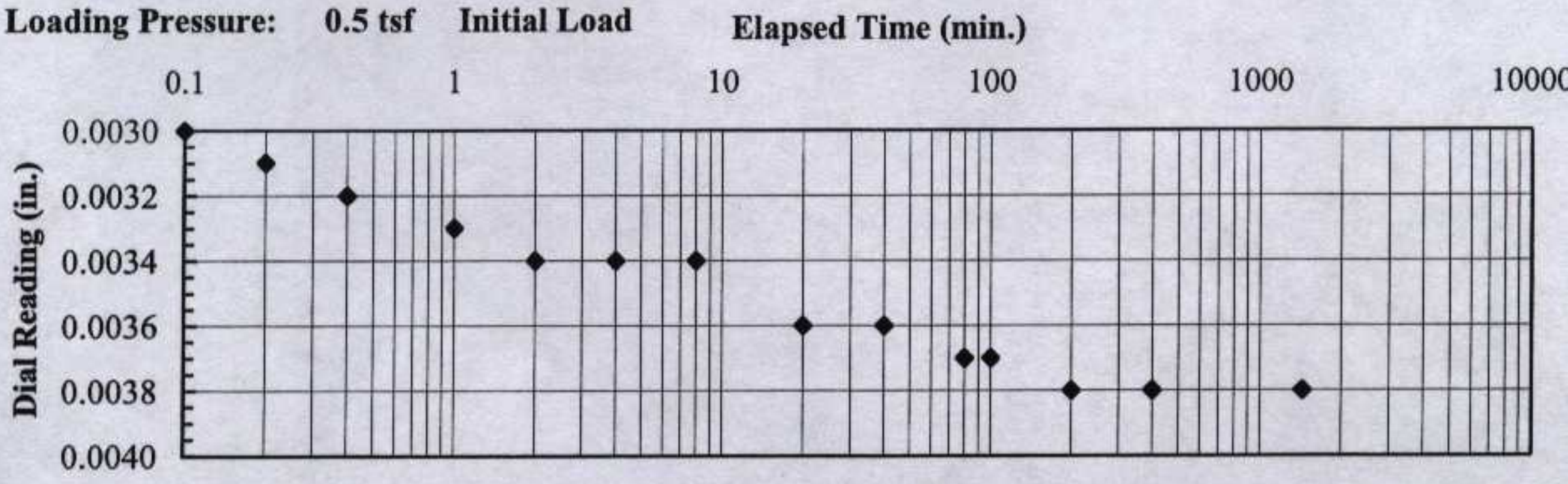
Project: *Air Freight Terminal* **Boring No.:** *B-9* **Schnabel Contract:** *03141063*

Dover Air Force Base **Depth:** *3.0-5.0 ft* Amendment No. 0010

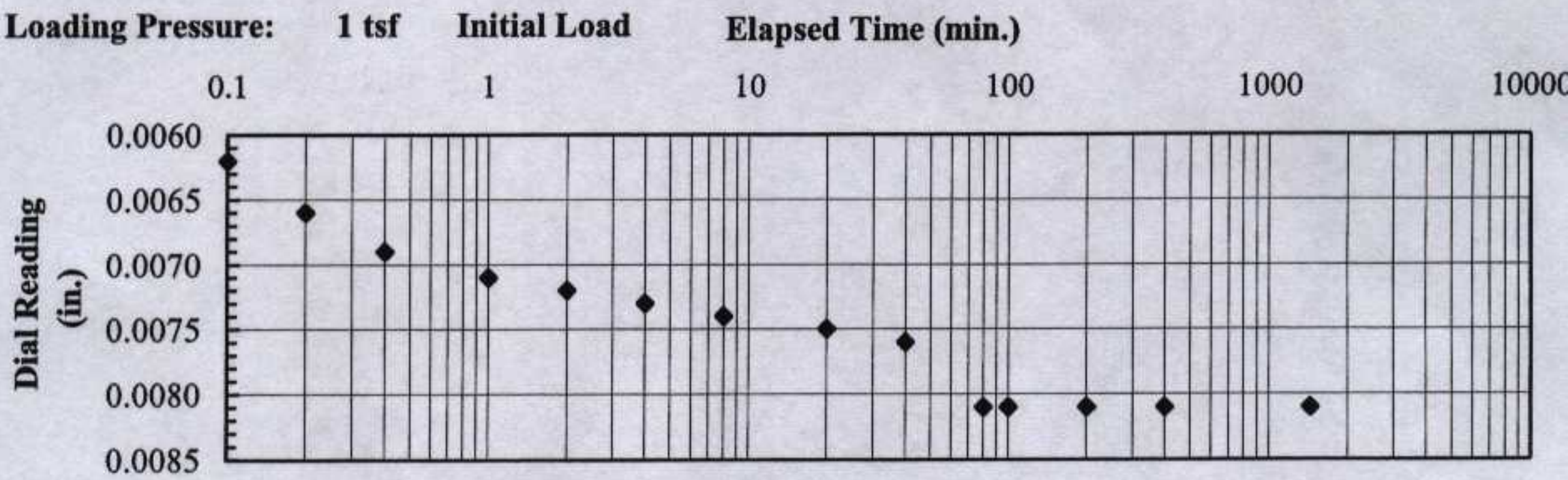
Loading Pressure: 0.25 tsf Initial Load



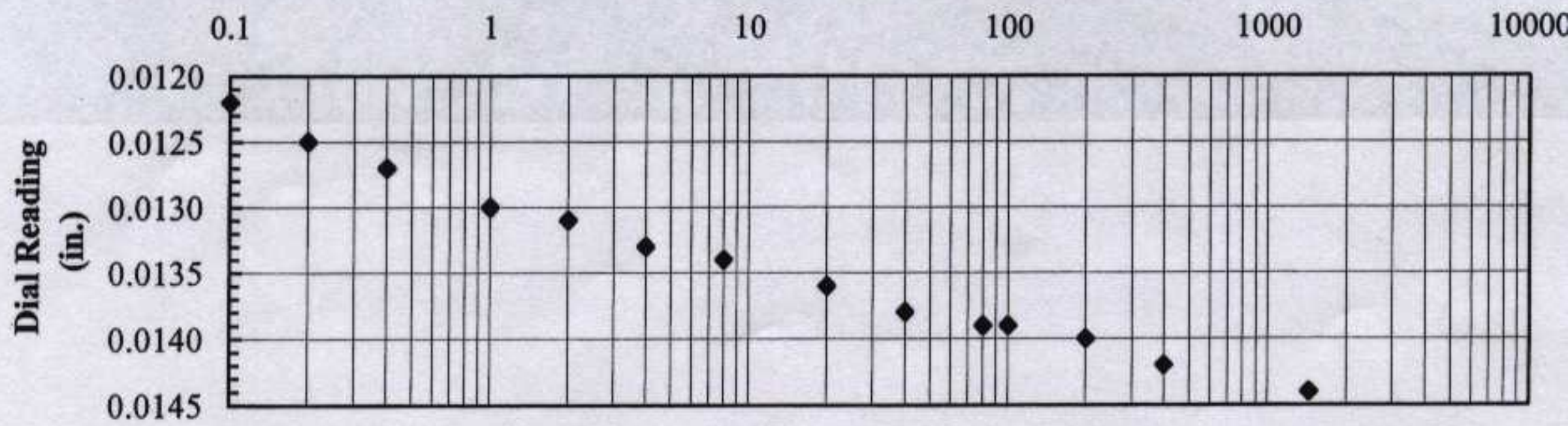
Loading Pressure: 0.5 tsf Initial Load



Loading Pressure: 1 tsf Initial Load



Loading Pressure: 2 tsf Initial Load



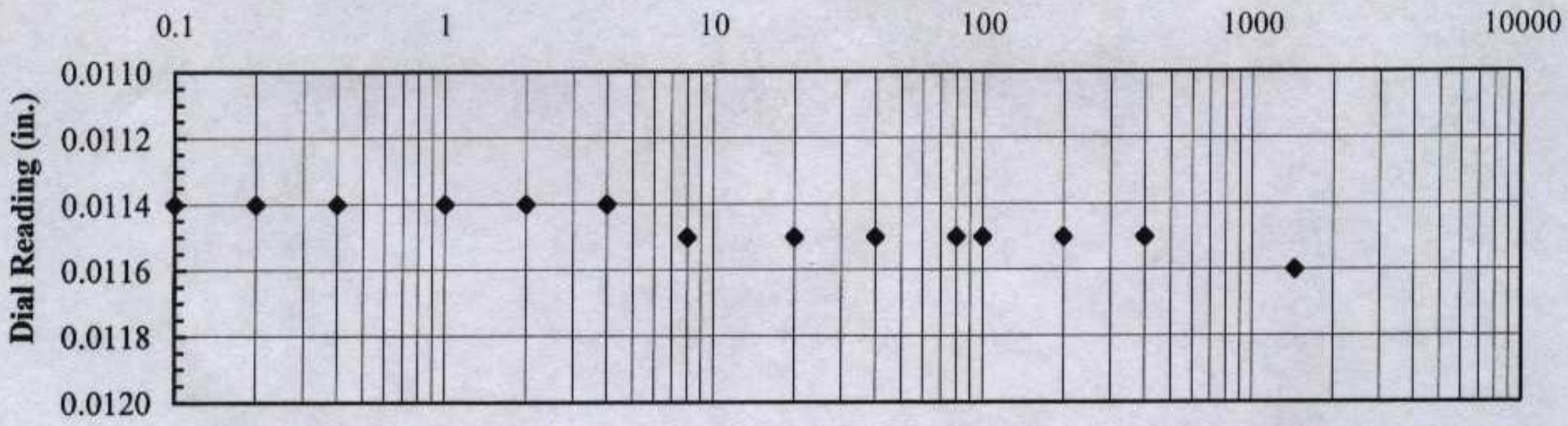
Project: *Air Freight Terminal*
Dover Air Force Base

Boring No.: *B-9*
Depth: *3.0-5.0 ft*

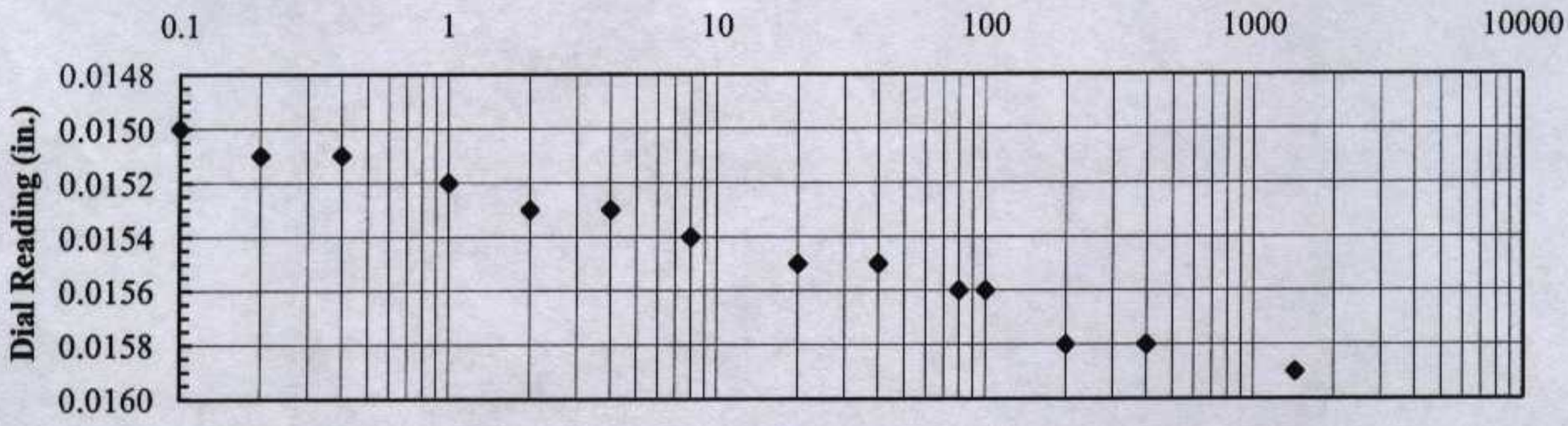
Schnabel Contract: *03141063*

Amendment No. 0010

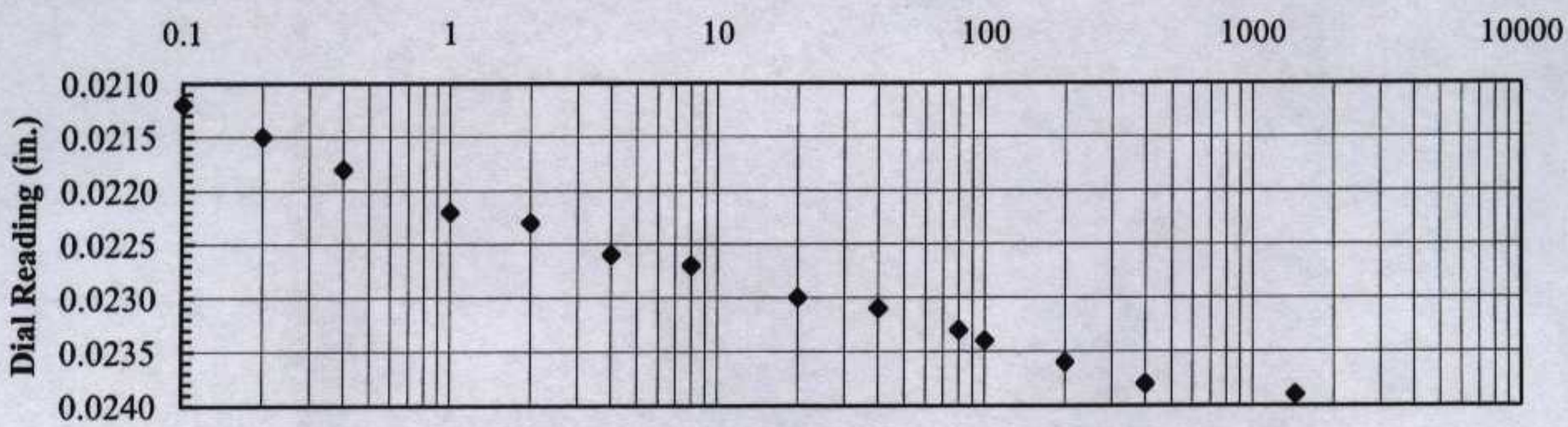
Loading Pressure: **0.5 tsf** **Reload**



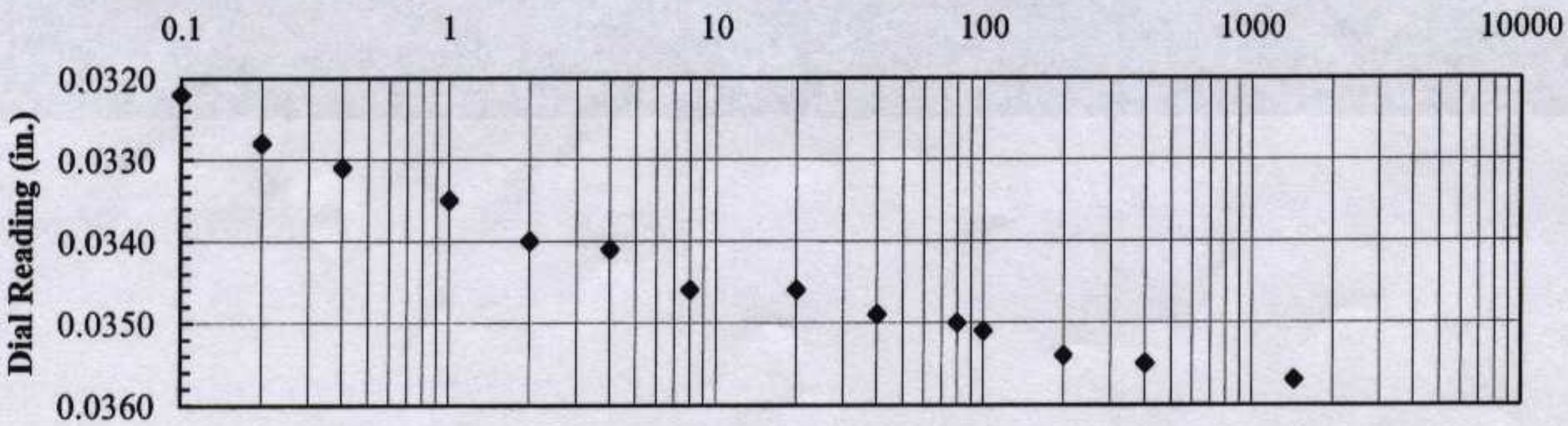
Loading Pressure: **2 tsf** **Reload**



Loading Pressure: **4 tsf** **Load**



Loading Pressure: **8 tsf** **Load**



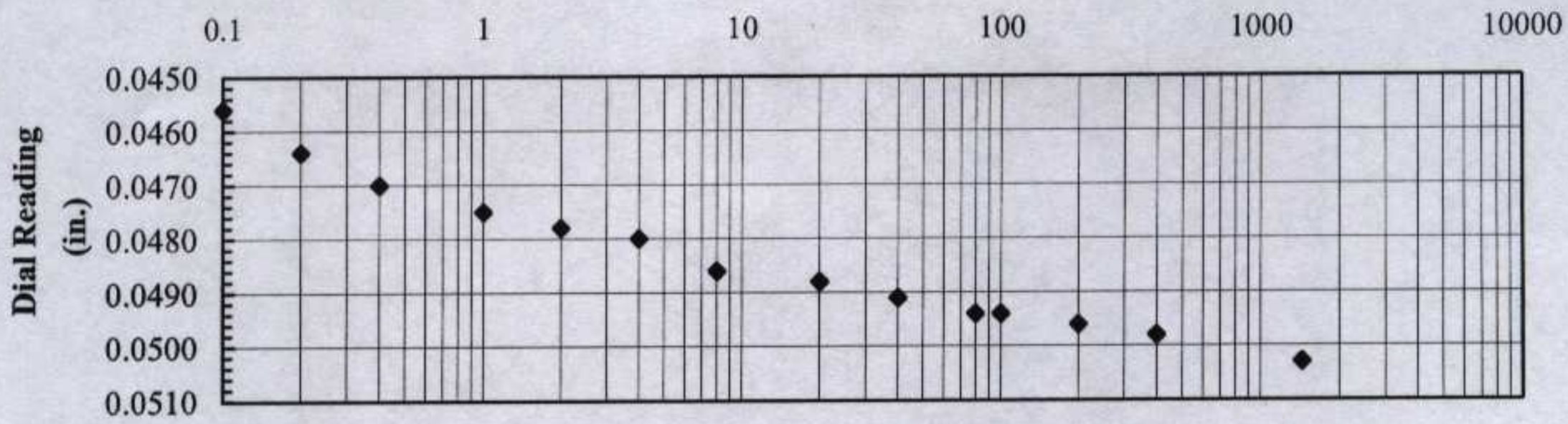
Project: *Air Freight Terminal*
Dover Air Force Base

Boring No.: *B-9*
Depth: *3.0-5.0 ft*

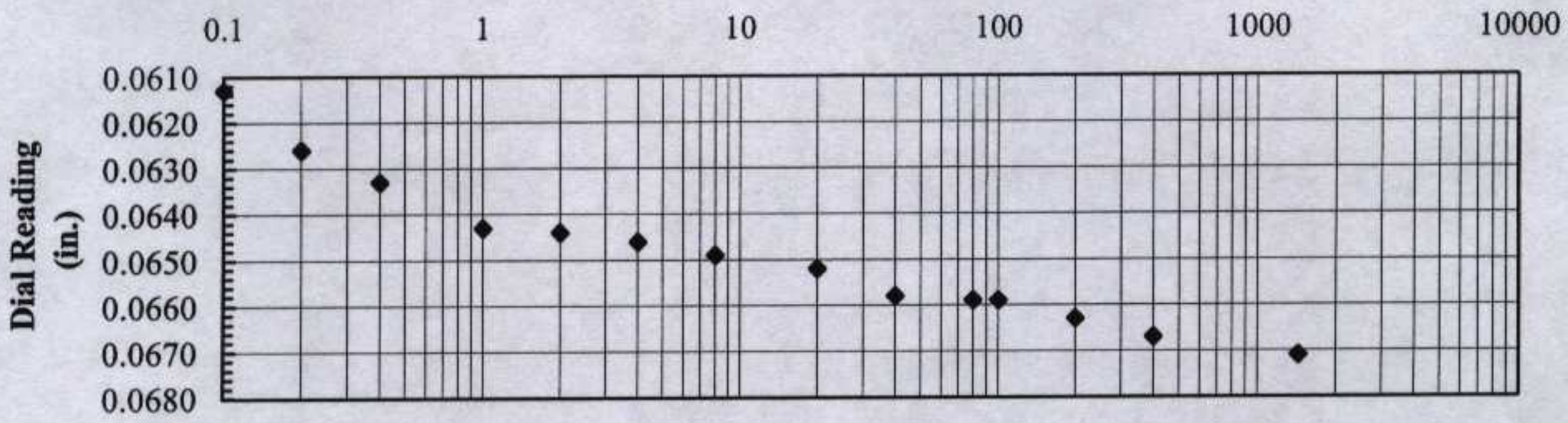
Schnabel Contract: *03141063*

Amendment No. 0010

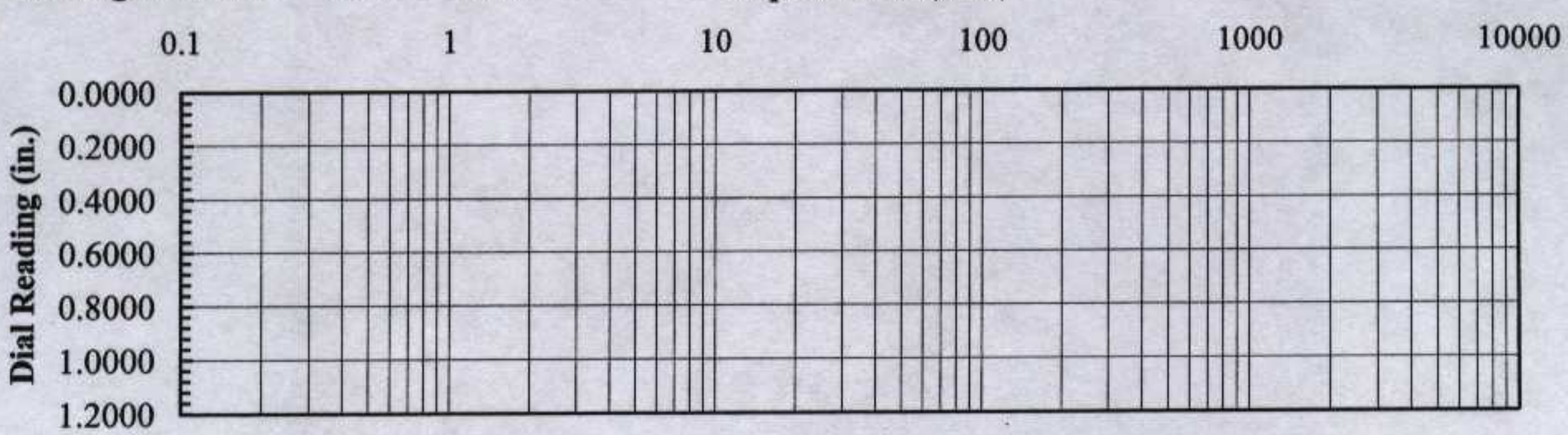
Loading Pressure: **16 tsf** **Load**



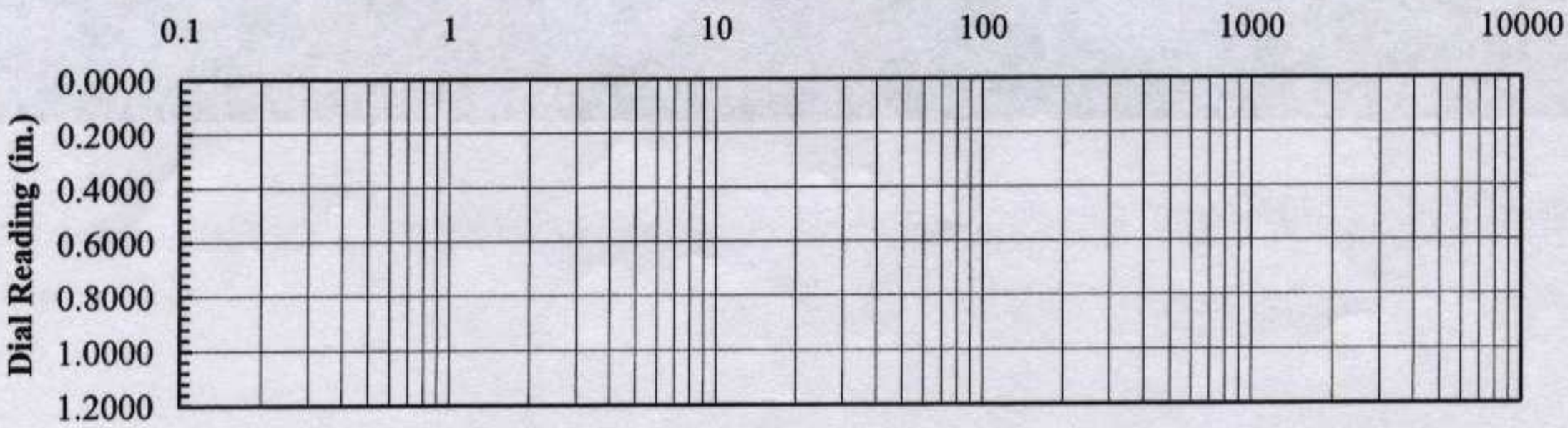
Loading Pressure: **32 tsf** **Load**

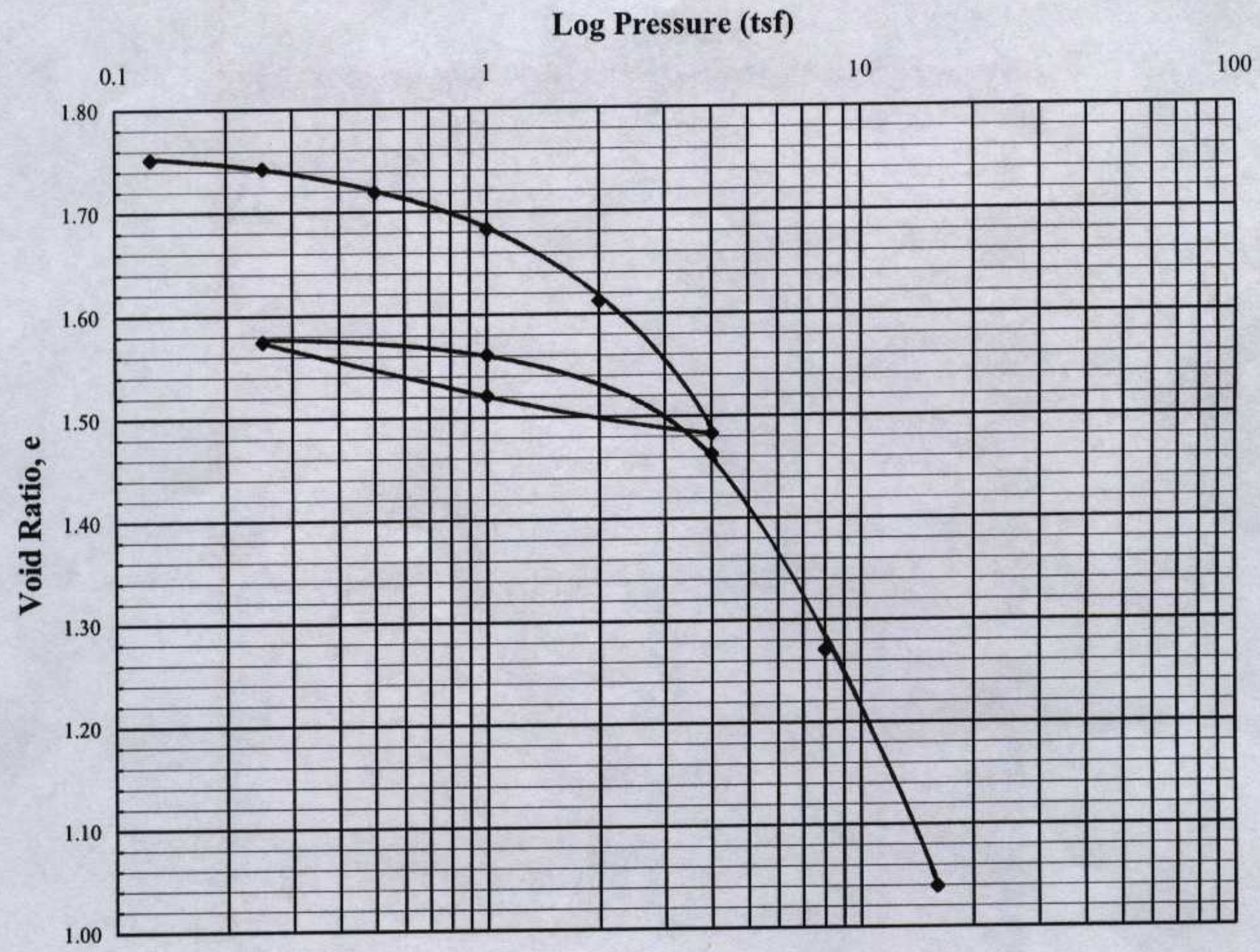


Loading Pressure: **0.000** **Load**



Loading Pressure: **0.000** **Load**





Probable Preconsolidation Pressure (Pp), tsf: *2.5*		**Recompression Index (Cr):**	*0.074*
Type of Specimen: *Tube Sample*		**Compression Index (Cc):**	*0.704*
Description: *SILT (ML), trace sand - dark gray*			

	Initial	Final
Water Content, %	66.3	36.3
Void Ratio	1.75	1.04
Saturation, %	100	96
Dry Unit Weight, pcf	62.1	83.8

LL: *48*	**PI:** *17*	**Gs:** *2.74*	**P_o' (tsf):** *1.70*
% < No. 200: *90.3*		**Test Method:** *ASTM D2435 Method A*	
Test Condition: *Inundated at 0.05 tsf*			

Remarks:

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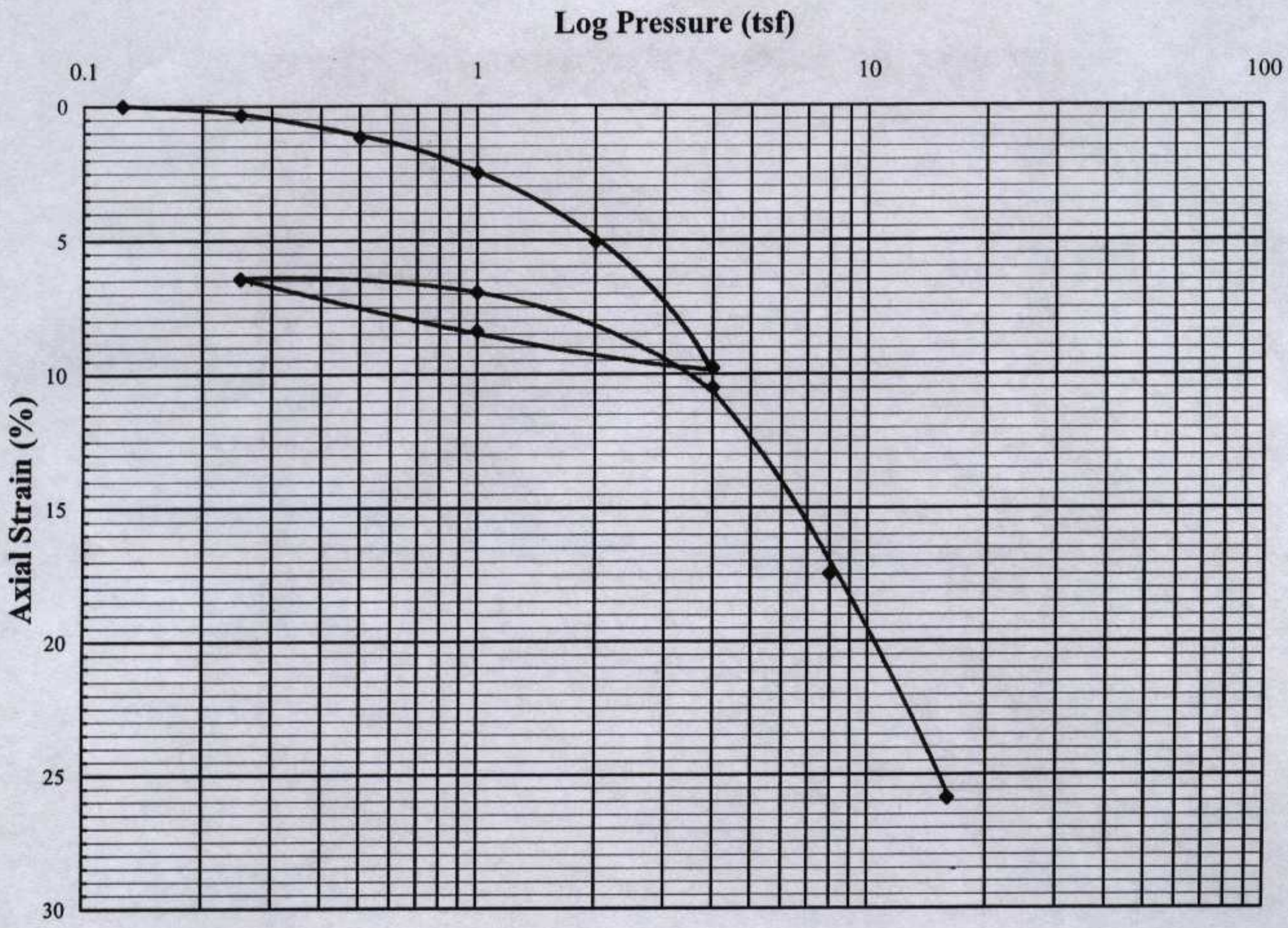
Schnabel Engineering

Project:	Air Freight Terminal Dover Air Force Base		
Location:	*Dover, Delaware*		
Boring:	*B-10*	**Sample No.:**	
Depth:	*44-46 ft*	**Elevation:**	
Date:	*12/5/03*	**Schnabel No.:**	*03141063*

Consolidation Test Report



Probable Preconsolidation Pressure (Pp), tsf:	*2.5*			**Recompression Ratio (Cεr):**	*0.027*
Type of Specimen:	*Tube Sample*			**Compression Ratio (Cεc):**	*0.256*
Description:	*SILT (ML), trace sand - dark gray*				
LL: *48*	**PI:** *17*	**Gs:** *2.74*	**P_o' (tsf):** *1.70*	**Water Content, %**	*66.3* / *36.3*
% < No. 200:	*90.3*	**Test Method:**	*ASTM D2435 Method A*	**Void Ratio**	*1.75* / *1.04*
Test Condition:	*Inundated at 0.05 tsf*			**Saturation, %**	*100* / *96*
				Dry Unit Weight, pcf	*62.1* / *83.8*

Initial	Final

Remarks:

Project: Air Freight Terminal
Dover Air Force Base

Location: *Dover, Delaware*

Boring: *B-10* **Sample No.:**

Depth: *44-46 ft* **Elevation:**

Date: *12/5/03* **Schnabel No.:** *03141063*

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Schnabel Engineering

Consolidation Test Report

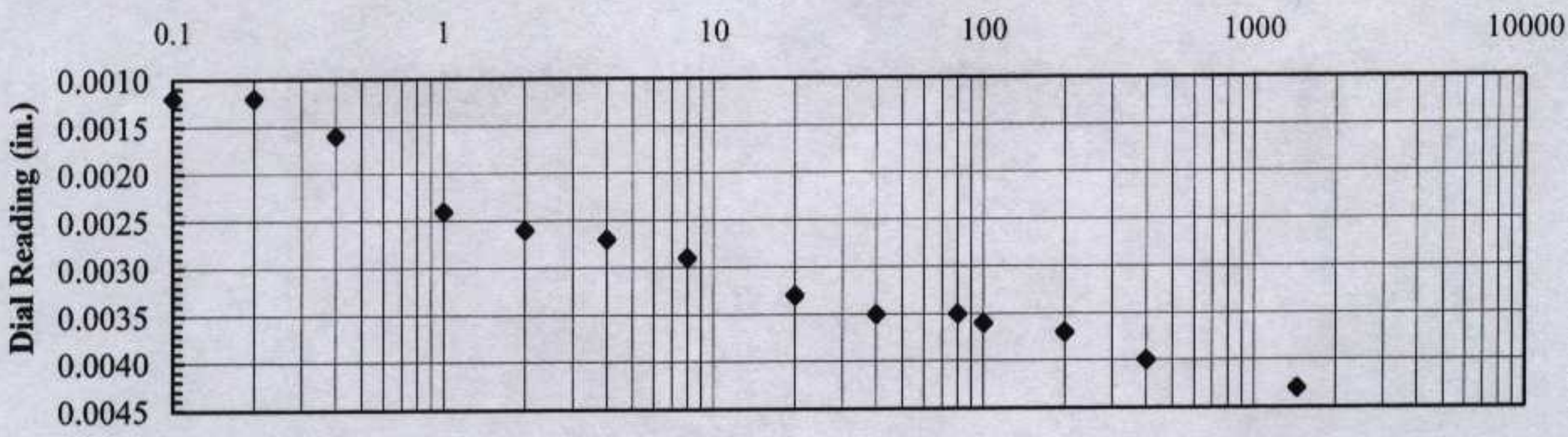
Project: *Air Freight Terminal*
Dover Air Force Base

Boring No.: *B-10*
Depth: *44-46 ft*

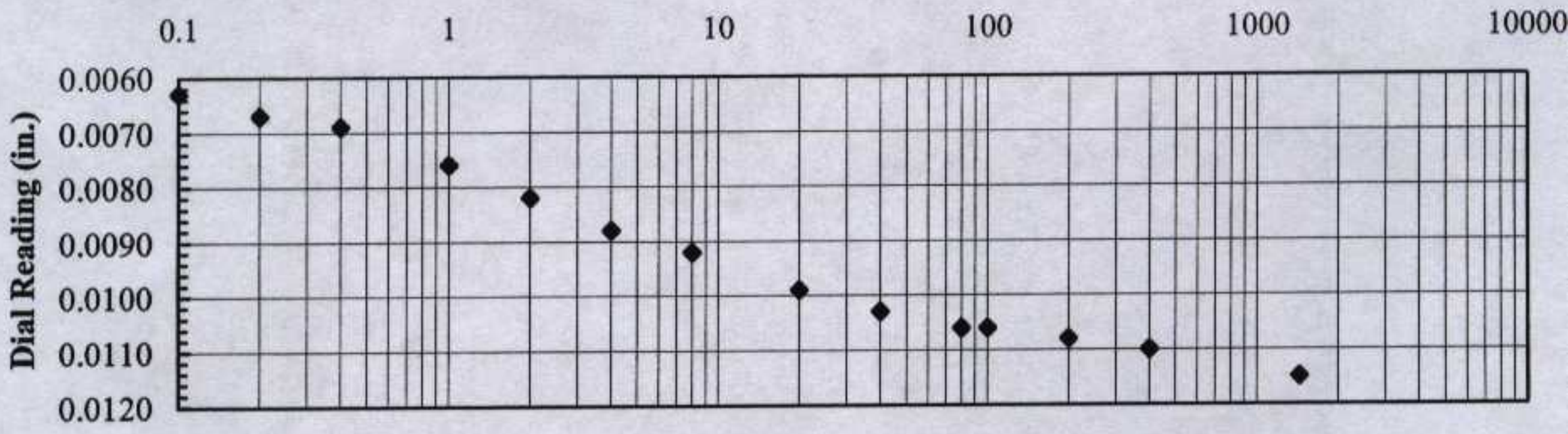
Schnabel Contract: *03141063*

Amendment No. 0010

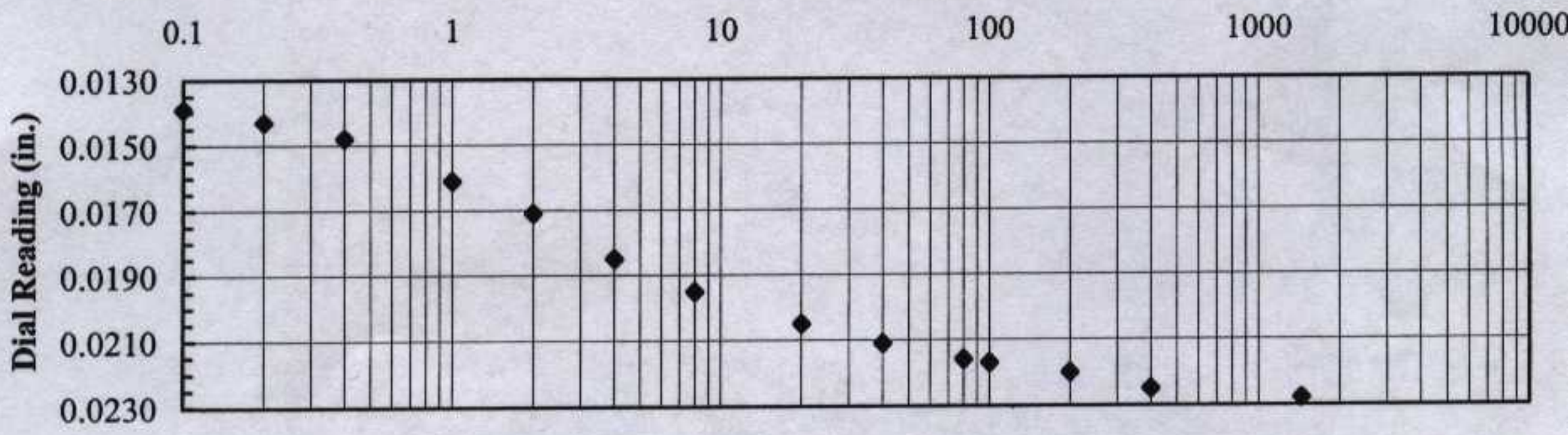
Loading Pressure: 0.25 tsf Load



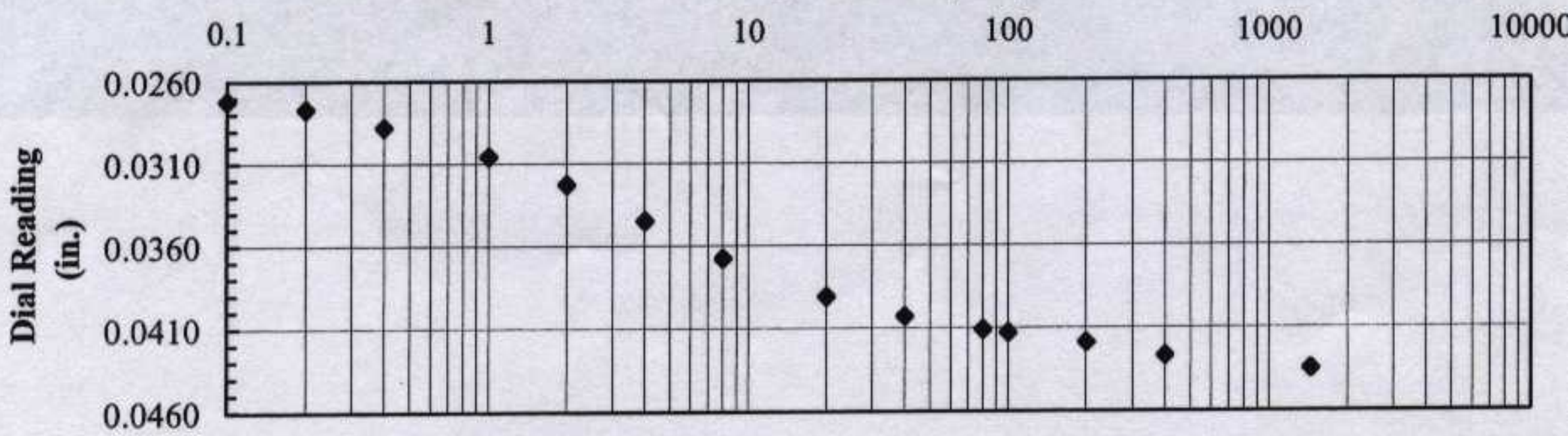
Loading Pressure: 0.5 tsf Load



Loading Pressure: 1 tsf Load



Loading Pressure: 2 tsf Load



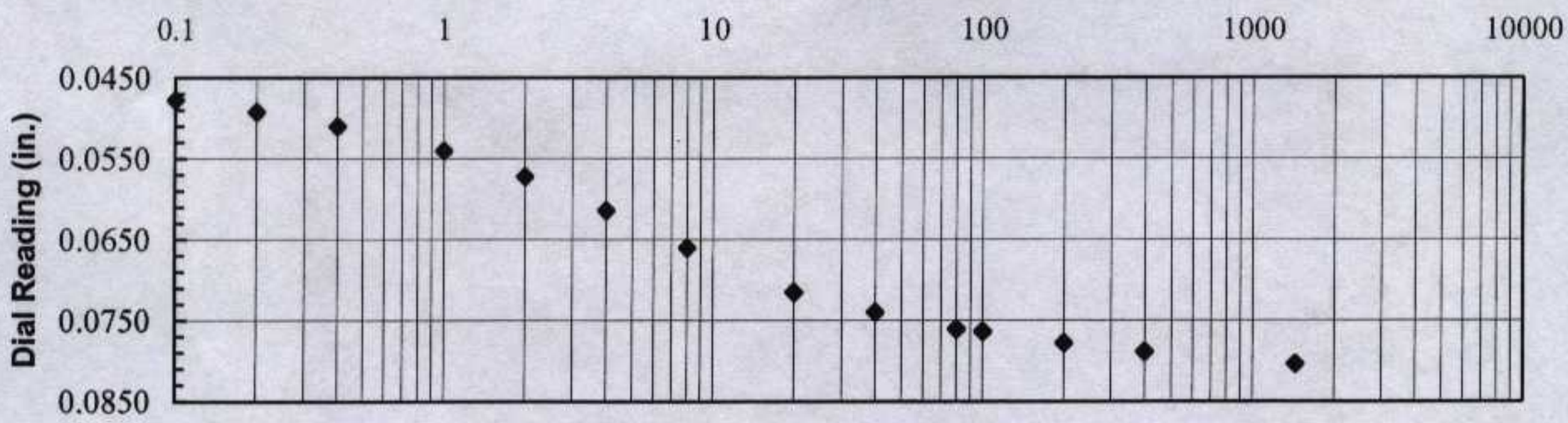
Project: *Air Freight Terminal*
Dover Air Force Base

Boring No.: *B-10*
Depth: *44-46 ft*

Schnabel Contract: *03141063*

Amendment No. 0010

Loading Pressure: **4 tsf** **Load**



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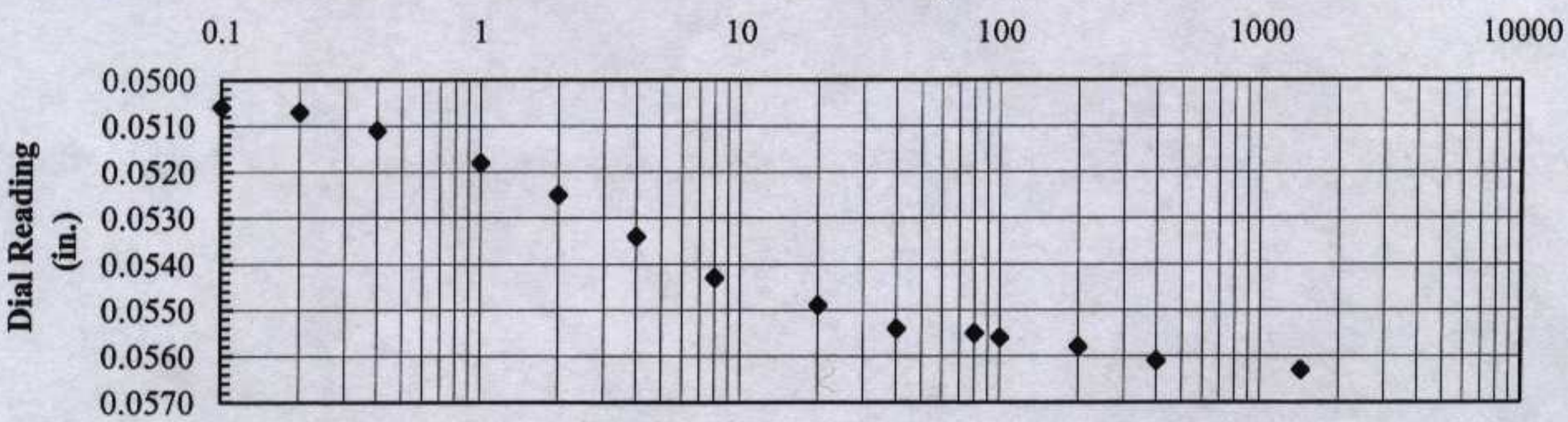

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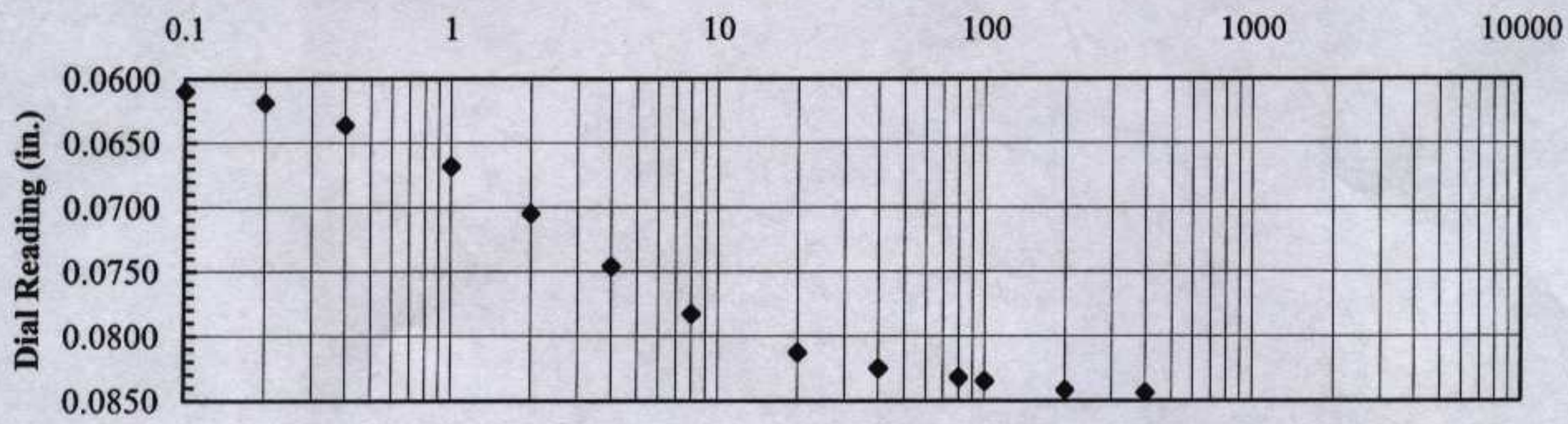
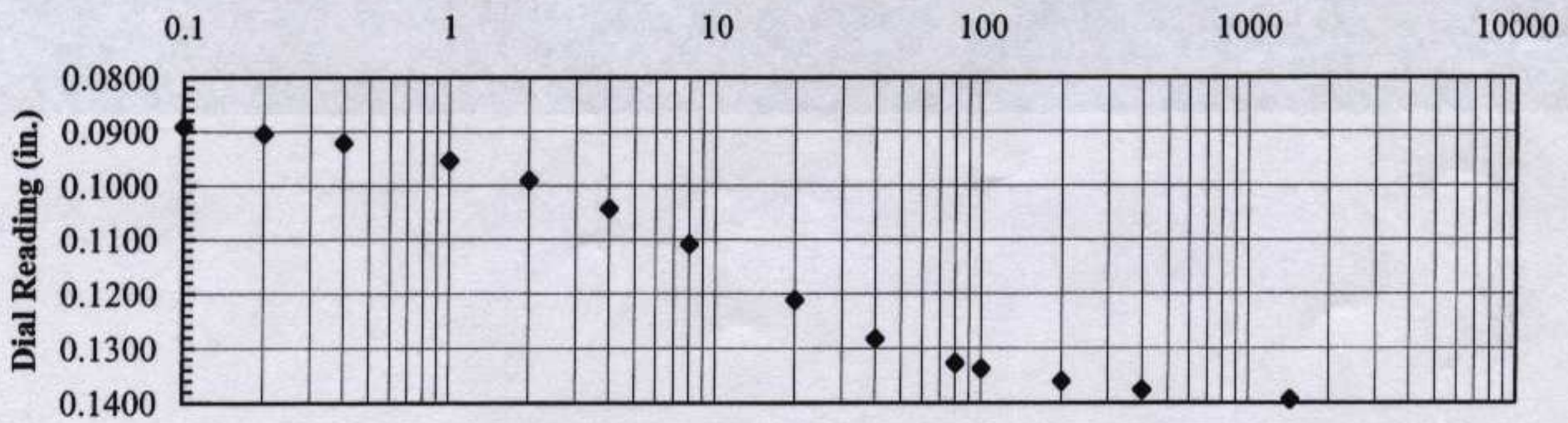


Loading Pressure: **8 tsf** **Load**



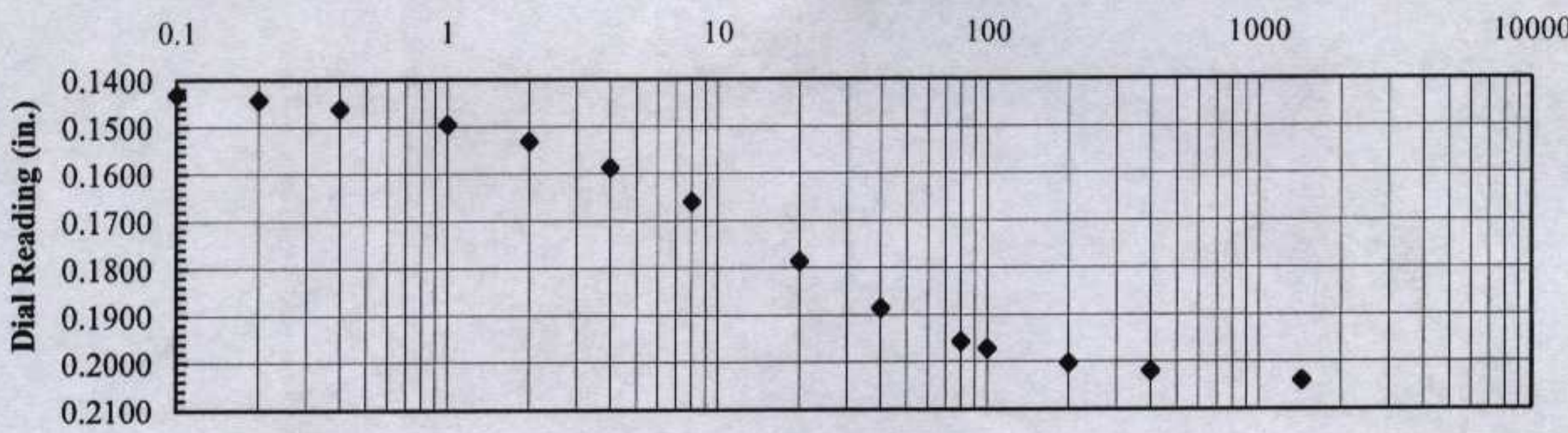
Project: *Air Freight Terminal*
Dover Air Force Base

Boring No.: *B-10*
Depth: *44-46 ft*

Schnabel Contract: *03141063*

Amendment No. 0010

Loading Pressure: **16 tsf** **Load**



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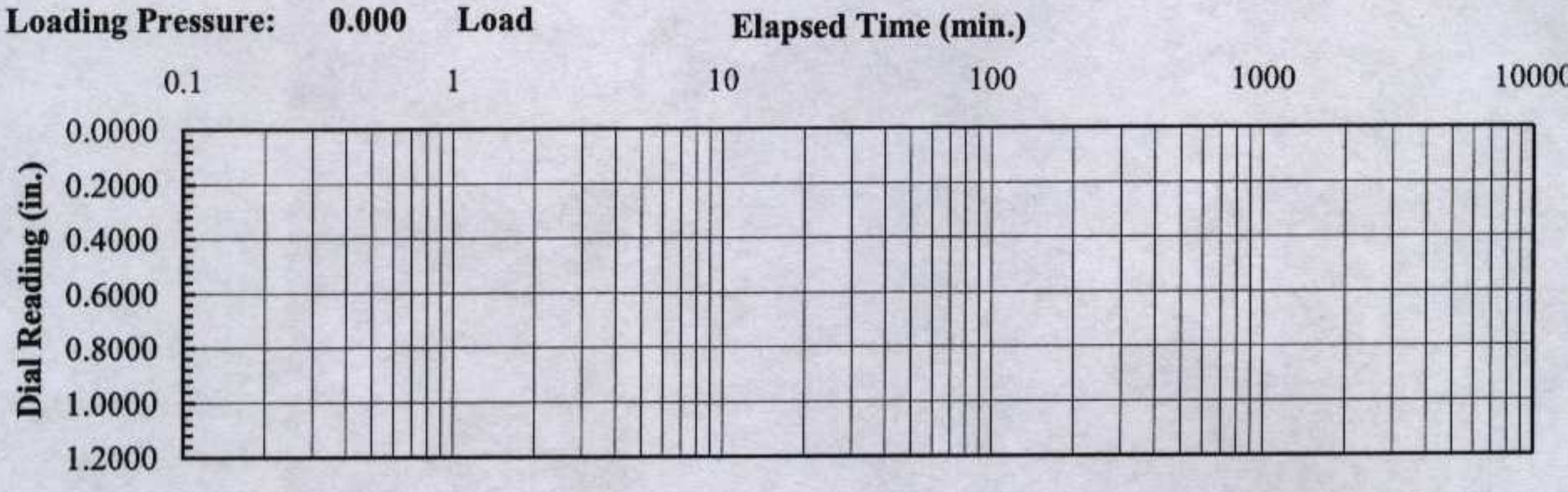
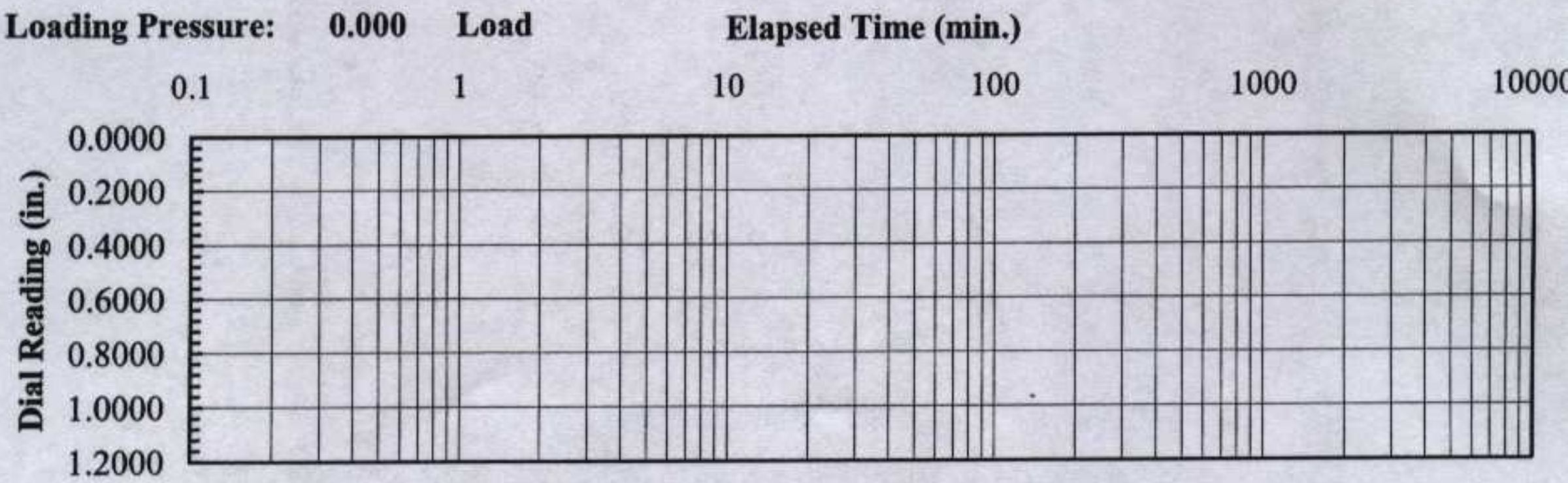
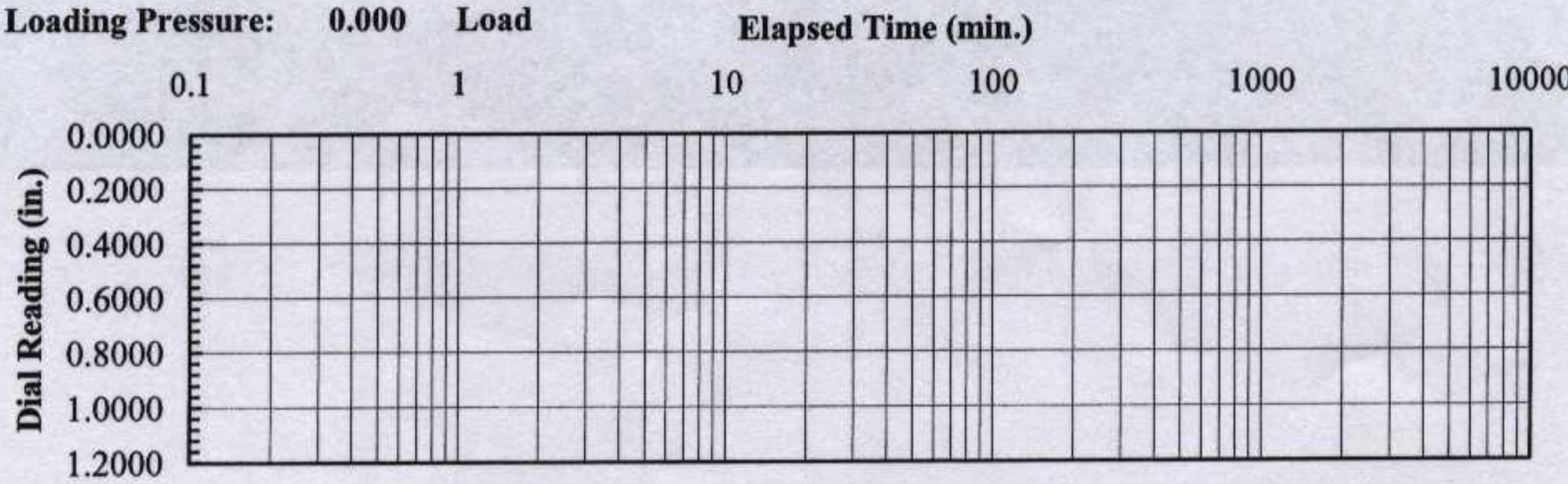
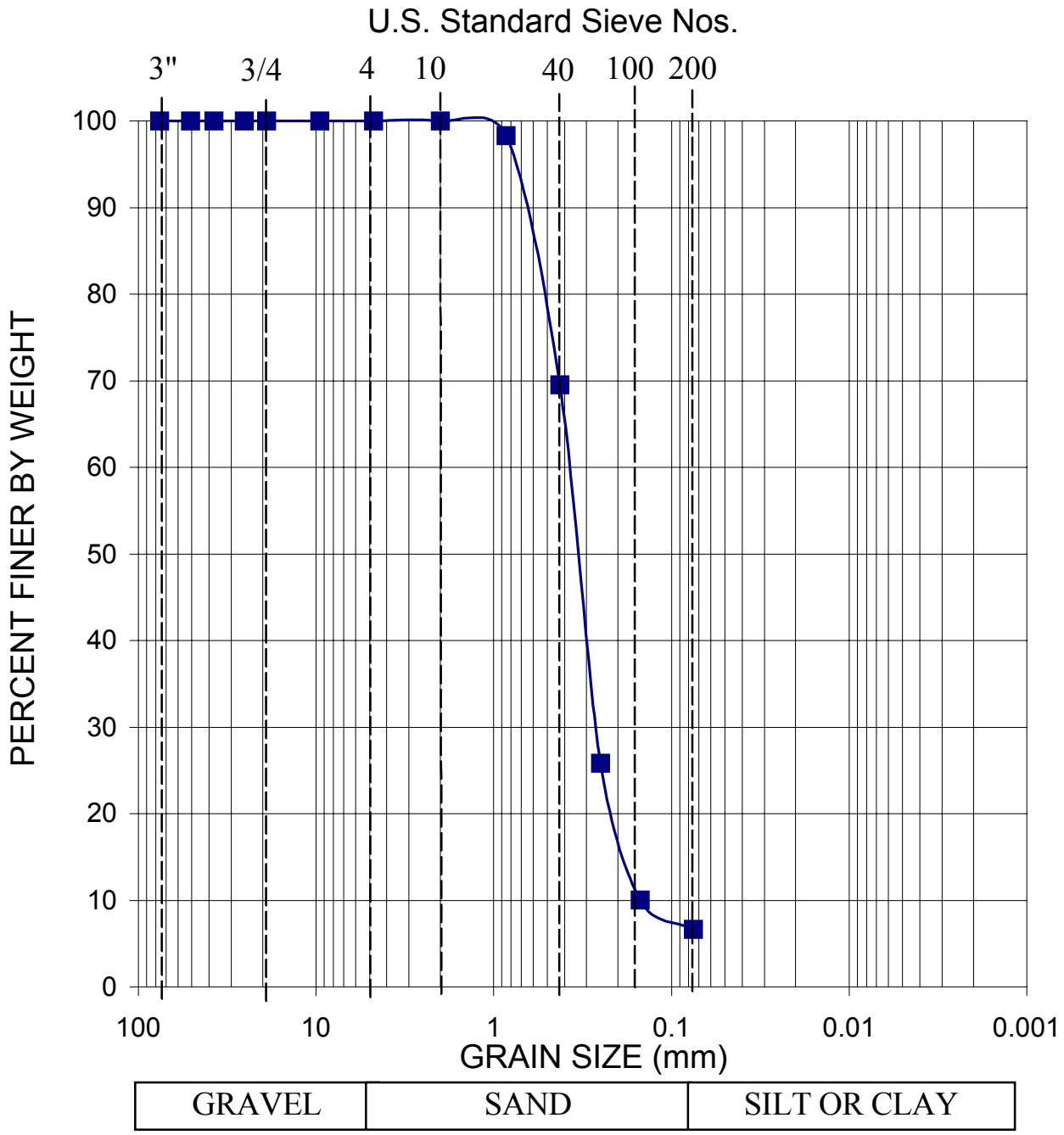


Loading Pressure: **0.000** **Load**



Loading Pressure: **0.000** **Load**





Key	Sample	Depth(ft.)	Sample Description	Class.	LL	PI
■	B-3	5.5-7.5	poorly graded SAND, with silt, dark gray and tan	SP-SM	NP	NP
▲						
●						

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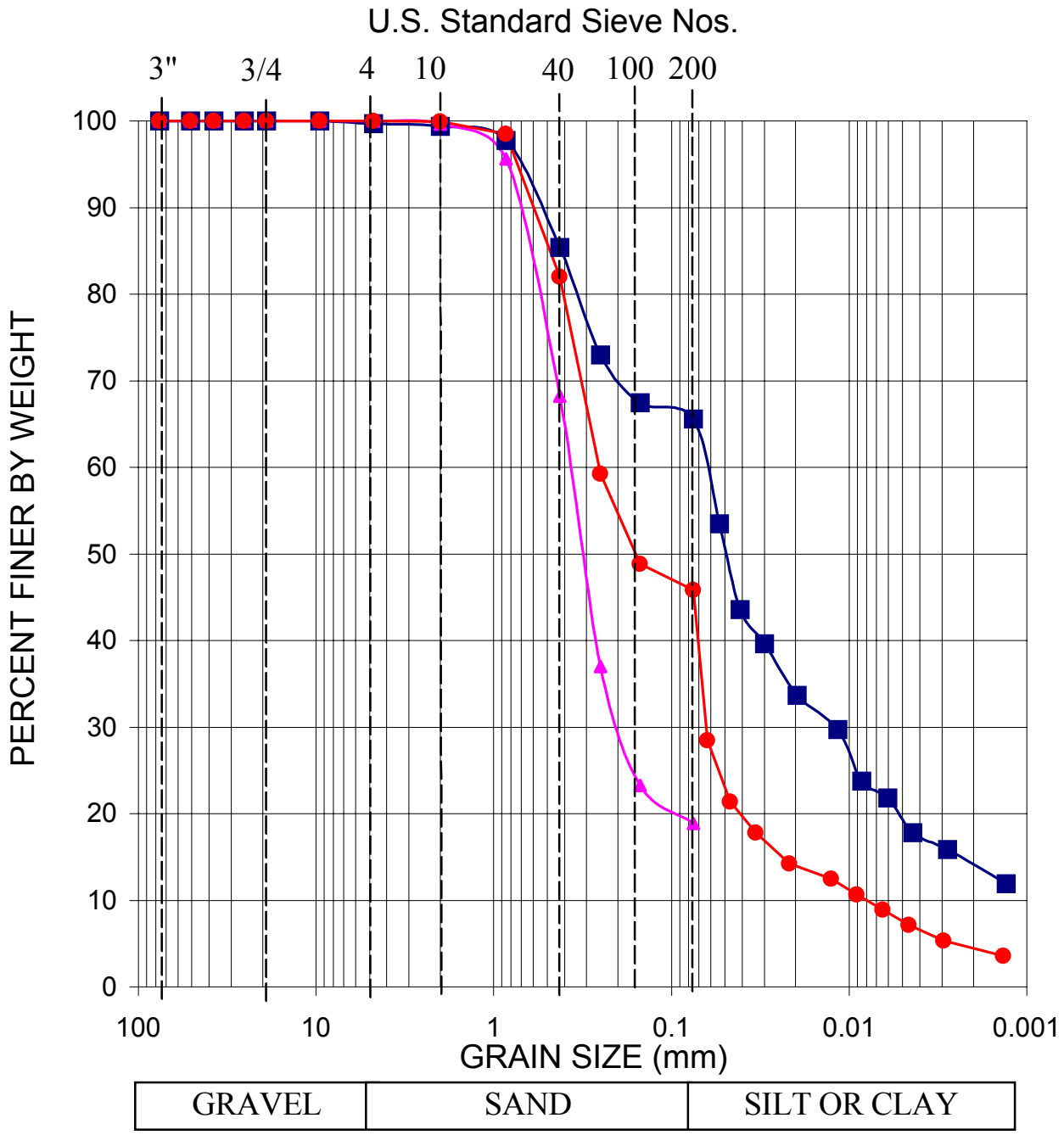
GRADATION CURVES

Project: Air Freight Terminal Dover AFB

Contract No. 03141063.00



Key	Sample	Depth(ft.)	Sample Description	Class.	LL	PI
■	B-3	1.5-2.0	sandy, silty CLAY, brorn	CL-ML	22	6
▲	B-4	3.5-5.5	silty SAND, gray			
●	B-6	4.5-6.5	clayey SAND, gray	SC	26	12

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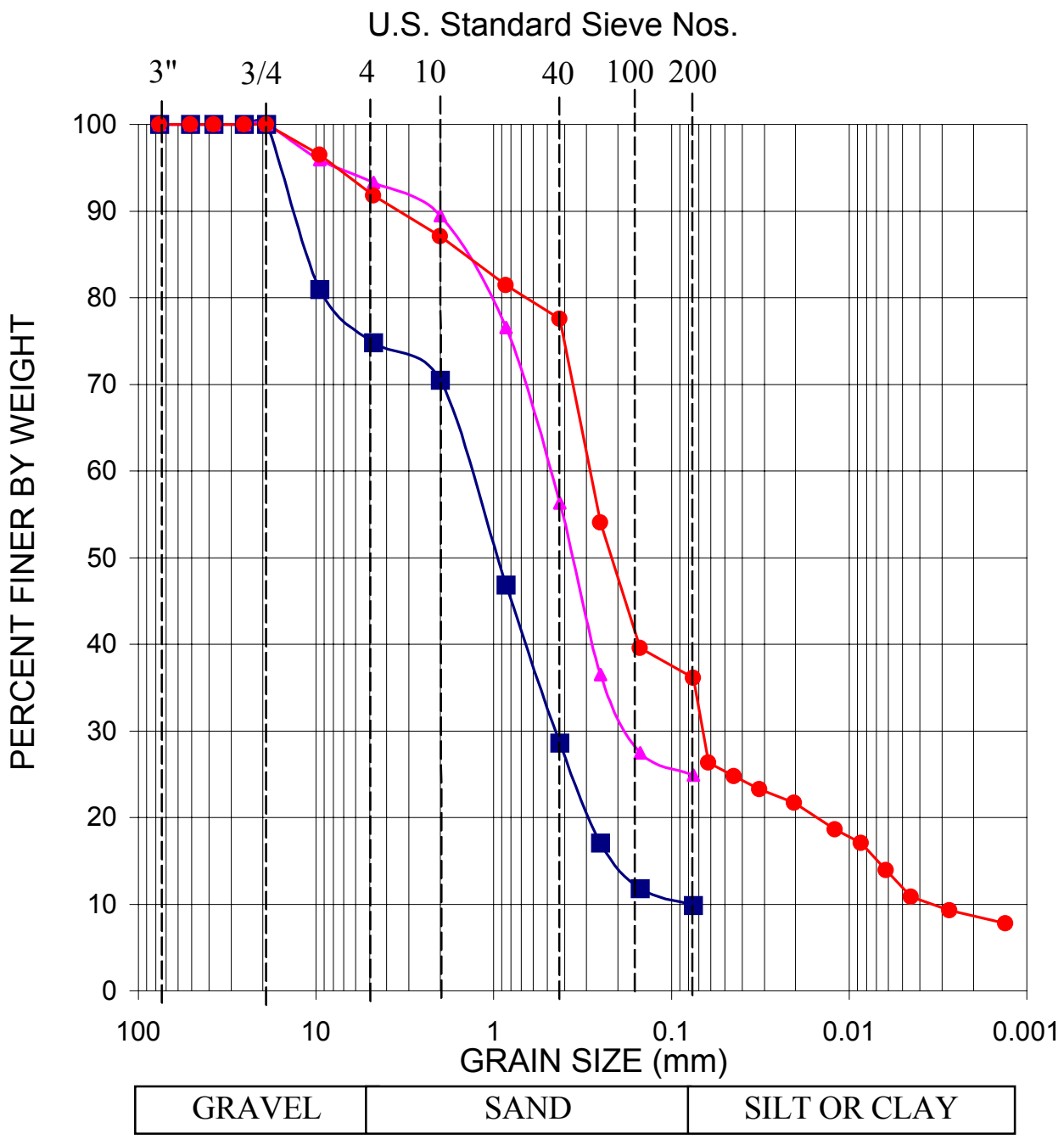
GRADATION CURVES

Project: Air Freight Terminal, Dover AFB

Contract No. 03141063.00



Key	Sample	Depth(ft.)	Sample Description	Class.	LL	PI
■	B-9	21.0-23.0	well graded SAND, with silt and gravel, reddish brown			
▲	B-10	7.0-9.0	clayey SAND, trace gravel, brown	SC	21	9
●	B-11	7.0-9.0	clayey SAND, trace gravel, tan	SC	26	11

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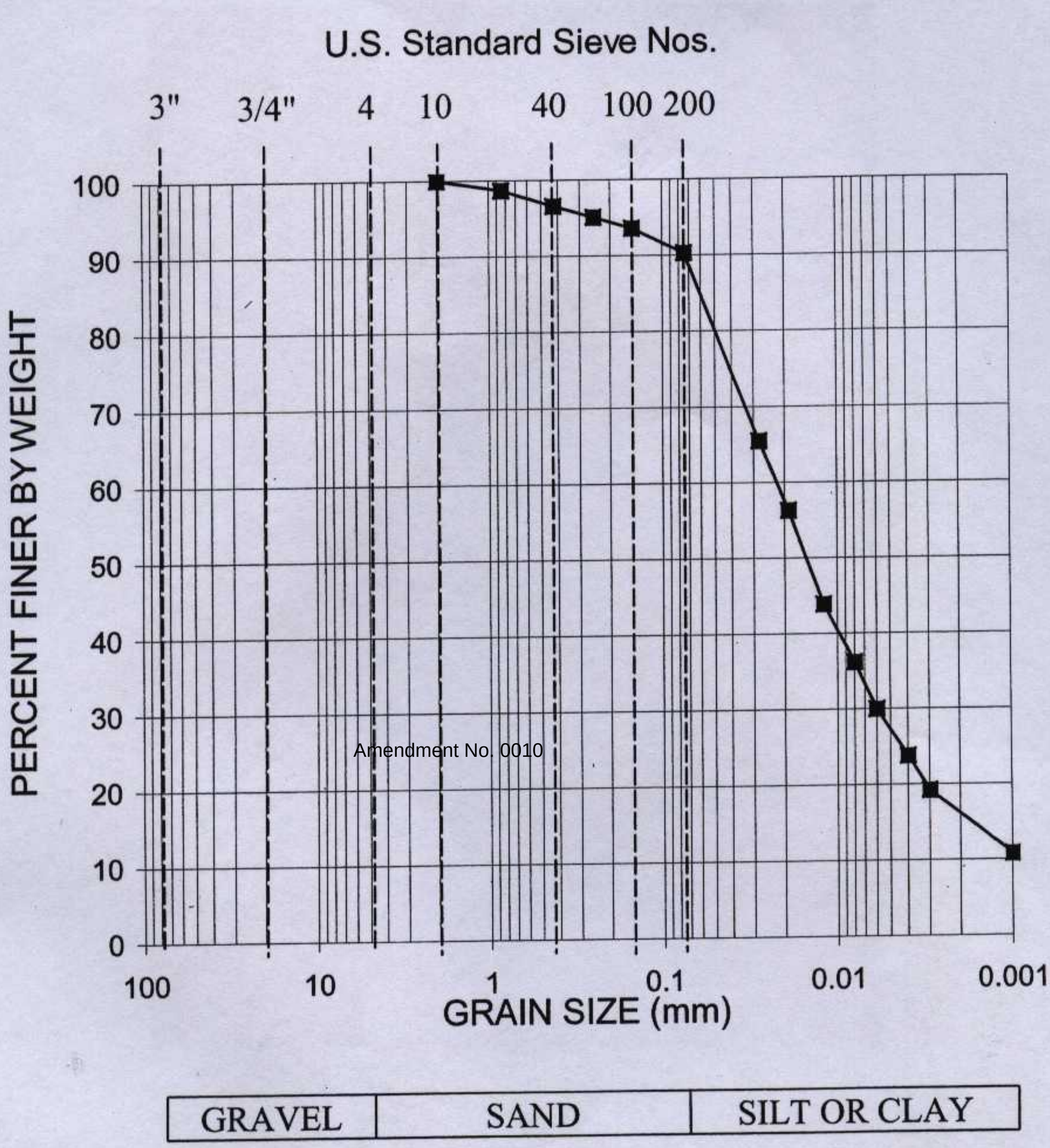
GRADATION CURVES

Project: Air Freight Terminal, Dover AFB

Contract No. 03141063.00



Amendment No. 0010

Key	Sample	Depth(ft.)	Sample Description	Class.	LL	PI
■	B-10	44-46	SILT, trace sand - dark gray	ML	48	17

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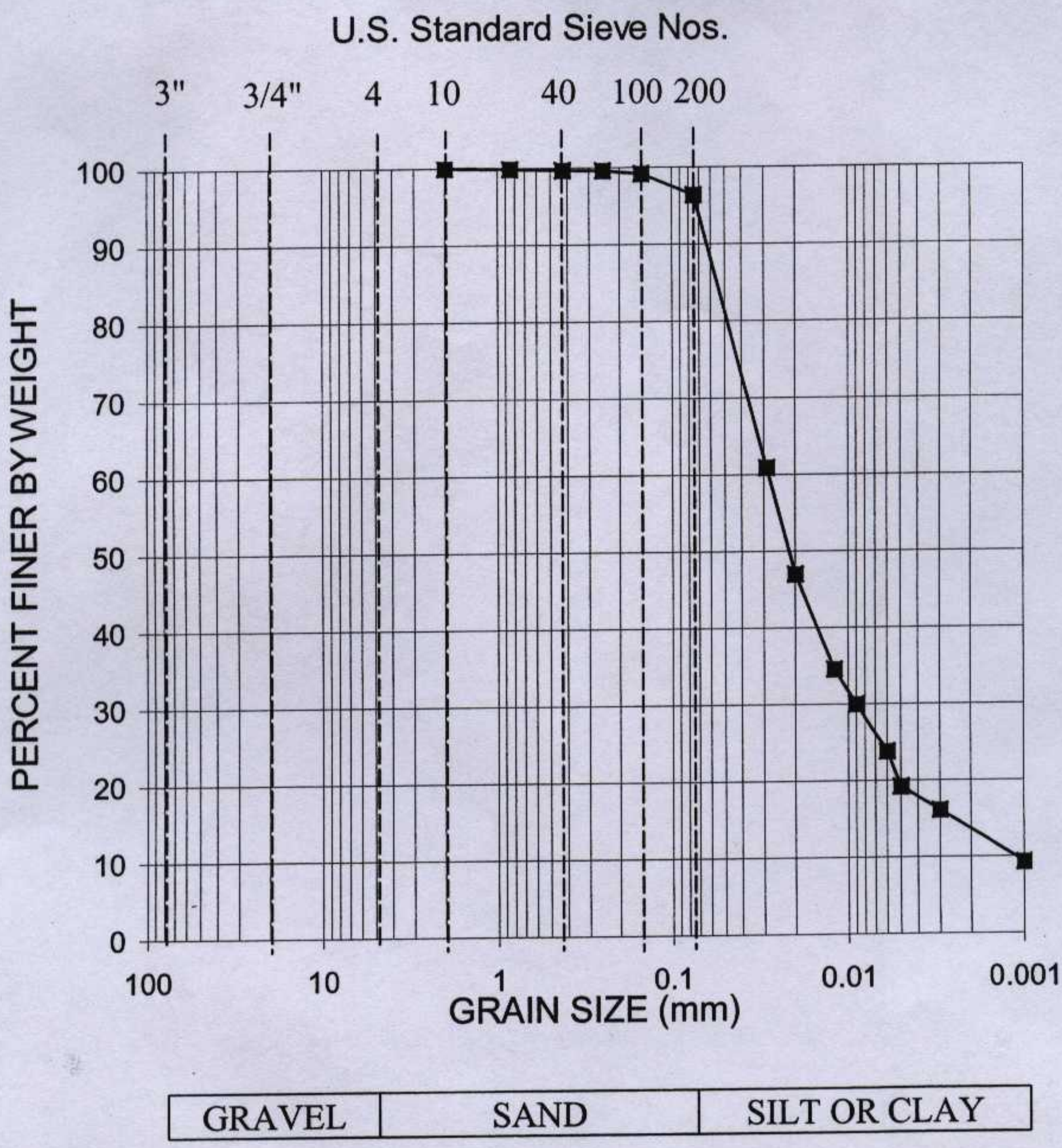
GRADATION CURVES

Project: Air Freight Terminal, Dover Air Force Base

Contract No. 03141063



Key	Sample	Depth(ft.)	Sample Description	Class.	LL	PI
■	B-11	43-45	FAT CLAY, trace sand - dark gray	CH	107	78

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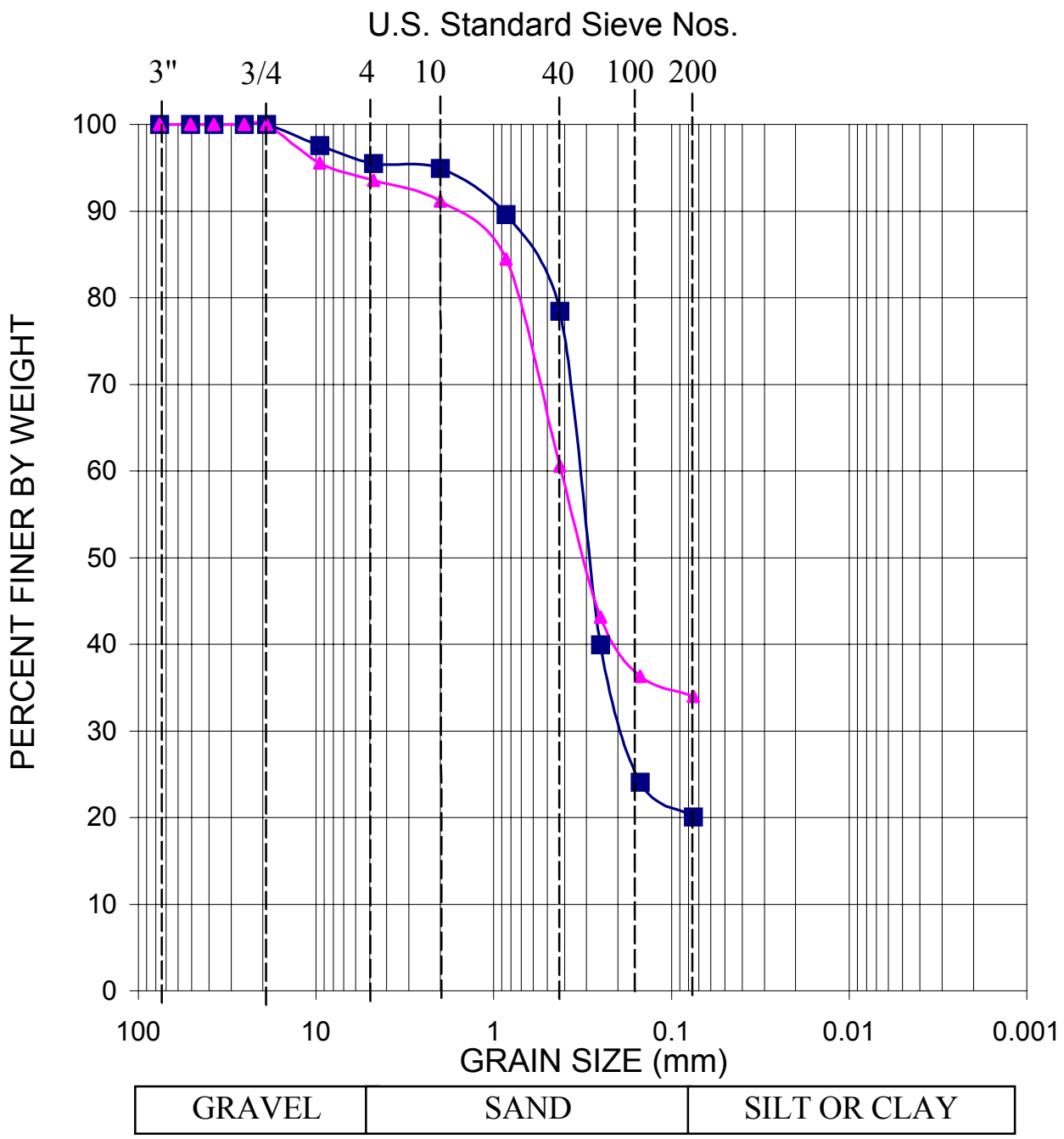
GRADATION CURVES

Project: Air Freight Terminal, Dover Air Force Base

Contract No. 03141063



Key	Sample	Depth(ft.)	Sample Description	Class.	LL	PI
■	B-11	13.5-15.0	silty SAND, trace gravel, reddish brown			
▲	B-21	2.5-4.5	clayey SAND, trace gravel, gray	SC	20	9
●						

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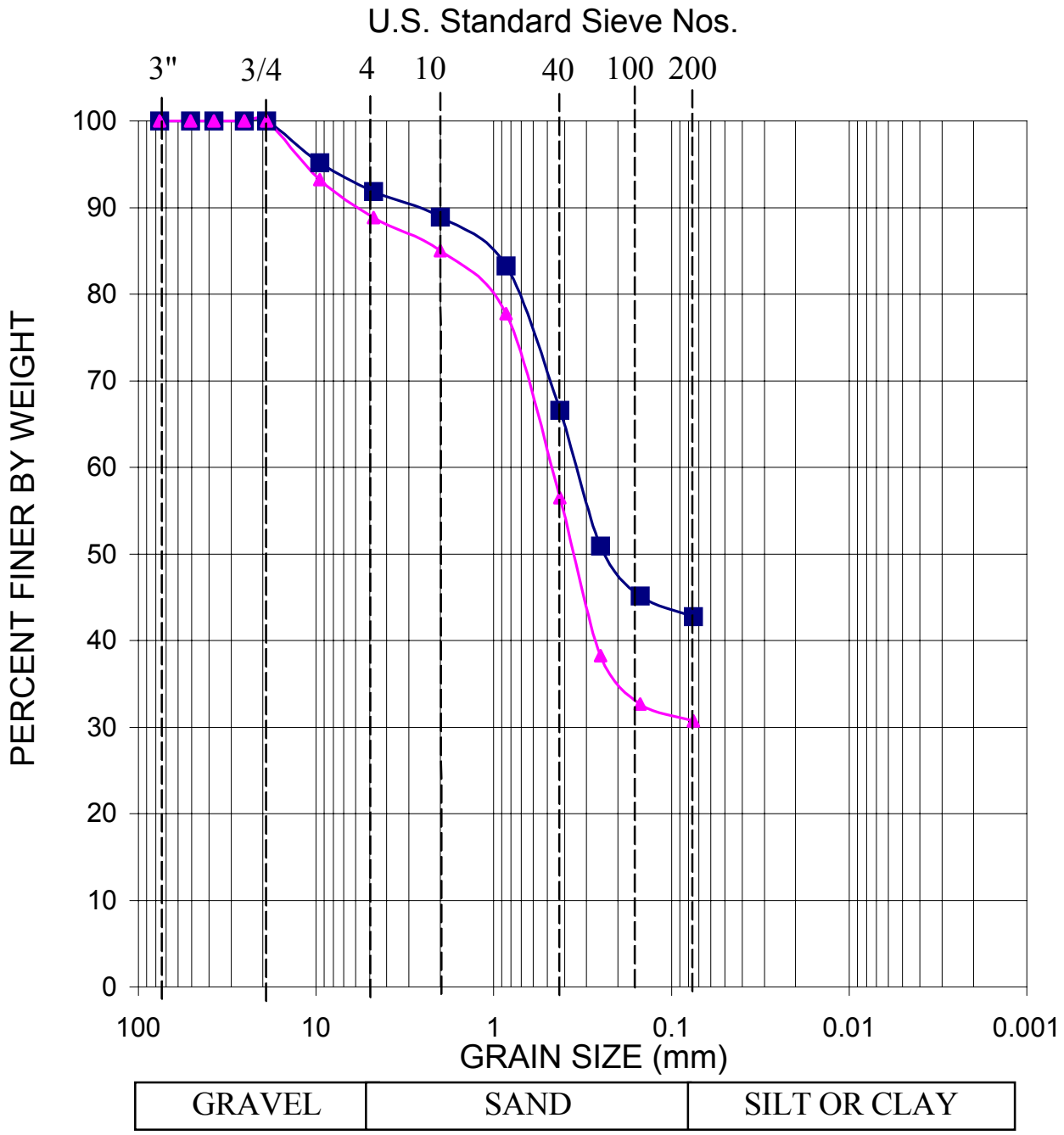
GRADATION CURVES

Project: Air Freight Terminal, Dover AFB

Contract No. 03141063.00



Key	Sample	Depth(ft.)	Sample Description	Class.	LL	PI
■	P-2	0.5-4.5	silty, clayey SAND, trace gravel and rock fragments, dark gray	SC-SM	24	7
▲	P-3	0.5	silty, clayey SAND, trace gravel and rock fragments, dark brown	SC-SM	18	5
●						

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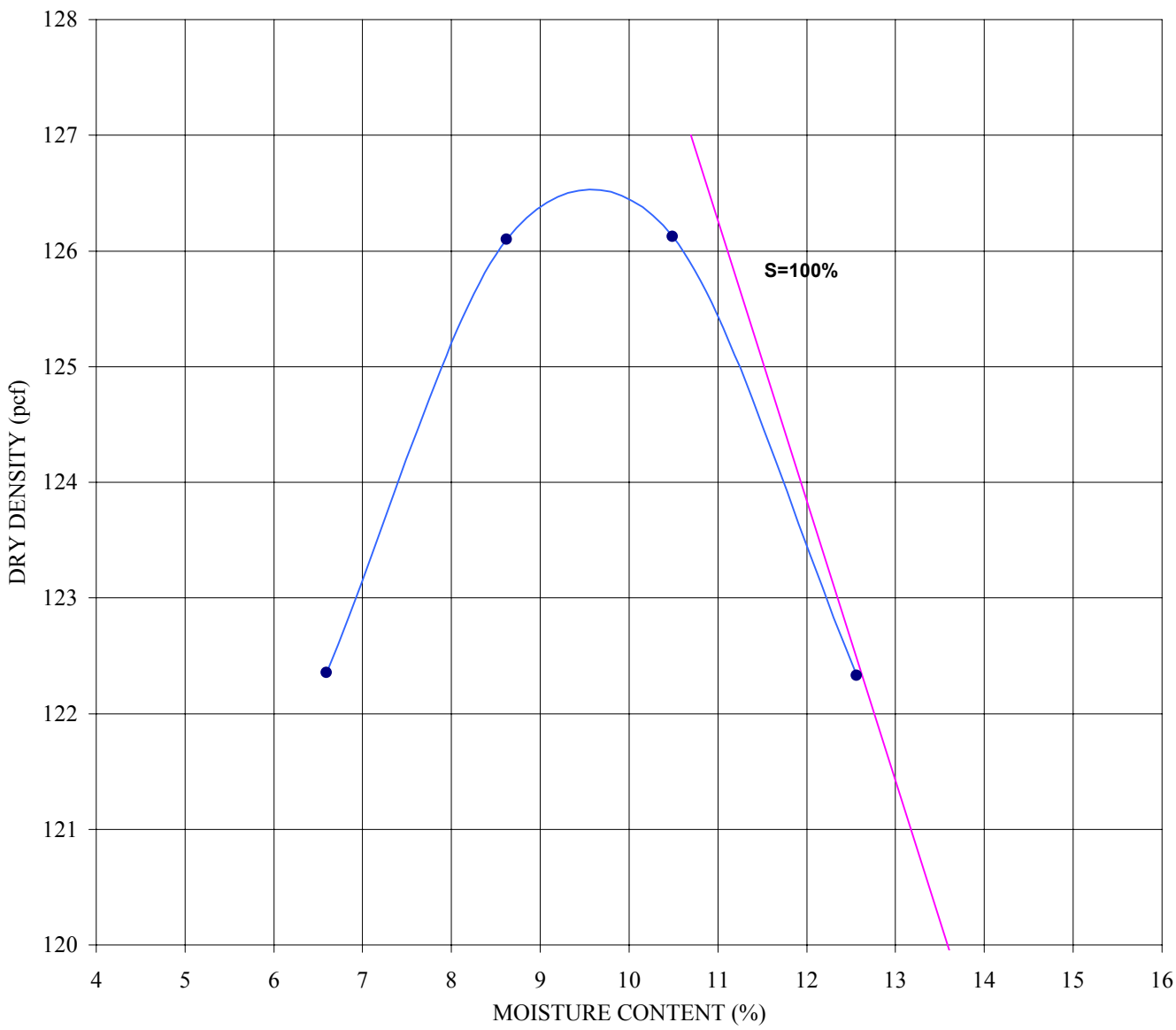
GRADATION CURVES

Project: Air Freight Terminal Dover AFB

Contract No. 03141063.00



Sample Description:

silty, clayey SAND, trace gravel and rock fragments, dark gray

Classification: SC-SM

Sample Number:	P-2		
Sample Depth (Ft.):	0.5-4.5		
Sample Source:		Assumed Specific Gravity:	2.60
		Liquid Limit (LL):	24
		Plasticity Index (PI):	7
		Max. Dry Density (pcf):	126.5
		Opt. Moist. Content (%):	9.5
% Retained 3/4" Sieve:	0.0		
% Retained 3/8" Sieve:	4.8		

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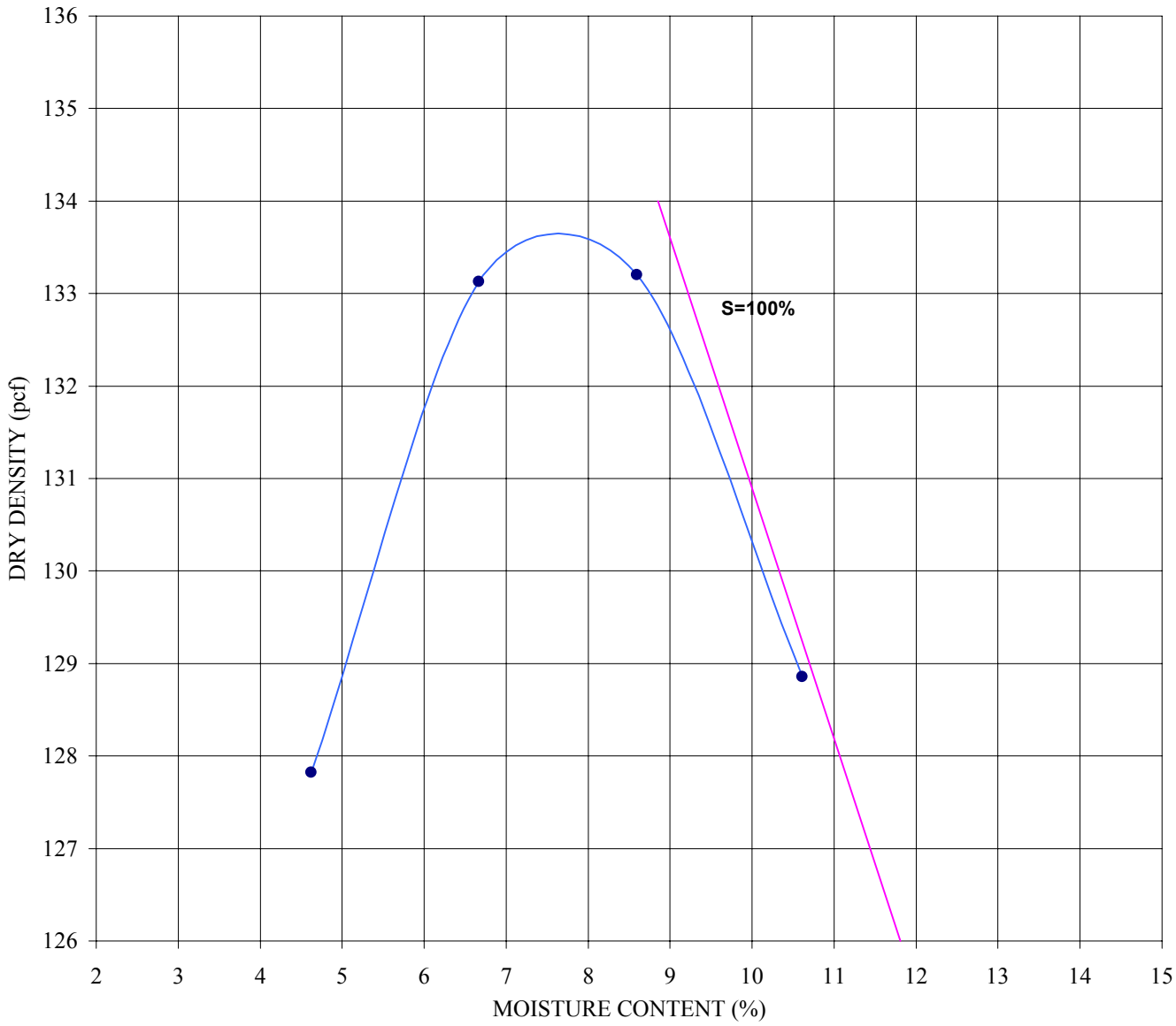
MOISTURE-DENSITY RELATION

Specification: ASTM D1557 Method: B

Project: Air Freight Terminal Dover AFB

Date: 1/9/2004

Contract No.: 03141063.00



Sample Description:

silty, clayey SAND, trace gravel and rock fragments, dark brown

Classification: SC-SM

Sample Number:	P-3		
Sample Depth (Ft.):	0.5		
Sample Source:		Assumed Specific Gravity:	2.65
		Liquid Limit (LL):	18
		Plasticity Index (PI):	5
		Max. Dry Density (pcf):	133.7
		Opt. Moist. Content (%):	7.7
% Retained 3/4" Sieve:	0.0		
% Retained 3/8" Sieve:	6.8		

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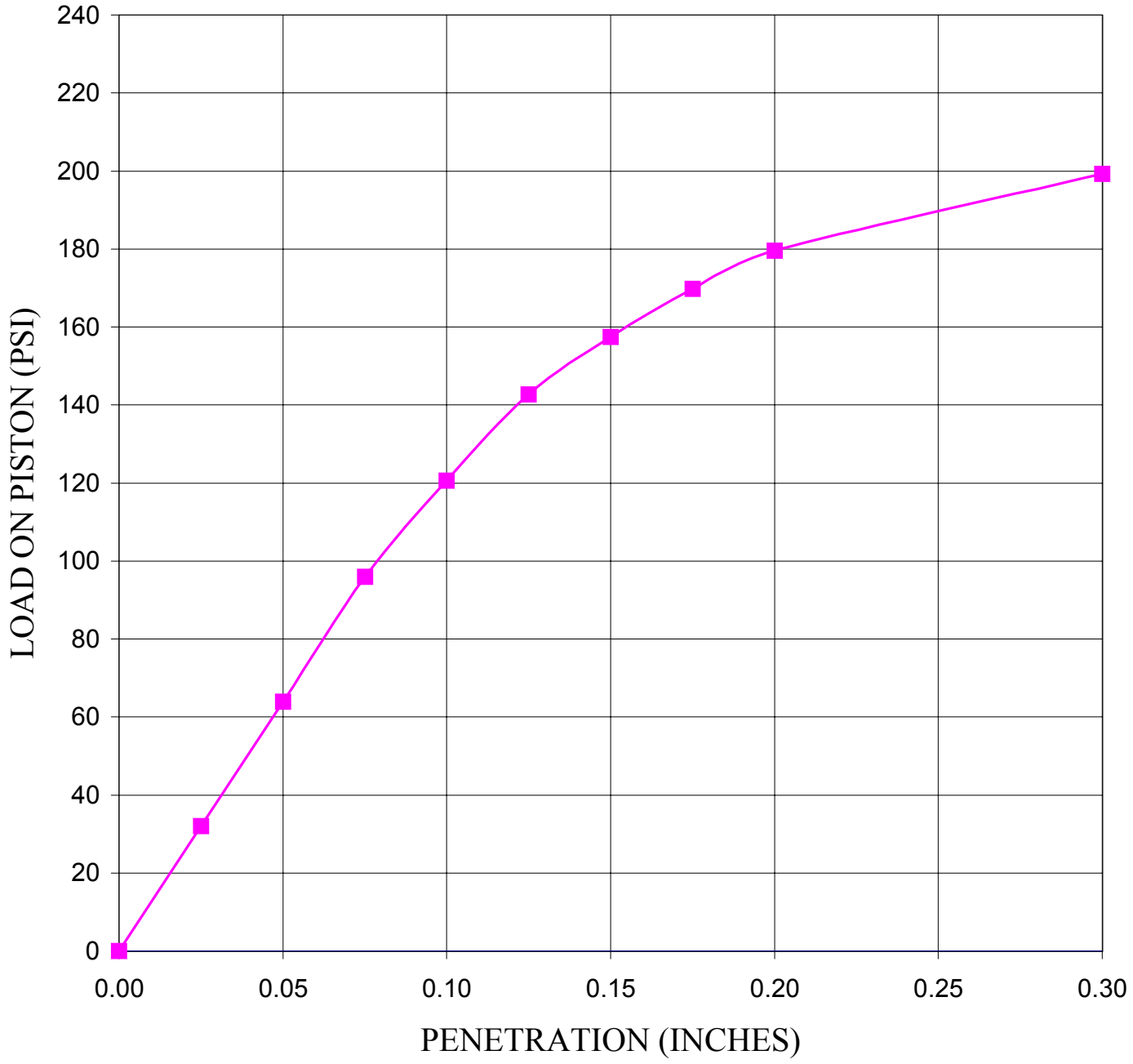
MOISTURE-DENSITY RELATION

Specification: ASTM D1557 Method: B

Project: Air Freight Terminal Dover AFB

Date: 1/9/2004

Contract No.: 03141063.00



Boring No.: P-2		Depth (Ft.): 0.5-4.5	
Sample Description:	silty, clayey SAND (SC-SM), trace gravel and rock fragments, dark gray		
CBR (Soaked):	12.1	Soaking Time:	4 Days
Surcharge:	50 PSF	Swell:	0.4%
DRY DENSITY, PCF		MOISTURE CONTENT, %	
Before Soaking:	120.5	Before Soaking:	9.5%
After Soaking:	120.0	After Soaking:	10.4%
Max. Dry Density:	126.5	Opt. Moisture:	9.5%

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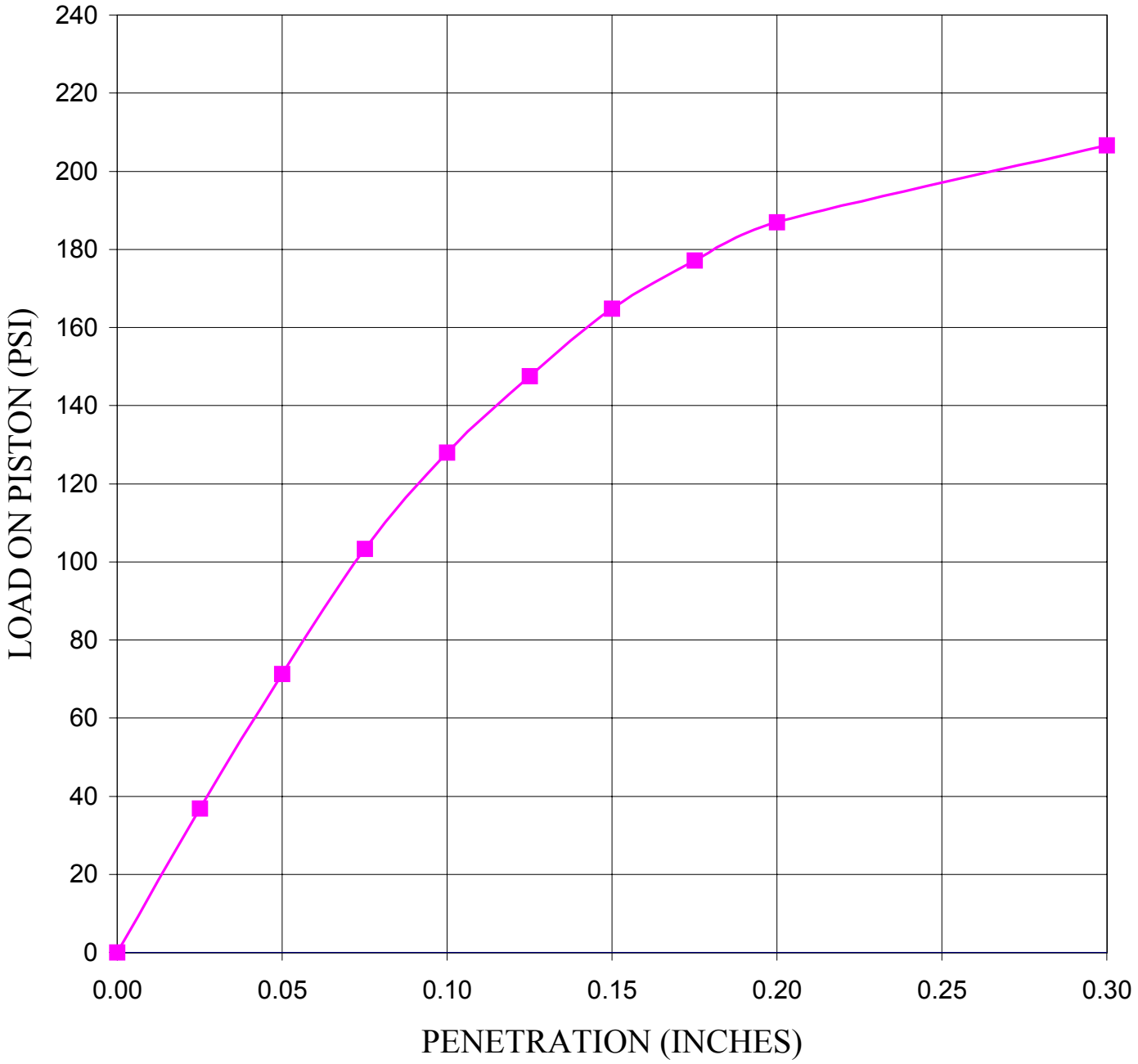
CALIFORNIA BEARING RATIO TEST

SPECIFICATION:	ASTM D1883		
PROJECT:	Air Freight Terminal Dover AFB		
DATE:	1/9/2004	Contract No.:	03141063.00



Boring No.: P-3		Depth (Ft.): 0.5	
Sample Description:	silty, clayey SAND (SC-SM), trace gravel and rock fragments, dark brown		
CBR (Soaked):	12.8	Soaking Time:	4 Days
Surcharge:	50 PSF	Swell:	0.4%
DRY DENSITY, PCF		MOISTURE CONTENT, %	
Before Soaking:	127.1	Before Soaking:	7.7%
After Soaking:	126.5	After Soaking:	8.6%
Max. Dry Density:	133.7	Opt. Moisture:	7.7%

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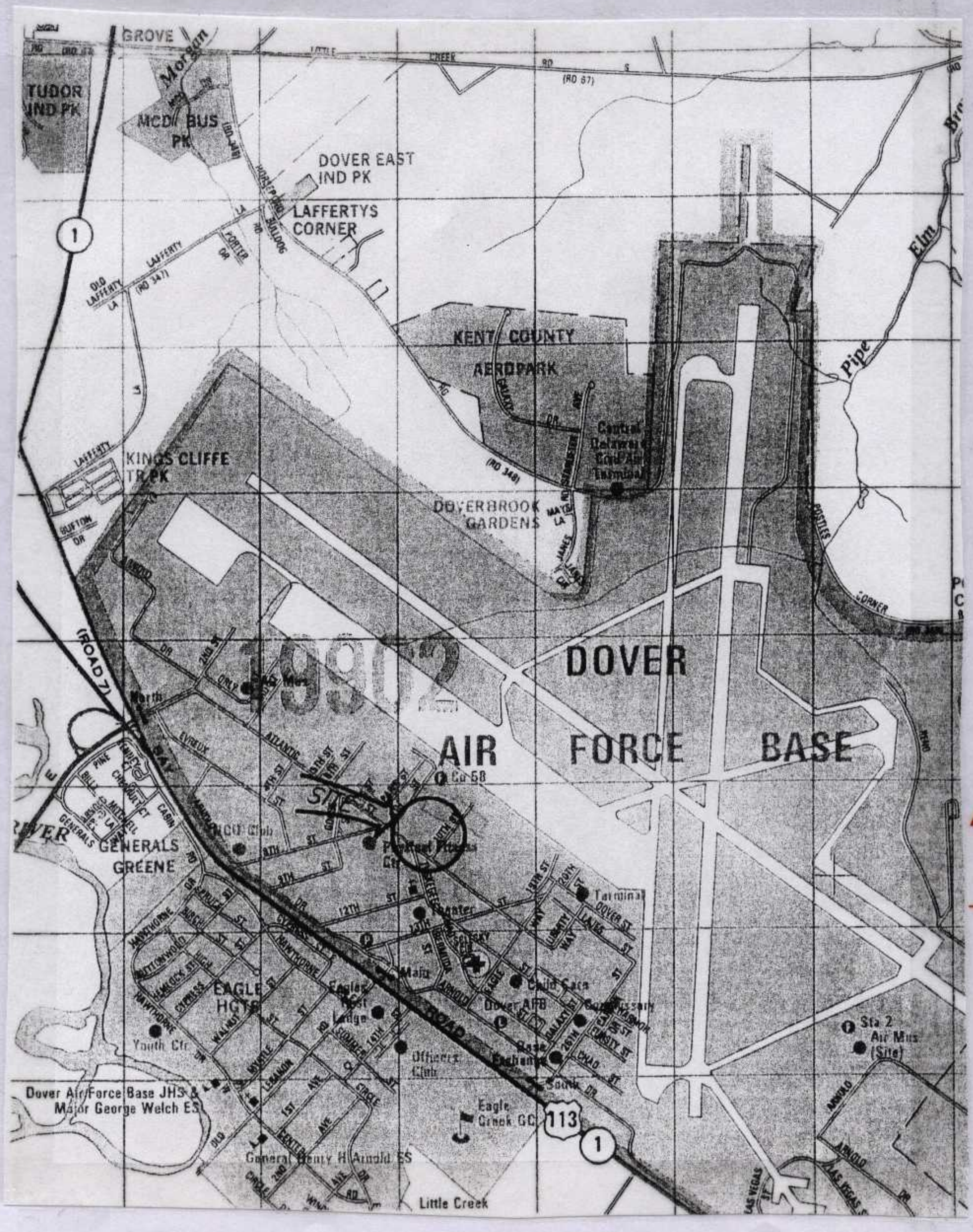
CALIFORNIA BEARING RATIO TEST

SPECIFICATION:	ASTM D1883		
PROJECT:	Air Freight Terminal Dover AFB		
DATE:	1/9/2004	Contract No.:	03141063.00

APPENDIX B
Subsurface Investigation Report

Vicinity Map
Test Boring Location Plan
Subsurface Investigation Procedures
General Notes for Test Boring Logs
Test Boring Logs (32)



REFERENCE: ADC Map of Kent County, Delaware

Schnabel Schnabel Engineering	AIR FREIGHT TERMINAL DOVER AIR FORCE BASE DOVER, DELAWARE	VICINITY MAP PROJECT NO. 03141063.00 FIGURE 1

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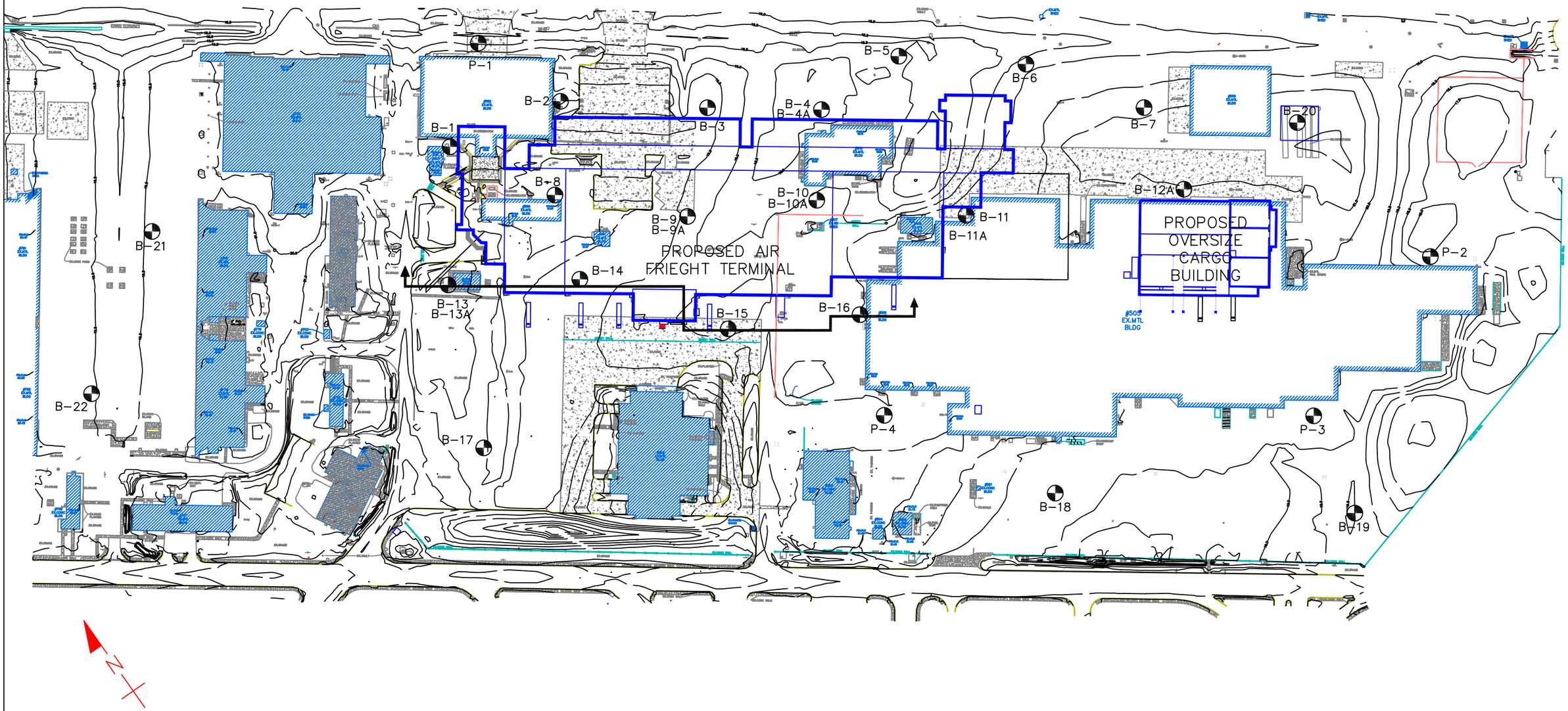

GRAPHIC SCALE

0 100' 200'

1 inch = 200 ft.

LEGEND

⊕ – APPROXIMATE TEST BORING LOCATION

REFERENCE: WBCM provided the base plan for this drawing.

Schnabel Schnabel Engineering	AIR FREIGHT TERMINAL DOVER AIR FORCE BASE DOVER, DELAWARE	TEST BORING LOCATION PLAN PROJECT NO. 03141063.00 FIGURE NO. 1

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SUBSURFACE INVESTIGATION REPORT

Subsurface Investigation Procedures

1. Test Borings

The borings are advanced by turning an auger with a center opening of 3-1/4 inches. Cuttings are brought to the surface by the auger flights. Sampling is performed through the center opening in the hollow stem auger by standard methods. Water was introduced into the borings, where noted, to stabilize the sands below the water table.

2. Standard Penetration Test

Testing is performed by driving a 2-inch O.D., 1-3/8 inch I.D., sampling spoon through three, 6-inch intervals or as indicated, using a manually tripped 140-pound hammer falling 30 inches, according to ASTM D-1586. N values indicate the penetration in blows per foot of a 2-inch O.D., 1-3/8 inch I.D., sampling spoon driven with a 140-pound hammer falling 30 inches per ASTM D-1586. Where possible, the sampler is driven 18 inches, with the number of blows required for penetration recorded for each 6-inch interval. After the initial 6 inches of penetration, which is usually considered a seating interval, the number of blows required to drive the sampler an additional 12 inches is taken as the N value. The sample operation is terminated after 18-inches of penetration or a total of 100 hammer blows, and the depth of penetration is recorded.

3. Pocket Penetrometer

Pocket Penetrometer tests were preformed at various locations on selected samples of the soils. The pocket penetrometer results are noted as "pp = 1.5 tsf" on the test boring logs. The pocket penetrometer estimates the unconfined compressive strength of the soil.

4. Boring Locations and Grades

The test borings were located by ENSR International by measuring from existing site features and should be considered accurate to within 5-feet. Boring elevations were estimated by referencing the ground surface elevations to the topographic boundary lines on plans provided by Whitney, Bailey, Cox and Magnani and should be considered accurate to within about 1 foot.

GENERAL NOTES FOR TEST BORING LOGS

1. NUMBERS IN THE SAMPLING DATA COLUMN (3+6+27) INDICATE BLOWS REQUIRED TO DRIVE A 2 INCH O.D., 1-3/8 INCH I.D. SAMPLING SPOON 6 INCHES, USING A 140 POUND HAMMER, FALLING 30 INCHES, ACCORDING TO ASTM D-1586.

2. VISUAL CLASSIFICATION OF SOIL IS IN ACCORDANCE WITH TERMINOLOGY SET FORTH IN "IDENTIFICATION OF SOIL". THE UNIFIED SOIL CLASSIFICATION SYMBOLS SHOWN IN THE CLASSIFICATION COLUMN ARE BASED ON VISUAL INSPECTION AND AVAILABLE LABORATORY DATA, IN ACCORDANCE WITH ASTM D-2487.

3. WATER LEVEL READINGS WHICH WERE OBTAINED IN THE BORINGS DURING AND AFTER COMPLETION ARE NOTED ON THE BORING LOGS. FLUCTUATION IN THE LOCATION OF THE WATER TABLE SHOULD BE ANTICIPATED, DEPENDING UPON VARIATIONS IN PRECIPITATION, SURFACE RUNOFF, SITE TOPOGRAPHY, AND SIMILAR FACTORS.

4. REFUSAL AT THE SURFACE OF ROCK, BOULDER, OR OBSTRUCTION IS DEFINED AS A PENETRATION RESISTANCE OF 100 BLOWS FOR 2 INCHES PENETRATION OR LESS.

5. THE BORING LOGS AND RELATED INFORMATION DEPICT SUBSURFACE CONDITIONS ONLY AT THE SPECIFIC LOCATIONS AND TIMES INDICATED. SUBSURFACE CONDITIONS, INCLUDING THE MATERIAL PROPERTIES OF SOIL (AND ROCK), AND WATER LEVELS AT OTHER LOCATIONS MAY DIFFER FROM CONDITIONS AS REPORTED ON THE LOGS WITH THE PASSAGE OF TIME.

6. THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL AND ROCK TYPES AS DETERMINED FROM THE DRILLING AND SAMPLING OPERATION. SOME VARIATION MAY ALSO BE EXPECTED VERTICALLY BETWEEN SAMPLES TAKEN. THE SOIL PROFILE, WATER LEVEL OBSERVATIONS, AND PENETRATION RESISTANCES PRESENTED ON THESE BORING LOGS HAVE BEEN MADE WITH REASONABLE CARE AND ACCURACY AND MUST BE CONSIDERED ONLY AS AN APPROXIMATE REPRESENTATION OF SUBSURFACE CONDITIONS TO BE ENCOUNTERED AT THE PARTICULAR LOCATION.

7. TOPSOIL DEPTHS SHOWN BY THE BORING LOGS DO NOT NECESSARILY INDICATE THE STRIPPING DEPTHS NEEDED TO PROVIDE A FIRM BASE FOR FILLING.

9. KEY TO SYMBOLS AND ABBREVIATIONS:

3+6+27	STANDARD PENETRATION TEST, ASTM D1586 DESIGNATION
3T 24/18	2" OR 3" UNDISTURBED TUBE SAMPLE, ASTM D-1587 (LENGTH SAMPLED INCHES/SAMPLE RECOVERED INCHES)
REC RQD	NQ2, NX OR 2 INCH RUN, ASTM D-2113 (RECOVERY AND O.D. ROCK CORE RQD AS SHOWN)

DO = DITTO

RQD = ROCK QUALITY DESIGNATION

REC = RECOVERY (%)(LENGTH RECOVERED/LENGTH SAMPLED)

W = NATURAL MOISTURE CONTENT (%)

* = NO SAMPLE RECOVERY

1504 WOODLAWN DRIVE
BALTIMORE, MARYLAND 21207
PHONE: (410) 944-6170
FAX: (410) 944-1162

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Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-1**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Materials Testing, Inc.
Boring Foreman: Brett Orsatt
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Mobile 2500 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/10/03 **Finished:** 11/10/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 20.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/10	10:07	11.0'	10.0'	---
Completion	11/10	3:00	10.0'	15.0'	---
Casing Pulled	11/10	3:10	9.5'	---	10.5'
24 Hour Reading	11/11	2:12	9.5'	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Topsoil=1-inch	Fill				2+5+11+16		W=9.9%	Fill
2.0	Silty Sand FILL, trace gravel, moist, brown	Fill	18.5			15+19+13+13		W=7.4%	
	Poorly Graded Sand FILL, trace gravel, silt, moist, brown				5	4+4+4+2		W=7.8%	
6.0	Do: trace geotextile at 4.0-feet	Fill	14.5			2+2+1+1		W=11.2%	Organic like odor at 6.0 to 10.0-feet
	Poorly Graded Sand FILL, trace clay, moist, tan and gray			A		1+1+1+3			
	Do: wet below 8.0-feet								
10.0	Clayey Sand FILL, trace gravel, wet, gray	Fill	10.5		10	3+20+22+8			
12.0	Concrete Fragment FILL, with sand, trace clay, wet, gray	Fill	8.5			2+7+11+3			
					15	45+14+9+5			
16.0	BOTTOM OF BORING @ 16.0 FT.		4.5						

Comments:

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Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-2**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/18/03 **Finished:** 11/18/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 19.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/18	11:20	12.0'	12.0'	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Topsoil=1-inch	Fill				8+12+7+7			Fill
2.0	Silty Sand FILL, with gravel, moist, brown	Fill	17.0	A		5+5+4+5			
	Clayey Sand FILL, moist, brown				5	5+5+10+17			
5.5			13.5						
6.0	Clayey Sand FILL, orange-brown and gray	Fill	13.0			9+15+17+16			
		SP							
	Poorly Graded SAND, moist, orange-brown					8+5+5+5			
	Do: wet below 8.0-feet				10	3+4+5+6			Columbia Formation
						2+1+2+3			
				B	15	ST-1			
	Do: trace clay below 16.0-feet					4+4+4+10			
						5+5+6+4			
	Do: no clay below 20.0-feet				20	2+3+3+6			
22.0	BOTTOM OF BORING @ 22.0 FT.		-3.0						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-3**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/5/03 **Finished:** 11/5/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 19.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/5	12:03	9.5'	9.5'	---
Completion	11/5	---	---	43.0'	---
Casing Pulled	11/5	---	Dry	---	10.0'
24 Hour Reading	11/6	4:15	9.2'	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=3-inches								
	Concrete=11-inches								
2.5	Sandy Lean Clay FILL, moist, gray-brown	Fill	17.0	A		1+1+1+1	18	W=16.5% LL=22 PL=16	Fill Organic and petroleum odor at 1.5 to 3.5-feet.
		Fill				7+5+8+12	18		
5.5	Poorly Graded Sand FILL, moist, brown		14.0		5				
	Poorly Graded SAND, with silt, moist, gray and tan	SP-SM				ST-1	24	W=7.8% LL=NP PL=NP	
						10+11+14+12	15		
	Do: wet below 9.5-feet				10	5+5+4+3	15		Columbia Formation
	Do: trace silt, wet, brown below 11.5-feet					3+3+2+3	11		
15.5	Poorly Graded SAND, with silt, wet, brown	SP-SM	4.0		15	3+2+4+4	19		
	Do: trace gravel below 17.5-feet					5+6+7+7			
					20				
				B		2+3+4+4	10		
						3+5+6+7	11		
					25	2+2+4+6	22		
						3+5+5+8	24		
					30	3+5+6+6	19		
						3+5+5+6	24		
						1+3+4+5	24		
					35	1+1+4+4	24		
						2+2+3+4	24		
					40	3+3+3+3	24		
41.5	LEAN CLAY, moist, gray and yellow	CL	-22.0	C		3+3+5+4	24	PP=0.7tsf	Calvert Formation
43.5	BOTTOM OF BORING @ 43.5 FT.		-24.0						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-4**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/6/03 **Finished:** 11/6/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 18.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/6	11:25	Dry	---	---
Completion	11/6	6:01	Dry	3.5'	---
Casing Pulled	11/6	6:35	Dry	---	---
24 Hour Reading	11/7	8:30	Dry	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=5-inches Concrete=11.5-inches Lean Clay FILL, trace gravel, moist, gray and brown	Fill		A		10+7+6+9	15	PP=2.0tsf	Fill
					5	3+10+12+9	24	W=19.3%	
5.5	BOTTOM OF BORING @ 5.5 FT.		13.0						

Comments:
Water introduced into borehole during concrete coring.
Boring terminated at 6pm due to lightening

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-4A**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Unitech Drilling Services
Boring Foreman: Rich Eastlack
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: CME 75, Manual Hammer
SE Representative: K. Turner
Dates Started: 11/24/03 **Finished:** 11/24/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 18.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/24	9:18	13.0'	13.0'	---
Completion	11/24	11:36	10.5'	44.0'	---
Casing Pulled	11/24	12:00	---	---	9.0'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=6-inches Concrete=18-inches Lean Clay FILL, moist, gray and brown	Fill							Fill
						6+4+5+4		PP=2.0tsf	
4.0	Poorly Graded Sand FILL, moist, light gray and brown	Fill	14.5	A	5	6+8+9+9			
	Do: with gravel below 6.5-feet					8+11+5+6			
						3+4+4+3			
9.0	Poorly Graded SAND, wet, light gray	SP	9.5		10	3+3+4+4			
	Do: trace gravel below 13.0-feet					4+5+7+6			Added water and bentonite to augers below 14-feet
					15	4+4+6+6			
						4+4+6+6			
						10+5+6+4			
	Do: orange, with gravel below 19.0-feet				20	3+2+2+3			Columbia Formation
	Do: with clay lense at 21.5-feet			B		4+4+4+4			
					25	3+2+4+5			
						4+4+3+4			
						2+2+2+4			
					30	2+4+3+3			
						4+4+5+4			
					35	3+4+4+5			
						5+5+7+7			
38.0	LEAN CLAY, moist, orange-brown	CL	-19.5			1+1+2+3		PP=0.5tsf	
	Do: dark gray below 39.0-feet				40	3+2+3+3		PP=0.7tsf	Calvert Formation
				C		5+4+4+5		PP=0.7tsf	
					45	3+2+2+3		PP=0.3tsf	
46.0	BOTTOM OF BORING @ 46.0 FT.		-27.5						

Comments:
Backfilled Upon Completion

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-5**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Materials Testing, Inc.
Boring Foreman: Brett Orsatt
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Mobile 2500 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/20/03 **Finished:** 11/20/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 18.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/20	---	9.5'	9.0'	---
Completion	11/20	3:06	22.0'	19.0'	---
Casing Pulled	11/20	3:26	9.0'	---	16.0'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=6-inches								
	Base Stone=6-inches	Fill		A		15+19+19+26			Fill
3.0	Clayey Sand FILL, moist, orange-brown and gray	Fill	15.5			20+26+16+15			
5.0	Poorly Graded Sand FILL, trace rock fragments, wet, brown	CL	13.5		5	4+11+12+10		PP=3.2tsf	
7.0	Sandy LEAN CLAY, moist, gray and brown	SP	11.5			8+11+13+15			
	Poorly Graded SAND, with gravel, moist, gray				10	7+13+8+15			Columbia Formation
11.0	Sandy LEAN CLAY, moist, gray	CL	7.5			5+8+11+9		PP=1.6tsf	
	Do: orange-brown below 13.0-feet			B		9+7+5+4			
15.0	Poorly Graded SAND, wet, orange-brown	SP	3.5		15	4+6+5+7			
						10+12+13+14			Augered to 39-feet and collected shelby tubes from 39 to 41 and 42 to 43-feet
					20	6+5+10+9			
22.0	BOTTOM OF BORING @ 22.0 FT.		-3.5						

Comments:

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Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-6**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Materials Testing, Inc.
Boring Foreman: Brett Orsatt
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Mobile 2500 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/13/03 **Finished:** 11/14/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 19.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/13	---	11.0'	10.5'	---
Completion	11/14	---	15.0'	18.5'	---
Casing Pulled	11/14	---	10.0'	---	11.5'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=4.5-inches								
	Clayey Sand FILL, with gravel, moist, orange and brown	Fill				11+14+20+22			Fill Petroleum smell at 2.5-ft.
	Do: no gravel, gray below 3.0-feet			A		7+15+11+9			
	Do: light gray and brown below 5.0 feet				5	6+4+8+7		W=11.0% LL=26 PL=14	
	Do: with gravel below 6.5-feet					8+12+14+13			
8.5	Poorly Graded SAND, moist, gray	SP	11.0			6+9+10+4			Columbia Formation
					10	7+8+9+8			
	Do: wet below 12.5-feet			B		4+6+7+7			Stong chemical odor from 10.5 to 14.5-ft.
					15	4+7+8+10			
	Do: tan below 17.0-feet					3+5+7+17			
18.5	BOTTOM OF BORING @ 18.5 FT.		1.0						

Comments:
When noted as full, split sample consisted of very wet clean sands

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-7**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Materials Testing, Inc.
Boring Foreman: Brett Orsatt
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Mobile 2500 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/13/03 **Finished:** 11/13/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 21.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/13	10:00	13.0'	14.5'	---
Completion	11/13	---	---	18.5'	---
Casing Pulled	11/13	---	---	---	13.0'
24 Hour Reading	11/14	3:51	11.0'	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=2.5-inches Stone Base=3-inches	Fill							Fill
	Poorly Graded Sand FILL, with gravel, moist, brown and gray					19+15+26+32			
						24+23+19+16			Strong organic odor at 4.5 to 8.5-ft.
4.5	Clayey Sand FILL, with gravel, wet, gray	Fill	16.5	A	5	8+7+6+6			
						7+3+3+4			
						ST-1			
10.5					10				Columbia Formation
	Clayey SAND, moist, gray	SC	10.5			7+4+11+14			
12.0	Poorly Graded SAND, moist, light gray ▽	SP	9.0			7+10+12+13			
				B	15	5+3+2+3			
	Do: with gravel below 17.0-feet					3+6+6+6			
						3+4+3+4			
20.0	BOTTOM OF BORING @ 20.0 FT.		1.0		20				

Comments:

TEST BORING LOG W/ RECOVERY 03141063.00.GPJ SCHNABEL.GDT 1/13/04

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-8**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/20/03 **Finished:** 11/21/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 21.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/20	10:30	20.0'	19.0'	---
Completion	11/20	2:45	26.5'	25.0'	---
Casing Pulled	11/20	3:20	9.0'	---	14.5'
24 Hour Reading	11/21	2:20	9.0'	---	9.5'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=3-inches Concrete=7-inches								
	Base Stone=2-inches	Fill	19.0			7+5+5+4			Fill Petroleum odor from 1.0 to 7.0-feet
2.0	Sand FILL, moist, tan	Fill	18.0			11+22+21+21			
3.0	Silt FILL, moist, dark gray	Fill	17.0						
4.0	Sandy Lean Clay FILL, moist, gray	Fill			5	8+13+11+7			
	Poorly Graded Sand FILL, moist, gray-brown			A		4+5+2+2			
					10	6+5+8+6			
12.0	Clayey SAND, wet, light brown	SC	9.0			4+3+4+3			Columbia Formation
						3+3+4+7			
15.0	Sandy LEAN CLAY, moist, red-brown	CL	6.0		15	4+3+5+5		PP=0.3tsf	
						2+2+6+6		PP=0.4tsf	
20.0	Poorly Graded SAND, wet, tan and orange	SP	1.0	B	20	7+6+4+4			
						3+4+4+4			
	Do: trace gravel below 24.0-feet					3+4+4+6			
					25	2+1+2+3			
27.0	BOTTOM OF BORING @ 27.0 FT.		-6.0						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-9**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/7/03 **Finished:** 11/7/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 19.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/7	10:00	13.0'	11.0'	---
Completion	11/7	---	---	---	---
Casing Pulled	11/7	---	---	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=2-inches Concrete=9-inches Sandy Lean Clay FILL, with gravel, moist, gray			A		12+12+6+4	11	W=14.9%	Fill Strong organic odor at 1.0 to 3.0 ft.
						ST-1	24		
					5	7+7+2+1	17	W=7.0%	
6.3	Poorly Graded SAND, trace gravel, moist, light gray	SP	13.2			1+4+2+5	18		Columbia Formation
	Do: gray and black below 9.0-feet			B	10	6+6+5+5	19		
						2+4+4+4	19		
13.0	Do: with brown clay lenses at 12.3-feet BOTTOM OF BORING @ 13.0 FT.		6.5						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-9A**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Unitech Drilling Services
Boring Foreman: Rich Eastlack
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: CME 75, Manual Hammer
SE Representative: K. Turner
Dates Started: 11/25/03 **Finished:** 11/25/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 19.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/25	12:51	13.0'	15.0'	---
Completion	11/25	1:40	---	---	---
Casing Pulled	11/25	2:12	---	---	6.9'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=2-inches Concrete=9-inches Silty Sand FILL, with gravel, moist, dark gray	Fill		A		6+3+2+2 6+6+14+17			Fill Strong petroleum like odor from 1.0 to 3.0-feet
5.0	Poorly Graded SAND, moist, gray	SP	14.5		5				
	Do: wet, orange-brown below 10.0-feet				10	3+4+4+5			Columbia Formation
	Do: trace silt and gravel below 15.0-feet				15	2+3+5+6			
	Do: 2-inch clay lense at 19.0-feet Do: no silt, with gravel below 20.0-feet			B	20	5+3+3+2			Added water and bentonite to augers below water table
					25	4+3+4+4			
					30	2+4+2+4			
					35	3+4+6+7			
40.0	LEAN CLAY, moist, orange	CL	-20.5		40	3+3+3+3		PP=0.7tsf	
	Do: dark gray below 41.8-feet			C					Calvert Formation
					45	2+2+4+4		PP=0.9tsf	
47.0	BOTTOM OF BORING @ 47.0 FT.		-27.5						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-10**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Materials Testing, Inc.
Boring Foreman: Brett Orsatt
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Mobile 2500 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/11/03 **Finished:** 11/11/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 19.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/11	7:30	10.0'	9.0'	---
Completion	11/11	4:00	---	---	---
Casing Pulled	11/11	4:28	9.0'	---	10.0'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=3.5-inches Concrete=7.5-inches	Fill							Fill
	Poorly Graded Sand FILL, trace clay, moist, brown					8+11+16+11		W=9.2%	
	Do: trace silt, gray below 3.0-feet			A		11+8+8+7		W=12.8%	
					5	8+9+10+14		W=12.6%	
8.0			11.0			4+5+4+3		W=12.7% LL=21 PL=12	
9.0	Clayey Sand FILL, trace gravel, moist, brown	Fill SP	10.0		10	3+4+4+4			Columbia Formation
	Poorly Graded SAND, moist, light gray Do: wet below 10.0-feet			B		2+2+3+2			
	Do: orange-brown below 13.0-feet				15	3+4+5+5			Augered to 44-feet and pushed shelby tube
15.0	BOTTOM OF BORING @ 15.0 FT.		4.0						

Comments:

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Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-10A**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Unitech Drilling Services
Boring Foreman: George Edwards
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: CME 55, Manual Hammer
SE Representative: K. Turner
Dates Started: 11/6/04 **Finished:** 11/7/04
Location: See Test Boring Location Plan
Ground Surface Elevation: 19.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	1/6	11:33	11.0'	10.0'	---
Completion	1/7	10:00	---	---	---
Casing Pulled	1/7	12:30	---	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=2-inches Concrete=12-inches Stone Base=6-inches	Fill		A					Fill
4.0	Silty Sand FILL, trace gravel, moist, white and gray	Fill	15.0			29+28+21+8			
	Silt FILL, with sand, moist, gray				5	7+8+17+10			
7.0			12.0			6+7+12+24			Columbia Formation
8.0	Poorly Graded SAND, with gravel, trace silt, moist, light gray	SP SM	11.0			26+16+15+16			
	Silty SAND, moist, tan				10	9+7+8+7			Water and bentonite added to augers below 12.0-feet
	Do: wet below 11.0-feet					5+4+6+8			
	Do: medium brown below 14.5-feet				15	2+1+2+4			
17.0	Poorly Graded SAND, with gravel, wet, orange-brown	SP	2.0			4+5+11+11			
				B	20	4+4+8+10			
						8+7+7+8			
						9+4+5+4			
					25	7+10+9+9			
						5+7+10+9			
						5+8+8+10			
					30	4+4+8+9			
						4+5+6+8			
					35	5+6+7+10			
37.0	LEAN CLAY, moist, orange-brown	CL	-18.0			4+4+4+7			Calvert Frormation
					40	ST-1			
				C		2+4+4+6			
	Do: dark gray below 42.0-feet					3+4+4+4			
					45	5+4+4+4			
46.0	BOTTOM OF BORING @ 46.0 FT.		-27.0						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-11**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Materials Testing, Inc.
Boring Foreman: Brett Orsatt
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Mobile 2500 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/14/03 **Finished:** 11/14/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 20.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/14	---	7.0'	7.0'	---
Completion	11/14	---	---	42.0'	---
Casing Pulled	11/14	---	9.0'	---	14.0'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Concrete=12-inches								
	Silty Sand FILL, with gravel, black and brown	Fill		A		6+7+6+3			Fill Chemical Odor from 1 to 5.0-ft.
3.0			17.0						
	Poorly Graded Sand FILL, with gravel, moist, gray and black	Fill				2+3+3+4			
5.0			15.0		5				
	Poorly Graded SAND, moist, light gray ▽	SP		B		7+8+2+3			
						9+7+6+6		W=12.1% LL=26 PL=15	Columbia Formation
8.0			12.0						
	Clayey SAND, trace gravel, moist, tan	SC			10	3+5+6+4			
11.5			8.5			4+6+4+5			
	Silty SAND, trace gravel, red-brown, moist, tan	SM				7+8+8+9		W=16.6%	Augered to 44.5-feet and pushed Shelby Tube from 44.5 to 46.5 feet
15.0			5.0		15				
	BOTTOM OF BORING @ 15.0 FT.								

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-11A**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Unitech Drilling Services
Boring Foreman: George Edwards
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: CME 55, Manual Hammer
SE Representative: K. Turner
Dates Started: 1/7/04 **Finished:** 1/8/04
Location: See Test Boring Location Plan
Ground Surface Elevation: 20.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	1/7	---	---	---	---
See B-11 for Water Data	1/7	---	---	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Concrete=24-inches Sandy Silt FILL, with asphalt lenses, moist, dark gray	FILL		A		8+4+3+4			Fill
4.5	Silty SAND, trace gravel, moist, light gray, white	SM	15.5		5	4+11+13+7			Columbia Formation
6.0	Sandy SILT, moist, tan	ML	14.0			4+10+13+13			
	Do: yellow and orange/brown below 9.0-feet					6+6+5+6			Water and bentonite added to augers
	Do: light gray below 10.0-feet				10	4+5+4+3			
12.0	Silty SAND, moist, orange	SM	8.0			3+6+4+5			
					15	4+5+8+10			
						32+12+11+12			
	Do: trace gravel, moist, orange-brown below 18.0-feet			B		5+6+12+18			
					20	5+14+24+39			
						12+12+12+9			
					25	2+5+7+8			
						12+15+14+20			
						10+7+7+5			
					30	6+21+5+6			
32.0	LEAN CLAY, wet, orange	CL	-12.0			5+4+5+4			Calvert Formation
	Do: dark gray below 33.0-feet				35	ST-1			
						5+4+4+5			
				C		4+4+4+5			
					40	3+3+4+5			
						2+4+3+4			
					45	4+5+5+5			
46.0	BOTTOM OF BORING @ 46.0 FT.		-26.0						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-12**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Materials Testing, Inc.
Boring Foreman: Brett Orsatt
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Mobile 2500 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/17/03 **Finished:** 11/17/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 21.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/17	10:30	18.5'	17.0'	---
Completion	11/17	---	---	43.0'	---
Casing Pulled	11/17	---	---	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Concrete=12-inches Silty Sand FILL, with gravel, moist, tan and brown			A		8+15+14+15 15+15+19+17 9+10+13+15			Fill
7.0	Poorly Graded SAND, with clay, moist, brown	SP-SC	14.0		5	10+7+5+3			
9.0	Sandy LEAN CLAY, with gravel, moist, gray	CL	12.0		10	7+6+8+10			
11.0	Poorly Graded SAND, wet, gray	SP	10.0			5+6+7+9 8+10+11+12			
	Do: orange-brown below 16.5-feet				15	4+4+5+6 6+6+6+13			
	Do: trace silt below 21.0-feet			B	20	13+8+10+10 6+6+10+8			
	Do: no silt below 23.5-feet				25	11+12+13+14 8+7+5+4 6+7+4+8			
33.0	BOTTOM OF BORING @ 33.0 FT.		-12.0		30	4+3+2+5 5+8+9+9			

Comments:

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Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-12A**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor:

Boring Foreman: Rich Eastlack

Drilling Method: 3-1/4" Hollow Stem Auger

Drilling Equipment: CME 75, Manual Hammer

SE Representative: K. Turner

Dates Started: 11/24/03 **Finished:** 11/25/03

Location: See Test Boring Location Plan

Ground Surface Elevation: 21.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/24	3:24	13.0'	12.0'	---
Completion	11/25	11:00	---	---	---
Casing Pulled	11/25	11:30	---	---	11.3'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Concrete=12-inches								
	Poorly Graded Gravel FILL, with sand, moist, dark gray					20+31+29+27			Fill
4.0	Sandy Silt FILL, moist, light to dark gray		17.0	A	5	9+12+16+9			
7.0			14.0			9+14+13+8			
8.0	Poorly Graded Sand FILL, moist, tan		13.0						Columbia Formation
9.5	Sandy Lean Clay FILL, moist, gray and brown	SP	11.5		10	3+2+7+7		PP=1.5tsf	
	Poorly Graded SAND, trace gravel, moist, light gray					5+8+11+13			
	Do: wet below 12.0-feet					10+10+12+12			
					15	4+8+6+7			
	Do: orange below 15.5-feet					3+5+5+7			Added water and bentonite to augers below 18-feet
						6+5+6+8			
					20	5+6+7+10			
				B		7+9+14+13			
					25	3+4+5+4			
	Do: trace silt below 26.5-feet					3+2+4+5			
						2+2+3+3			
					30	1+7+14+50/2"			Sampled through gravel at 31.5-feet
	Do: no silt, with gravel below 31.5-feet					18+15+17+19			
					35	12+18+13+9			
36.0	Sandy LEAN CLAY, moist, orange	CL	-15.0			7+6+7+6		PP=0.9tsf	Calvert Formation Organic like odor below 36.0-feet
	Do: no sand, gray below 37.5-feet					2+4+4+4		PP=1.6tsf	
					40	4+4+7+4		PP=1.2tsf	
				C		4+5+6+5		PP=1.5tsf	
					45	5+6+8+7		PP=1.3tsf	
46.0	BOTTOM OF BORING @ 46.0 FT.		-25.0						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-13**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/21/03 **Finished:** 11/21/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 20.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/21	9:59	12.0'	12.0'	---
Completion	11/21	4:39	26.0'	30.0'	---
Casing Pulled	11/21	5:08	9.0'	---	10.0'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Topsoil=1-inch								
2.0	Silty Sand FILL, moist, brown	Fill	18.0			9+9+8+6			Fill
	Poorly Graded Sand FILL, moist, brown	Fill		A		2+6+10+12			
4.0	Clayey Sand FILL, moist, brown	Fill	16.0		5	12+10+11+10			
7.0	Poorly Graded SAND, trace clay, light gray and brown	SP	13.0			6+6+9+10			
	Do: trace gravel below 8.0-feet					5+5+4+5			
	Do: wet below 11.0-feet				10	4+5+6+5			
						5+3+6+5			
	Do: orange-brown below 15.0-feet				15	3+3+2+3			Columbia Formation
						1+2+4+4			
				B		2+1+2+3			
					20				
					25				
						5+6+7+7			
						11+6+4+6			
					30	8+4+5+6			
32.0	BOTTOM OF BORING @ 32.0 FT.		-12.0						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-13A**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Unitech Drilling Services
Boring Foreman: George Edwards
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: CME 55, Manual Hammer
SE Representative: K. Turner
Dates Started: 1/9/04 **Finished:** 1/9/04
Location: See Test Boring Location Plan
Ground Surface Elevation: 20.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	1/9	---	---	---	---
See B-13 for Water Data	1/9	---	---	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Topsoil=1-inch								
	Sandy Silt FILL, with gravel, moist, medium to dark, brown	Fill		A		3+10+11+12			Fill
						10+8+7+10			
4.0	Silty SAND, moist, yellow-brown	SM	16.0		5	14+15+9+6			Columbia Formation
						5+5+16+19			
	Do: with gravel, gray-tan below 7-feet					8+11+11+11			
	Do: white/gray wet below 10 feet				10	3+6+6+6			
12.0	Poorly Graded SAND, trace gravel, yellow-brown	SP	8.0			5+6+6+8			
					15	2+2+2+2			
						3+4+7+4			
						2+1+1+6			
					20	5+7+3+4			
						3+3+3+3			
				B	25	2+3+5+5			
						7+8+8+8			
						1+1+2+3			
					30	2+2+2+4			
						3+5+7+9			
					35	2+2+4+5			
						4+5+7+7			
38.0	Silty SAND, wet, orange-brown	SM	-18.0			2+6+7+9			
					40	3+5+9+9			
						9+9+9+9			
					45	3+4+7+8			
46.0	BOTTOM OF BORING @ 46.0 FT.		-26.0						

Comments:

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Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-14**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Materials Testing, Inc.
Boring Foreman: Brett Orsatt
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Mobile 2500 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/20/03 **Finished:** 11/21/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 20.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/20	4:45	13.0'	13.0'	---
Completion	11/21	3:45	22.0'	31.0'	---
Casing Pulled	11/21	4:05	8.5'	---	10.5'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
1.0	Asphalt=2-inches Concrete=10-inches								
	Poorly Graded Sand FILL, with gravel, moist, brown and gray	Fill	19.0	A	5	7+11+9+10 10+13+14+18 8+6+4+4 4+6+3+5			Fill
9.5	Silty SAND, moist, light gray Do: trace gravel, wet, below 12.0-feet	SM	10.5	B	10 15	5+4+5+5 4+2+2+5 5+5+5+6 1+1+1+1 2+4+5+8			Columbia Formation
20.5	Poorly Graded SAND, wet, gray Do: orange-brown below 29.5-feet	SP	-0.5		20 25 30	4+4+7+8 4+4+8+11 2+3+8+6 7+13+7+8 5+6+6+6 6+7+8+9			
33.0	BOTTOM OF BORING @ 33.0 FT.		-13.0						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-15**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Materials Testing, Inc.
Boring Foreman: Brett Orsatt
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Mobile 2500 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/18/03 **Finished:** 11/18/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 19.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/18	11:00	12.0'	11.0'	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Concrete=12-inches								
	Poorly Graded Gravel FILL, with sand, moist, gray-brown	Fill				33+22+11+7			Fill
3.0	Sandy Lean Clay FILL, with gravel, moist, dark gray	Fill	16.5	A		11+6+7+4			
5.0	Poorly Graded Sand FILL, moist, gray	Fill	14.5		5	5+9+11+9			
7.0	Clayey Sand FILL, with gravel, moist, gray	Fill	12.5			6+7+13+19			
9.0	Poorly Graded SAND, wet, gray	SP	10.5		10	9+13+9+11			
						12+11+9+9			
						9+13+12+10			
	Do: tan below 15.0-feet				15	6+7+10+15			Columbia Formation
				B		7+6+7+8			
	Do: brown below 19.0-feet				20	5+8+15+10			
	Do: tan below 21.0-feet					4+4+4+5			
						4+5+7+9			
25.0	BOTTOM OF BORING @ 25.0 FT.		-5.5		25				

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-16**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/14/03 **Finished:** 11/14/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 19.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/14	---	15.0'	13.0'	---
Completion	11/14	---	---	43.0'	---
Casing Pulled	11/14	---	9.6'	---	9.6'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=6-inches								
	Sandy Silt FILL, trace asphalt, moist, gray	Fill		A		13+15+16+24	14		Fill
	Do: with gravel below 3.0-feet					8+18+15+18			
5.0	Clayey SAND, trace silt, moist, light gray and brown	SC	14.5		5	13+5+6+7			Columbia Formation Augers grinding at 7.0-feet
7.0	Poorly Graded SAND, with gravel, moist, gray	SP	12.5			6+8+12+12	14		
10.0	Poorly Graded SAND, moist, light gray	SP	9.5		10	7+11+10+10			
	Do: wet below 11.0-feet					6+9+7+7	21		
						2+4+3			
15.0	Clayey SAND, wet, red-orange, brown	SC	4.5	B	15	3+3+3+4	24		
17.0	Poorly Graded SAND, wet, brown-gray	SP	2.5			2+2+5+7	24		
	Do: orange below 19.0-feet				20	2+4+1+4	24		
	Do: tan below 21.0-feet					3+6+5+6	24		
						3+3+4+5	24		
					25	1+2+3+4	24		
27.0	BOTTOM OF BORING @ 27.0 FT.		-7.5						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-17**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/17/03 **Finished:** 11/17/03
Location: See Test Boring Location Plan

Ground Surface Elevation: 21.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/17	3:20	18.0'	18.0'	---
Completion	11/17	5:40	---	---	---
Casing Pulled	11/17	6:01	8.0'	---	10.5'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Topsoil=1-inch	Fill				3+7+10+11			Fill
1.5	Silty Sand FILL, trace gravel, moist, tan	Fill	19.5	A		2+4+5+6			
4.0	Poorly Graded Sand FILL, moist, light brown	SP	17.0		5	7+9+11+9			
	Do: trace gravel below 3.0-feet					7+8+8+7			
	Poorly Graded SAND, moist, tan					3+4+4+4			
	Do: trace clay below 6.0-feet				10	2+2+3+4			Columbia Formation
	Do: no clay below 8.5-feet					3+4+5+5		PP=1.6tsf	
	Do: trace clay below 10.0-feet				15	3+3+5+7			
12.0	Sandy LEAN CLAY, moist, gray	CL	9.0	B		3+2+2+3			
16.0	Poorly Graded SAND, wet, gray	SP	5.0		20	8+7+5+3			
20.0	BOTTOM OF BORING @ 20.0 FT.		1.0						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-18**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/17/03 **Finished:** 11/17/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 20.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/17	10:00	15.0'	13.0'	---
Completion	11/17	12:30	15.0'	25.0'	---
Casing Pulled	11/17	12:46	8.5'	---	12.0'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=6-inches Aggregate=6-inches Silt FILL, dry, gray and brown	Fill				10+6+11+17			Fill
3.0	Clayey Sand FILL, moist, gray and brown	Fill	17.0	A		8+3+3+6			
					5	6+5+10+9			
7.0	Poorly Graded SAND, moist, tan and gray	SP	13.0			5+5+3+2			
					10	2+2+6+4			Columbia Formation
						2+6+4+3			
	Do: wet below 13.0-feet					6+7+6+7			
					15	9+7+9+6			
				B		9+4+5+5			
	Do: trace gravel below 19.0-feet				20	7+7+6+9			
						7+6+2+5			
	Do: orange brown below 22.0-feet					9+5+5+4			
					25	5+3+2+5			
27.0	BOTTOM OF BORING @ 27.0 FT.		-7.0						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-19**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: Materials Testing, Inc.
Boring Foreman: Brett Orsatt
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Mobile 2500 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/11/03 **Finished:** 11/11/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 19.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/11	1:41	15.0'	15.0'	---
Completion	11/11	4:15	15.0'	33.0'	---
Casing Pulled	11/11	4:35	9.5'	---	11.0'
24 Hour Reading	11/12	---	9.3'	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=6-inches								
	Stone Base=6-inches								
3.0	Clayey Sand FILL, moist, brown and black		16.5	A		6+8+4+3	16		Fill
						10+3+3+5			Slight organic like odor at 3.0-ft.
5.0	Sandy Lean Clay FILL, trace organics, moist, gray		14.5		5	4+5+4+5	0		
7.0	Clayey Sand FILL, moist, gray-brown	SP	12.5			ST-1			Tube bent.
	Poorly Graded SAND, moist, light gray				10	8+7+7+2	21		Columbia Formation
						4+4+5+6	24		
	Do: wet below 13.0-feet					3+6+6+7	24		
					15	5+7+7+7	24		
	Do: with gravel below 17.0-feet					5+6+8+8	24		
					20	1+1+1+1			
	Do: no gravel, orange brown below 21.0-feet			B		1+2+4+5			
						1+1+3+4			
					25	1+1+2+3			
						5+4+4+4			
					30	4+4+6+8			
						2+2+2+2			
	Do: trace gravel, moist below 33.0-feet					4+5+6+8			
35.0	BOTTOM OF BORING @ 35.0 FT.		-15.5		35				

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-20**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/13/03 **Finished:** 11/13/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 21.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/13	---	9.0'	7.0'	---
Completion	11/13	---	9.0'	13.0'	---
Casing Pulled	11/13	---	10.0'	---	11.0'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=4-inches Aggregate=3-inches Poorly Graded Sand FILL, with gravel, moist, brown	Fill				14+14+16+14			Fill
						6+5+4+12			
	Do: with concrete fragments, below 5.0-feet			A	5	3+3+2+2			
	Do: wet below 9.0-feet				10	5+6+4+5			
11.0	Poorly Graded SAND, trace silt, moist, light gray	SP	10.5	B		3+4+4+5			Columbia Formation
						4+10+13+9			
15.0	BOTTOM OF BORING @ 15.0 FT.		6.5		15				

Comments:
Backfilled upon completion

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-21**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/13/03 **Finished:** 11/13/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 19.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/13	---	Dry	---	---
Completion	11/13	3:05	Dry	14.5'	---
Casing Pulled	11/13	3:24	7.5'	---	9.0'
24 Hour Reading	11/14	4:02	7.0'	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt and Concrete=30-inches								Fill
	Clayey Sand FILL, trace gravel, moist, gray	Fill		A		8+7+9+7		W=10.3% LL=20 PL=11	
4.5	Poorly Graded SAND, moist, gray-brown	SP	15.0		5	3+6+10+14	24		
	Do: trace gravel below 6.5-feet					7+6+10+8	20		
	Do: tan below 8.0-feet					4+4+5+8	24		
				B	10				Columbia Formation
						3+4+3+6	24		
	Do: orange-tan below 14.5-feet				15	4+4+4+6	24		
16.5	BOTTOM OF BORING @ 16.5 FT.		3.0						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **B-22**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/13/03 **Finished:** 11/13/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 19.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/13	---	15.0'	---	---
Completion	11/13	---	---	14.0'	---
Casing Pulled	11/13	5:30	7.9'	---	9.0'
24 Hour Reading	11/14	3:59	7.5'	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=5-inches Concrete=18-inches Poorly Graded Sand FILL, with gravel, moist, gray	Fill							Fill Strong organic like odor from 2 to 4.0-ft.
4.0	Sandy Lean Clay FILL, moist, gray-brown Do: gray below 6.0-feet	Fill	15.5	A	5	10+9+10+11	20		
						4+3+2+5	24	PP=1.5tsf	
						2+2+2+8	18	PP=0.3tsf	Petroleum like odor from 8 to 10.0-ft.
8.0	Poorly Graded Sand FILL, moist, light gray Do: with gravel below 10.0-feet	Fill	11.5		10	3+8+11+10	14		
						3+7+12+9	15		
12.0	Poorly Graded SAND, wet, light gray	SP	7.5	B		4+4+4+5	24		Columbia Formation
					15	5+4+4+3	24		
16.0	BOTTOM OF BORING @ 16.0 FT.		3.5						

Comments:
SE representative was not onsite during drilling

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **P-1**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/18/03 **Finished:** 11/18/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 18.5± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/18	9:15	9.5'	9.5'	---
Completion	11/18	9:22	10.0'	11.5'	---
Casing Pulled	11/18	---	---	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Concrete=12-inches Aggregate=6-inches Sandy Silt FILL, moist, gray	Fill		A		5+5+14+17			Fill
4.0	Clayey Sand FILL, moist, gray	Fill	14.5			9+4+8+14			Organic odor from 3.5 to 5.5-feet.
5.5	Poorly Graded SAND, with gravel, moist, gray	SP	13.0	B	5	10+11+14+17			Columbia Formation
	Do: orange-brown below 9.0-feet					5+6+5+5			
					10	3+2+3+3			
11.5	BOTTOM OF BORING @ 11.5 FT.		7.0						

Comments:

Schnabel
Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **P-2**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/11/03 **Finished:** 11/11/03
Location: See Test Boring Location Plan
Ground Surface Elevation: 18.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/11	8:50	Dry	---	---
Completion	11/11	8:54	Dry	10.5'	---
Casing Pulled	11/11	8:56	Dry	---	9.0'
24 Hour Reading	11/12	---	6.0'	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=5-inches Aggregate=6-inches Silty Clayey Sand FILL, trace gravel and rock fragments, moist, dark gray Do: trace root hairs below 2.5-feet	Fill		A	5	34+34+20+12 15+12+7+8 18+6+6+9		W=10.8% LL=24 PL=17	Fill
6.0	Poorly Graded SAND, moist, gray Do: wet below 10.0-feet	SP	12.0	B	10	6+6+5+6 5+4+3+4			Columbia Formation
12.5	BOTTOM OF BORING @ 12.5 FT.		5.5						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **P-3**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/11/03 **Finished:** 11/11/03
Location: See Test Boring Location Plan

Ground Surface Elevation: 20.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/11	---	Dry	---	---
Completion	11/11	10:30	Dry	9.5'	---
Casing Pulled	11/11	10:35	Dry	---	9.0'
24 Hour Reading	11/12	---	6.6'	---	---

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=5-inches								
	Silty Clayey Sand FILL, trace gravel and rock fragments, moist, dark brown-orange	Fill				16+11+16+6			Fill
	Do: gray below 2.0-feet			A		13+10+12+8		W=10.0% LL=18 PL=13	
6.0	Do: no gravel below 4.5-feet		14.0		5	13+6+5+7			
	Clayey Sand FILL, moist, gray	Fill				8+4+5+9			
8.5	Poorly Graded SAND, moist, white-gray	SP	11.5	B	10	6+14+9+7			Columbia Formation
10.5	BOTTOM OF BORING @ 10.5 FT.		9.5						

Comments:

Schnabel Engineering

Project: Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Number: **P-4**
Contract Number: 03141063.00
Sheet: 1 of 1

TEST BORING LOG

Boring Contractor: American Geotech, Inc.
Boring Foreman: Leon C. Remp
Drilling Method: 3-1/4" Hollow Stem Auger
Drilling Equipment: Simco 2800 Manual Hammer
SE Representative: K. Turner
Dates Started: 11/13/03 **Finished:** 11/13/03
Location: See Test Boring Location Plan

Ground Surface Elevation: 20.0± (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	11/13	---	Dry	---	---
Completion	11/13	9:00	Dry	11.0'	---
Casing Pulled	11/13	9:08	Dry	---	8.0'
24 Hour Reading	11/14	7:41	Dry	---	8.0'

DEPTH (ft)	STRATA DESCRIPTION	CLASS.	ELEV. (ft)	STRA-TUM	SAMPLING DEPTH	SAMPLING DATA	REC (in.)	TESTS	REMARKS
	Asphalt=4-inches Stone base=6-inches	Fill							Fill
3.0	Sandy Silt FILL, with gravel, moist, dark gray	Fill	17.0	A		11+15+12+13		W=7.1%	
	Sandy Lean Clay FILL, moist, gray and brown				5	12+11+7+7		W=11.8% PP=4.5tsf	
6.0	Poorly Graded Sand FILL, moist, light gray and brown	Fill	14.0			4+3+4+8			
						1+WOH+1+8			
9.0	Do: with gravel, gray below 7.0-feet	SP	11.0	B	10	8+7+9+9			Columbia Formation
11.0	Poorly Graded SAND, moist, gray BOTTOM OF BORING @ 11.0 FT.		9.0						

Comments:
Offset boring 10.0-feet south due to water line

APPENDIX O

CONTAMINATED SOILS REPORT

FOR THE

AIR CARGO HANDLING SYSTEM

AT THE

NEW AIR FREIGHT TERMINAL

AT

DOVER AIR FORCE BASE, DELAWARE

DATE: 21 JANUARY 2004

Amendment No. 0010

Whitney Bailey Cox & Magnani, LLC

Baltimore, Maryland

Limited Soil Sampling Investigation Report

Dover Air Force Base
Building Nos. 504, 505, 506, 509, 510, 581, 582, 583, 585, and Pavilion No. 67585
Dover, Delaware

ENSR Consulting * Engineering * Remediation

January 2004

Document Number ENSR Project No. 09000-339-013

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1 Soil Analytical Results

2 Summary of PID Readings

FIGURE

1 Soil Boring Location Map

APPENDICES

A Sampling and Analysis Plan

B Laboratory Analytical Results

1.0 INTRODUCTION

ENSR International (ENSR) has prepared this Limited Soil Sampling Investigation Report for the proposed Air Freight Terminal (AFT) at the Dover Air Force Base (DAFB) in Dover, Delaware. The limited soil sampling was conducted in accordance with the scope of work presented in the Architect-Engineer Services, Scope of Work, Contract Number: DACA61-02-D-0002, Contract Action: Task Order 0006, Modification P0002 (herein referred to as "Project Specifications", and ENSR's proposal dated August 8, 2003. The objective of this report is to summarize the sampling and analysis work performed, methodologies used, and the analytical results from soil samples.

2.0 BACKGROUND

The United States Army Corps of Engineers, Philadelphia District (CENAP) was requested by the Air Mobility Command (AMC), United States Air Force to procure a design-build contract and perform design and construction oversight for a new AFT at DAFB. As a part of the Architect-Engineer (A-E) team, ENSR is providing the materials and labor necessary to complete specific portions of this Design-Build Scope of Work, as described in the Project Specifications. ENSR's project scope and objectives are discussed in Section 2.0.

3.0 PROJECT SCOPE AND OBJECTIVES

The purpose of the project work was to obtain data indicating the chemical characteristics of subsurface soil encountered within the first two (2) meters below ground surface (bgs) in the proposed AFT area where excavation or other earth-moving work may potentially be performed as part of the construction and demolition activities. Groundwater samples were not collected as it was not encountered within the first two meters of each soil boring, per the Project Specifications. ENSR then compared the analytical results for soils in these work areas to the Underground Storage Tank (UST) Branch Tier 0, Table 2 (Delaware Department of Natural Resource and Environmental Control (DNREC) Risk-Based Corrective Action Program (DERBCAP)). Based on this data, ENSR then recommended management options for the soils that exceeded the DNREC's UST soil cleanup standards. Recommendations might include removal from the site and disposed offsite at an approved and licensed/regulated waste disposal facility. Depending on the level of contamination, if any, the soils may need to be disposed of as hazardous waste. Chemical waste characterization of soils in the construction areas was also conducted to ensure that proper precautions are taken to minimize worker exposure to contamination during construction and demolition operations.

In addition to ENSR's activities onsite, Schnabel Engineering (Schnabel) was also present onsite leading the geotechnical subsurface investigation. Schnabel was present onsite to log soils recovered in the split-spoon samplers and classify the soils according to the Unified Soil Classification System. American Geotech Inc. (AGI) and Materials Testing (MT) also performed a standard penetration test (SPT) while advancing each split-barrel sampler. The SPT values were recorded and utilized as another field classification during the geotechnical evaluation. Schnabel also collected geotechnical samples in order to determine the load bearing characteristics of the subsurface material. This included collecting Shelby tube samples in areas where clayey zones were suspected in the subsurface. The geotechnical investigation results are presented by Schnabel under separate cover.

4.0 FIELD ACTIVITIES BY AREA OF CONCERN

Geotechnical soil borings were used to obtain soil samples for laboratory analysis of selected contaminants of concern. Based on Schnabel's Drilling and Sampling Plan, soil borings were advanced at locations in the following areas of concern (AOCs):

Structure	Quantity	Boring Identification	Depth (feet)
Terminal	16	B-1 to B-16	45
Administration Building	2	B-17 and B-18	35
DCS Shiff Building	1	B-19	35
POL Gas Station Storage	1	B-20	15
Area West of 8th Street	2	B-21and B-22	15
Pavements	4	P-1 to P-4	10

These soil boring locations are presented on Figure 1.

4.1 Soil Sample Collection Procedures

ENSR collected 31 soil samples from 26 soil boring locations on November 4th through 25th, 2003. A detailed soil sampling plan is provided in the Sampling and Analysis Plan (SAP), dated November 2003 and included as Appendix A. The soil samples collected included one sample from each boring location, one sample from each of three boring locations that were re-sampled because of exceeded holding times, one matrix spike, and one matrix spike duplicate.

The test borings were advanced by AGI using a Simco 2800 HS drill rig and MT using a Mobile 2500 drill rig with both using 3.25-inch inside diameter (ID) hollow-stem augers. Continuous soil sampling using split-barrel samplers was performed while advancing the borings. Samples were collected using a 140 pound manually operated hammer with a 30 inch drop. Soils recovered in the split spoon samplers were visually examined for staining, odors, and other indications of subsurface contamination, and field screened along the entire length of the spoon for the presence of volatile organic compounds (VOCs) using a calibrated photoionization detector (PID).

Per the Project Specifications, chemical characterization samples were collected from the uppermost two (2) meters (6.5 feet), where foundation excavation and other earth-moving work would be most likely to occur during construction and demolition activities. No environmental soil samples were collected from the depth interval 0 to 0.5 meters (0 to 1.5 feet) below ground

surface. Following PID field screening, soil samples were collected from 0.5 to 1.5 meters (1.5 to 5.0 feet). If field screening or observations of soils from 1.5 to 2 meters (5 feet to 6.5 feet) indicated significantly higher potential contamination (i.e., high PID readings, odor, or staining), then the soil samples were collected from this depth interval rather than from 0.5 to 1.5 meters (1.5 to 5.0 feet). A summary of PID readings is included as Table 2.

Sampling equipment used during soil sample collection activities was decontaminated prior to use. A decontamination pad was utilized to decontaminate drilling equipment (e.g., augers, split-barrel samplers, and hand-tools) between soil boring locations so that cross contamination between sampling locations would not occur. Decontamination fluids and soil generated from borings was placed in 55-gallon drums and staged onsite at a central location for waste disposal. Both soil and water investigation derived wastes (IDW) were analyzed and the material is awaiting disposal.

4.2 Laboratory Analysis

Soil samples were collected and analyzed for gasoline range organics (GRO); diesel range organics (DRO), and an specific suite of volatile organic compounds (VOCs) that includes benzene, toluene, ethylbenzene, total xylenes (BTEX), tertiary-butyl alcohol (TBA), methyl tertiary-butyl ether (MTBE), tertiary-amyl methyl ether, trichloroethene, 1-dichloroethene and polychlorinated biphenyls (PCBs).

Selected soil samples were also collected for potential hazardous characterisitics analysis including zero headspace Toxic Characteristic Leaching Procedure (TCLP) VOC analysis, and Resource Conservation Recovery Act (RCRA) waste characteristic parameters of reactivity (sulfide and cyanide), corrosivity, and ignitability. TCLP VOC analysis was to be performed based total VOC analysis results (for example, if soil sample results exceeded the DERBCAP Tier 0 soil action levels, analysis for TCLP VOC would be performed). Soil samples collected for the TCLP VOC analysis were extracted via the zero headspace extraction method and placed on laboratory hold pending the results of the soil sample analyses. Because VOC analysis revealed that contamination levels are below DERBCAP Tier 0 soil action levels in all samples, no TCLP VOC analyses were conducted on the TCLP extracts. In addition, both soil and water IDW were analyzed for TCLP VOC analysis and RCRA waste characteristic parameters.

Rinsate blanks were collected at a rate of ten percent each day that dedicated sampling equipment decontamination was performed, and were analyzed for the same parameters as the primary samples. VOC samples collected each day were shipped in one cooler to minimize the number of trip blanks. Matrix spike/matrix spike duplicate (MS/MSD) samples were collected at a rate of five percent for all analytical parameters describe above.

Sample preservation and holding times were executed in accordance with their applicable United States Environmental Protection Agency (EPA) method as listed in the SAP. Sample preservation was achieved by packaging all samples in laboratory-supplied coolers at a temperature of four degrees Celsius (4°C). Prior to shipping samples, custody seals were placed on the outside of all coolers containing environmental samples. Samples were shipped the same day of sample collection via over-night carrier to the USACE-approved primary laboratory so that holding times were not exceeded.

A detailed procedure for laboratory analysis is provided in the SAP, dated November 2003 and included as Appendix A.

5.0 SOIL ANALYTICAL RESULTS

ENSR collected 31 soil samples from 26 soil boring locations on November 4th through the 25th, 2003. As stated previously, all samples were collected from the first two meters bgs, and analyzed for GRO, DRO, VOCs (including BTEX, TBA, MTBE, tert-amyl methyl ether, TCE, and DCE), and PCBs. Soil samples were also collected for TCLP VOC analysis and RCRA waste characteristic parameters. These samples were placed on hold pending the results from GRO, DRO, and VOC analysis. Analytical results have been summarized in Table 1. The full laboratory report is presented in Appendix B.

Analytical results for soil samples indicated that no VOCs, DRO, or PCBs exceeded the DERBCAP Tier 0 action levels for soil, DERBCAP Tier 1 Risk Based Screening Levels, and Delaware Uniform Risk-Based Remediation Standards for Critical Water Resource Areas, Unrestricted Use, Subsurface Soil. However GRO exceeded the DERBCAP Tier 0 Action Level for Soil in sample B-8 (3-5) with a level of 560,000 μg/L. All soil samples were also analyzed for reactivity (cyanide, sulfide), ignitability, and corrosivity. In all soil samples analyzed, no reactivity or ignitability was detected and corrosivity (pH) ranged from 4.8 to 7.8.

In addition to the soil samples collected, three samples of drilling cuttings were also collected and analyzed for reactivity (cyanide, sulfide), ignitability, corrosivity, and TCLP VOC analysis. In all three samples no reactivity was detected, corrosivity (pH) ranged from 6.5 to 7.6, and TCLP VOC were not detected above their laboratory MDLs for parameters analyzed. One sample, B-8 Cuttings, was found to be ignitable at 110° Fahrenheit. The other two samples were found to be non-ignitable.

One aqueous sample of decontamination fluids was collected and analyzed for volatile organics, reactivity (cyanide, sulfide), ignitability, and corrosivity. Volatile organics were not detected above their laboratory MDLs for parameters analyzed except for one parameter, xylene, detected at 8.2 μg/L. In addition, no reactivity or ignitability was detected and corrosivity (pH) was at 10.57. All laboratory analytical reports are included as Appendix B.

6.0 CONCLUSIONS

Based on analytical results from the soil sampling conducted between November 4 and 25, 2003 one boring, B-8, had evidence of contamination. Soil boring B-8 has an exceedance of GRO above DERBCAP's Tier 0 Action Levels for Soil. In addition, this sampling interval exhibited petroleum-type odors and registered a PID reading of 147.3. Based on these results, ENSR recommends that soil in the vicinity of B-8 be disposed in an appropriate manner. Appropriate precautions and methods (e.g. safety equipment, notification of workers, and plans for handling contaminated soil) should be established and implemented prior to intrusive construction activities. Additionally, an investigation to evaluate the source and delineate contamination in the areas of B-8 may be appropriate. The site owner may have responsibility for reporting the presence of contaminants of concern in soil.

7.0 LIMITATIONS

This report describes the results of ENSR's Limited Soil Sampling Investigation to identify the potential presence of contaminants beneath the subject property. In the conduct of this assessment, ENSR has attempted to independently assess the potential presence of such a problem within the limits of the established scope of work as described in the Project Specifications.

This report and field data and notes where gathered and/or prepared by ENSR in accordance with the agreed upon scope of work and generally accepted engineering and scientific practice in effect at the time of ENSR's limited assessment of the site. The statements, conclusions, and opinions contained in this report are only intended to give approximations of the environmental conditions at each site. Moreover, there are several major modifications that are inherent in the conduct of this or any other environmental examinations.

It is difficult to predict which, if any of the potential environmental issues identified will become actual problems in the future. Federal and state environmental regulations continually change, as do the enforcement priorities of the applicable government agencies involved. Even for problems currently identified, it is often difficult and sometimes impossible to accurately estimate the liabilities that may be involved in remedying the problem(s). The legal and technological standard for evaluating, remedying, environmental problems tends to be highly dependent upon agency negotiations and the sometimes arbitrary and unpredictable nature of agency officials charged with such negotiations.

There is always the possibility that major sources of future environmental issues have yet to manifest themselves to the point where they are reasonably identifiable through an external investigation such as the one conducted herein.

This report, including all supporting field data, notes and laboratory data where applicable (collectively referred hereinafter as "information"), was prepared or collected by ENSR International for the benefit of its client, Whitney, Bailey, Cox, and Magnani. ENSR's client may release the information to third parties, who may use and rely upon the information at their discretion. However, any use of or reliance upon the information by a party other than specifically named above shall be solely at the risk of such third party and without legal recourse against ENSR, its parent, its subsidiaries and affiliates; or their respective employees, officer, or directors; regardless of whether the action in which recovery of damages is sought is based upon contract, tort (including the sole, concurrent, or other negligence and strict liability of ENSR), stature, or otherwise. This information shall not be used or relied upon by a party that does not agree to be bound by the above statement.

SIGNATURES AND QUALITY CONTROL REVIEW

BY:

Richard Firely **DATE:** January 12, 2004

TITLE: Staff Specialist II

QUALITY CONTROL REVIEW BY:

BY: **DATE:** January 12, 2004

Sonya Ward

TITLE: Project Geologist

BY: **DATE:** January 12, 2004

Mack Astorga

TITLE: Program Manager

TABLES

Table 1
Soil Analytical Results
Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Parameters	DERBCAP Tier 0 Action Levels for soil	DERBCAP Tier 1 Risk-Based Screening Levels	Delaware Uniform Risk-Based Remediation Standards (ug/kg)*	B-1(4-6) 11/10/2003 222174-1			B-2(4-6) 11/18/2003 222386-3			B-3(3.5-5.5) 11/4/2003 221990-1			B-4(3.5-5.5) 11/5/2003 222038-1			B-5(3-5) 11/20/2003 222519-2			B-6(2.5-4.5) 11/13/2003 222287-6			B-7(4-6) 11/13/2003 222202-1			B-8(3-5) 11/20/2003 222519-1		
				CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL
Volatile Organics (ug/kg)																											
1,1-Dichloroethene	--	--	70	7.0	U	1.4	7.5	U	1.5	7.4	U	1.5	7.2	U	1.4	8.0	U	1.6	6.7	U	1.3	9.9	U	2	10	U	2
Methyl-tert-butyl-ether	130	--	--	7.0	U	0.90	7.5	U	0.96	7.4	U	0.95	7.2	U	0.92	8.0	U	1.0	6.7	U	0.86	9.9	U	1.3	10	U	1.3
Benzene	230	19,000	500	7.0	U	0.93	7.5	U	0.99	7.4	U	0.95	7.2	U	0.94	8.0	U	1.1	27		0.88	9.9	U	1.3	10	U	1.3
Trichloroethene	--	--	500	7.0	U	0.83	7.5	U	0.88	7.4	U	0.88	7.2	U	0.84	8.0	U	0.94	6.7	U	0.79	9.9	U	1.2	10	U	1.2
Toluene	--	3,800,000	100,000	7.0	U	1.4	7.5	U	1.5	7.4	U	1.5	7.2	U	1.4	8.0	U	1.6	6.7	U	1.3	9.9	U	2	10	U	2
Ethylbenzene	--	2,300,000	70,000	7.0	U	1.5	7.5	U	1.6	7.4	U	1.6	7.2	U	1.6	8.0	U	1.8	23		1.5	9.9	U	2.2	12		2.2
Xylenes	--	43,900,000	420,000	7.0	U	4.1	7.5	U	4.3	7.4	U	4.3	7.2	U	4.1	8.0	U	4.6	34		3.9	9.9	U	5.7	10	U	5.9
tert-Butyl alcohol	--	--	--	280	U	100	NA	U		300	U	220	290	U	210	320	U	230	270	U	190	390	U	290	400	U	290
tert-amyl methyl ether	--	--	--	7.0	U	0.87	NA	U		7.4	U	0.92	7.2	U	0.89	8.0	U	0.99	6.7	U	0.83	9.9	U	1.2	10	U	1.3
PCB Analysis (ug/kg)																											
Aroclor 1016	--	--	500	18.0	U	2.0	17.0	U	1.9	18.0	U	2.1	18.0	U	2.0	19.0	U	2.2	17.0	U	1.9	18.0	U	2.1	18.0	U	2.0
Aroclor 1221	--	--	300	18.0	U	2.1	17.0	U	2.0	18.0	U	2.2	18.0	U	2.1	19.0	U	2.3	17.0	U	2.1	18.0	U	2.2	18.0	U	2.1
Aroclor 1232	--	--	300	18.0	U	2.1	17.0	U	2.0	18.0	U	2.2	18.0	U	2.1	19.0	U	2.3	17.0	U	2.1	18.0	U	2.2	18.0	U	2.1
Aroclor 1242	--	--	300	18.0	U	2.1	17.0	U	2.0	18.0	U	2.2	18.0	U	2.1	19.0	U	2.3	17.0	U	2.1	18.0	U	2.2	18.0	U	2.1
Aroclor 1248	--	--	300	18.0	U	2.1	17.0	U	2.0	18.0	U	2.2	18.0	U	2.1	19.0	U	2.3	17.0	U	2.1	18.0	U	2.2	18.0	U	2.1
Aroclor 1254	--	--	300	18.0	U	2.1	17.0	U	2.0	18.0	U	2.2	18.0	U	2.1	19.0	U	2.3	17.0	U	2.1	18.0	U	2.2	18.0	U	2.1
Aroclor 1260	--	--	300	18.0	U	1.5	17.0	U	1.4	18.0	U	1.5	18.0	U	1.5	19.0	U	1.6	17.0	U	1.4	18.0	U	1.5	5.4	J	1.5
Total PCBs	--	2000	1000	<14.0			<13.3			<14.6			<14.0			<15.3			<13.8			<14.6			5.4 J		
Diesel Range Organics (DRO) (ug/kg)	1,000,000	--	--	4500	U	2800	4200	U	2600	4600	U	2800	4700	U	2900	4700	U	2900	20000		5600	8300		2700	830,000		29000
Gasoline Range Organics (GRO) (ug/kg)	100,000	--	--	10	U	10	51	U	9.8	5.7	U	11	56.0	U	11	27	J	11	79		10	55	U	11	560,000		49000
Reactivity Cyanide (ug/kg)	--	--	--	1500	U		2200	U	2200	900	U		1700	U		1900	U	1900	4300	U	4300	3100	U	3100	1,300	U	1300
Reactivity Sulfide (ug/kg)	--	--	--	240000	U	89000	250000	U	89000	230000	U	84000	230000	U	84000	250000	U	90000	250000	U	89000	250000	U	89000	240,000	U	89000
Ignitability (^{o}F)	--	--	--	>200			>200			>200			>200			>200			>200			>200			>200		
Corrosivity (pH)	--	--	--	6.9			6.8			5.3			4.8			7.8			7.6			7.4			6.4		
TCLP Volatilie Organics (ug/kg)																											
Vinyl Chloride	--	--	30	NA			NA			100	U	25	100	U	25	NA			NA			NA			NA		
1,1-Dichloroethene	--	--	70	NA			NA			100	U	25	100	U	25	NA			NA			NA			NA		
2-Butanone	--	--	--	NA			NA			100	U	25	100	U	25	NA			NA			NA			NA		
Chloroform	--	--	300	NA			NA			100	U	25	100	U	25	NA			NA			NA			NA		
Carbon Tetrachloride	--	--	300	NA			NA			100	U	25	100	U	25	NA			NA			NA			NA		
Benzene	230	--	500	NA			NA			100	U	25	100	U	25	NA			NA			NA			NA		
1,2-Dichloroethane (EDC)	400	6100	400	NA			NA			100	U	25	100	U	25	NA			NA			NA			NA		
Trichloroethene	--	--	500	NA			NA			100	U	25	100	U	25	NA			NA			NA			NA		
Tetrachloroethene	--	--	500	NA			NA			100	U	25	100	U	25	NA			NA			NA			NA		
Chlorobenzene	--	--	10000	NA			NA			100	U	25	100	U	25	NA			NA			NA			NA		

Notes:
DERBCAP= Delaware Risk Based Corrective Action Program
*= Critical Water Resource Area, Unrestricted Use, Subsurface Soil
ug/kg= micrograms per kilograms
NA = Not Analyzed
CONC = Concentration
Shaded cells exceed DERBCAP Tier 0 Action Level for Soils
MDL = Method Detection Limit
Q = Qualifier
J = Result is an estimated value below the reporting limit
U = Analyte was not detected at or above the detected limit

Table 1
Soil Analytical Results
Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Parameters	DERBCAP Tier 0 Action Levels for soil	DERBCAP Tier 1 Risk-Based Screening Levels	Delaware Uniform Risk-Based Remediation Standards (ug/kg)*	B-9(5-7) 11/20/2003 222519-8			B-10(3-5) 11/10/2003 222174-3			B-11(3-5) 11/21/2003 222551-1			B-12(3-5) 11/17/2003 222353-1			B-13(4-6) 11/21/2003 222551-3			B-14(3-5) 11/20/2003 222519-7			B-15(3-5) 11/18/2003 222386-1			B-16(3-5) 11/21/2003 222551-2		
				CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL
Volatile Organics (ug/kg)																											
1,1-Dichloroethene	--	--	70	8.3	U	1.7	5.8	U	1.2	10	U	2	6.1	U	1.2	8.0	U	1.6	11	U	2.2	9.0	U	1.8	7.2	U	1.4
Methyl-tert-butyl-ether	130	--	--	8.3	U	1.1	5.8	U	0.74	10	U	1.3	6.1	U	0.78	8.0	U	1.0	11	U	1.4	9.0	U	1.1	7.2	U	0.92
Benzene	230	19,000	500	8.3	U	1.1	5.8	U	0.77	9.8	J	1.3	6.1	U	0.8	8.0	U	1.1	11	U	1.4	9.0	U	1.2	7.2	U	0.95
Trichloroethene	--	--	500	8.3	U	0.98	5.8	U	0.69	10	U	1.2	6.1	U	0.71	8.0	U	0.94	11	U	1.3	9.0	U	1.1	7.2	U	0.85
Toluene	--	3,800,000	100,000	8.3	U	1.7	5.8	U	1.2	10	U	2.0	6.1	U	1.2	8.0	U	1.6	11	U	2.2	9.0	U	1.8	7.2	U	1.4
Ethylbenzene	--	2,300,000	70,000	8.3	U	1.8	5.8	U	1.3	10	U	2.2	6.1	U	1.3	8.0	U	1.8	11	U	2.4	9.0	U	2	7.2	U	1.6
Xylenes	--	43,900,000	420,000	8.3	U	4.8	5.8	U	3.4	10	U	5.8	6.1	U	3.5	8.0	U	4.6	11	U	6.3	9.0	U	5.2	7.2	U	4.2
tert-Butyl alcohol	--	--	--	330	U	240	230	U	170	400	U	290	240	U	180	320	U	230	430	U	310	NA			290	U	210
tert-amyl methyl ether	--	--	--	8.3	U	1	5.8	U	0.72	10	U	1.2	6.1	U	0.75	8.0	U	0.99	11	U	1.3	NA			7.2	U	0.89
PCB Analysis (ug/kg)																											
Aroclor 1016	--	--	500	18.0	U	2.0	18.0	U	2.0	20.0	U	2.2	18.0		2.0	19.0	U	2.2	18.0	U	2.1	18.0	U	2.1	19.0	U	2.2
Aroclor 1221	--	--	300	18.0	U	2.1	18.0	U	2.1	20.0	U	2.4	18.0		2.2	19.0	U	2.3	18.0	U	2.2	18.0	U	2.2	19.0	U	2.3
Aroclor 1232	--	--	300	18.0	U	2.1	18.0	U	2.1	20.0	U	2.4	18.0		2.2	19.0	U	2.3	18.0	U	2.2	18.0	U	2.2	19.0	U	2.3
Aroclor 1242	--	--	300	18.0	U	2.1	18.0	U	2.1	20.0	U	2.4	18.0		2.2	19.0	U	2.3	18.0	U	2.2	18.0	U	2.2	19.0	U	2.3
Aroclor 1248	--	--	300	18.0	U	2.1	18.0	U	2.1	20.0	U	2.4	18.0		2.2	19.0	U	2.3	18.0	U	2.2	18.0	U	2.2	19.0	U	2.3
Aroclor 1254	--	--	300	18.0	U	2.1	18.0	U	2.1	20.0	U	2.4	18.0		2.2	19.0	U	2.3	18.0	U	2.2	18.0	U	2.2	19.0	U	2.3
Aroclor 1260	--	--	300	2.7	J	1.5	18.0	U	1.5	20.0	U	1.7	18.0		1.5	19.0	U	1.6	18.0	U	1.6	18.0	U	1.5	19.0	U	1.6
Total PCBs	--	2000	1000	2.7 J			<14.0			<15.9			<14.5			<15.3			<14.7			<14.6			<15.3		
Diesel Range Organics (DRO) (ug/kg)	1,000,000	--	--	11,000		2700	4.4	U	2.7	45000		33	4500	U	2800	4900	U	34	4700	U	2900	4500	U	2800	170000		170
Gasoline Range Organics (GRO) (ug/kg)	100,000	--	--	54	U	10	53.0	U	10.0	11000		870	55	U	10	24	J	11	56	U	11	56	U	11	7900		700
Reactivity Cyanide (ug/kg)	--	--	--	1800	U	1800	2000	U		1500	U	1500	3100	U	3100	2000	U	2000	2500	U	2500	3300	U	3300	1900	U	1900
Reactivity Sulfide (ug/kg)	--	--	--	230000	U	83000	230000	U	84000	230000	U	85000	240000	U	86000	240000	U	89000	250000	U	90000	240000	U	89000	220000	U	81000
Ignitability (^{o}F)	--	--	--	>200			>200			>200			>200			>200			>200			>200			>200		
Corrosivity (pH)	--	--	--	6.8			6.2			7.3			6.0			5.8			6.9			7.4			7.3		
TCLP Volatilie Organics (ug/kg)																											
Vinyl Chloride	--	--	30	NA			NA			NA			NA			NA			NA			NA			NA		
1,1-Dichloroethene	--	--	70	NA			NA			NA			NA			NA			NA			NA			NA		
2-Butanone	--	--	--	NA			NA			NA			NA			NA			NA			NA			NA		
Chloroform	--	--	300	NA			NA			NA			NA			NA			NA			NA			NA		
Carbon Tetrachloride	--	--	300	NA			NA			NA			NA			NA			NA			NA			NA		
Benzene	230	--	500	NA			NA			NA			NA			NA			NA			NA			NA		
1,2-Dichloroethane (EDC)	400	6100	400	NA			NA			NA			NA			NA			NA			NA			NA		
Trichloroethene	--	--	500	NA			NA			NA			NA			NA			NA			NA			NA		
Tetrachloroethene	--	--	500	NA			NA			NA			NA			NA			NA			NA			NA		
Chlorobenzene	--	--	10000	NA			NA			NA			NA			NA			NA			NA			NA		

Notes:
DERBCAP= Delaware Risk Based Corrective Action Program
*= Critical Water Resource Area, Unrestricted Use, Subsurface Soil
ug/kg= micrograms per kilograms
NA = Not Analyzed
CONC = Concentration
Shaded cells exceed DERBCAP Tier 0 Action Level for Soils
MDL = Method Detection Limit
Q = Qualifier
J = Result is an estimated value below the reporting limit
U = Analyte was not detected at or above the detected limit

Table 1
Soil Analytical Results
Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Parameters	DERBCAP Tier 0 Action Levels for soil	DERBCAP Tier 1 Risk-Based Screening Levels	Delaware Uniform Risk-Based Remediation Standards (ug/kg)*	B-17(4-6) 11/17/2003 222353-4			B-18(3-5) 11/17/2003 222353-2			B-19(5-7) 11/11/2003 222211-4			B-20(3-5) 11/13/2003 222287-3			B-21(2.5.-4.5) 11/13/2003 222287-5			B-22(2-4) 11/13/2003 222287-7			P-1(3.5-5.5) 11/18/2003 222386-2			P-2(2.5-4.5) 11/11/2003 222211-1		
				CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL
Volatile Organics (ug/kg)																											
1,1-Dichloroethene	--	--	70	5.9	U	1.2	10	U	2.1	6.6	U	1.3	7	U	1.4	6.6	U	1.3	6.6	U	1.3	13	U	2.5	6.5	U	1.3
Methyl-tert-butyl-ether	130	--	--	5.9	U	0.75	10	U	1.3	6.6	U	0.84	7	U	0.90	6.6	U	0.84	6.6	U	0.84	13	U	1.6	6.5	U	0.83
Benzene	230	19,000	500	5.9	U	0.78	10	U	1.4	6.6	U	0.87	7	U	0.92	6.6	U	0.87	6.6	U	0.87	13	U	1.7	6.5	U	0.85
Trichloroethene	--	--	500	5.9	U	0.70	10	U	1.2	6.6	U	0.78	7	U	0.83	6.6	U	0.77	6.6	U	0.78	13	U	1.5	6.5	U	0.76
Toluene	--	3,800,000	100,000	5.9	U	1.2	10	U	2.1	6.6	U	1.3	7	U	1.4	6.6	U	1.3	6.6	U	1.3	13	U	2.5	6.5	U	1.3
Ethylbenzene	--	2,300,000	70,000	5.9	U	1.3	10	U	2.3	6.6	U	1.5	7	U	1.5	6.6	U	1.4	6.6	U	1.4	13	U	2.8	6.5	U	1.4
Xylenes	--	43,900,000	420,000	5.9	U	3.4	10	U	6.0	6.6	U	3.8	7	U	4.1	6.6	U	3.8	6.6	U	3.8	13	U	7.3	6.5	U	3.8
tert-Butyl alcohol	--	--	--	240	U	170	420	U	300	260	U	190	280	U	200	260	U	190	260	U	190	NA			260	U	190
tert-amyl methyl ether	--	--	--	5.9	U	0.73	10	U	1.3	6.6	U	0.82	7	U	0.87	6.6	U	0.81	6.6	U	0.82	NA			6.5	U	0.8
PCB Analysis (ug/kg)																											
Aroclor 1016	--	--	500	18.0	U	2.1	18.0	U	2.0	20.0	U	2.3	17.0	U	2.0	18.0	U	2.1	18.0	U	2.1	17.0	U	2.0	19.0	U	2.1
Aroclor 1221	--	--	300	18.0	U	2.2	18.0	U	2.1	20.0	U	2.4	17.0	U	2.1	18.0	U	2.2	18.0	U	2.2	17.0	U	2.1	19.0	U	2.2
Aroclor 1232	--	--	300	18.0	U	2.2	18.0	U	2.1	20.0	U	2.4	17.0	U	2.1	18.0	U	2.2	18.0	U	2.2	17.0	U	2.1	19.0	U	2.2
Aroclor 1242	--	--	300	18.0	U	2.2	18.0	U	2.1	20.0	U	2.4	17.0	U	2.1	18.0	U	2.2	18.0	U	2.2	17.0	U	2.1	19.0	U	2.2
Aroclor 1248	--	--	300	18.0	U	2.2	18.0	U	2.1	20.0	U	2.4	17.0	U	2.1	18.0	U	2.2	18.0	U	2.2	17.0	U	2.1	19.0	U	2.2
Aroclor 1254	--	--	300	18.0	U	2.2	18.0	U	2.1	20.0	U	2.4	17.0	U	2.1	18.0	U	2.2	18.0	U	2.2	17.0	U	2.1	19.0	U	2.2
Aroclor 1260	--	--	300	18.0	U	1.5	18.0	U	1.5	20.0	U	1.7	17.0	U	1.5	18.0	U	1.5	18.0	U	1.5	17.0	U	1.5	19.0	U	1.6
Total PCBs	--	2000	1000				<14.6			<16.0			<14.0			<14.6			<14.6			<14.0			<14.7		
Diesel Range Organics (DRO) (ug/kg)	1,000,000	--	--	4500	U	2800	6100		2900	7400		3000	4500	U	2800	16000		2900	4500	U	2800	4400	U	2700	4800		2900
Gasoline Range Organics (GRO) (ug/kg)	100,000	--	--	55	U	10	56	U	11	58	U	11	10	J	10	36	J	11	22	J	10	53	U	10	57	U	11
Reactivity Cyanide (ug/kg)	--	--	--	4200	U	4200	2000	U	2000	1700	U		3100	U	3100	3800	U	3800	3200	U	3200	3100	U	3100	1500	U	
Reactivity Sulfide (ug/kg)	--	--	--	240000	U	88000	240000	U	87000	240000	U	87000	250000	U	90000	250000	U	90000	250000	U	89000	250000	U	90000	250000	U	91000
Ignitability (°F)	--	--	--	>200			>200			>200			>200			>200			>200			>200			>200		
Corrosivity (pH)	--	--	--	5.0			7.0			6.5			6.9			7.0			7.5			6.9			4.9		
TCLP Volatilie Organics (ug/kg)																											
Vinyl Chloride	--	--	30	NA			NA			NA			NA			NA			NA			NA			NA		
1,1-Dichloroethene	--	--	70	NA			NA			NA			NA			NA			NA			NA			NA		
2-Butanone	--	--	--	NA			NA			NA			NA			NA			NA			NA			NA		
Chloroform	--	--	300	NA			NA			NA			NA			NA			NA			NA			NA		
Carbon Tetrachloride	--	--	300	NA			NA			NA			NA			NA			NA			NA			NA		
Benzene	230	--	500	NA			NA			NA			NA			NA			NA			NA			NA		
1,2-Dichloroethane (EDC)	400	6100	400	NA			NA			NA			NA			NA			NA			NA			NA		
Trichloroethene	--	--	500	NA			NA			NA			NA			NA			NA			NA			NA		
Tetrachloroethene	--	--	500	NA			NA			NA			NA			NA			NA			NA			NA		
Chlorobenzene	--	--	10000	NA			NA			NA			NA			NA			NA			NA			NA		

Notes:
DERBCAP= Delaware Risk Based Corrective Action Program
*= Critical Water Resource Area, Unrestricted Use, Subsurface Soil
ug/kg= micrograms per kilograms
NA = Not Analyzed
CONC = Concentration
Shaded cells exceed DERBCAP Tier 0 Action Level for Soils
MDL = Method Detection Limit
Q = Qualifier
J = Result is an estimated value below the reporting limit
U = Analyte was not detected at or above the detected limit

Table 1
Soil Analytical Results
Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Parameters	DERBCAP Tier 0 Action Levels for soil	DERBCAP Tier 1 Risk-Based Screening Levels	Delaware Uniform Risk-Based Remediation Standards (ug/kg)*	P-3(2.5-4.5) 11/11/2003 222211-2			P-4(3-5) 11/13/2003 222287-1			B-8 Cuttings 11/20/2003 222519-4			B-19 Cuttings 11/20/2003 222519-5			B-3 Cuttings 11/20/2003 222519-6			Decon Fluid-1 (ug/L) 11/21/2003 222551-5		
				CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL	CONC	Q	MDL
Volatile Organics (ug/kg)																					
1,1-Dichloroethene	--	--	70	7.5	U	1.5	5.0	U	1.0	NA			NA			NA			5.0	U	1.7
Methyl-tert-butyl-ether	130	--	--	7.5	U	0.96	5.0	U	0.65	NA			NA			NA			5.0	U	2.0
Benzene	230	19,000	500	7.5	U	0.99	5.0	U	0.67	NA			NA			NA			5.0	U	0.96
Trichloroethene	--	--	500	7.5	U	0.89	5.0	U	0.59	NA			NA			NA			5.0	U	1.6
Toluene	--	3,800,000	100,000	7.5	U	1.5	5.0	U	1.0	NA			NA			NA			5.0	U	1.1
Ethylbenzene	--	2,300,000	70,000	7.5	U	1.7	5.0	U	1.1	NA			NA			NA			5.0	U	0.93
Xylenes	--	43,900,000	420,000	7.5	U	4.4	5.0	U	2.9	NA			NA			NA			8.2		1.8
tert-Butyl alcohol	--	--	--	300	U	220	200	U	150	NA			NA			NA			200	U	30.0
tert-amyl methyl ether	--	--	--	7.5	U	0.93	5.0	U	0.63	NA			NA			NA			5	U	0.47
PCB Analysis (ug/kg)																					
Aroclor 1016	--	--	500	18.0	U	2.1	18.0	U	2.0	NA			NA			NA			NA		
Aroclor 1221	--	--	300	18.0	U	2.2	18.0	U	2.1	NA			NA			NA			NA		
Aroclor 1232	--	--	300	18.0	U	2.2	18.0	U	2.1	NA			NA			NA			NA		
Aroclor 1242	--	--	300	18.0	U	2.2	18.0	U	2.1	NA			NA			NA			NA		
Aroclor 1248	--	--	300	18.0	U	2.2	18.0	U	2.1	NA			NA			NA			NA		
Aroclor 1254	--	--	300	18.0	U	2.2	18.0	U	2.1	NA			NA			NA			NA		
Aroclor 1260	--	--	300	18.0	U	1.5	18.0	U	1.5	NA			NA			NA			NA		
Total PCBs	--	2000	1000	<14.0			<14.0			NA			NA			NA			NA		
Diesel Range Organics (DRO) (ug/kg)	1,000,000	--	--	21000		2800	4000	J	2800	NA			NA			NA			NA		
Gasoline Range Organics (GRO) (ug/kg)	100,000	--	--	54	U	10	18	J	10	NA			NA			NA			NA		
Reactivity Cyanide (ug/kg)	--	--	--	1400	U		3700	U	3700	1000	U	1000	1000	U	1000	2400	U	2400	10	U	10
Reactivity Sulfide (ug/kg)	--	--	--	230000	U	84000	240000	U	88000	240000	U	87000	230000	U	85000	170000	U	63000	1000	U	1000
Ignitability (^{o}F)	--	--	--	>200			>200			110			>200			>200			>200		
Corrosivity (pH)	--	--	--	7.8			6.1			6.9			6.5			7.6			10.57		
TCLP Volatilie Organics (ug/kg)																					
Vinyl Chloride	--	--	30	NA			NA			100	U	25	100	U	25	100	U	25	NA		
1,1-Dichloroethene	--	--	70	NA			NA			100	U	25	100	U	25	100	U	25	NA		
2-Butanone	--	--	--	NA			NA			100	U	25	100	U	25	100	U	25	NA		
Chloroform	--	--	300	NA			NA			100	U	25	100	U	25	100	U	25	NA		
Carbon Tetrachloride	--	--	300	NA			NA			100	U	25	100	U	25	100	U	25	NA		
Benzene	230	--	500	NA			NA			100	U	25	100	U	25	100	U	25	NA		
1,2-Dichloroethane (EDC)	400	6100	400	NA			NA			100	U	25	100	U	25	100	U	25	NA		
Trichloroethene	--	--	500	NA			NA			100	U	25	100	U	25	100	U	25	NA		
Tetrachloroethene	--	--	500	NA			NA			100	U	25	100	U	25	100	U	25	NA		
Chlorobenzene	--	--	10000	NA			NA			100	U	25	100	U	25	100	U	25	NA		

Notes:
DERBCAP= Delaware Risk Based Corrective Action Program
*= Critical Water Resource Area, Unrestricted Use, Subsurface Soil
ug/kg= micrograms per kilograms
NA = Not Analyzed
CONC = Concentration
Shaded cells exceed DERBCAP Tier 0 Action Level for Soils
MDL = Method Detection Limit
Q = Qualifier
J = Result is an estimated value below the reporting limit
U = Analyte was not detected at or above the detected limit

Table 2
Summary of PID Readings
Air Freight Terminal
Dover Air Force Base
Dover, Delaware

Boring Locations and Depths (feet)	PID Reading
B-1	
0.0-2.0	0.4
2.0-4.0	1.3
4.0-6.0	0.4
6.0-8.0	0.0
B-2	
0.0-2.0	No instrument response
2.0-4.0	No instrument response
4.0-6.0	No instrument response
6.0-8.0	No instrument response
B-3	
1.5-3.5	No instrument response
3.5-5.5	No instrument response
B-4	
1.5-3.5	No instrument response
3.5-5.5	No instrument response
B-5	
1.0-3.0	No instrument response
3.0-5.0	No instrument response
5.0-7.0	No instrument response
B-6	
0.5-2.5	NIR
2.5-4.5	15.5
4.5-6.5	10.7
B-7	
0.5-2.5	No instrument response
2.5-4.5	No instrument response
4.5-6.5	No instrument response
B-8	
1.0-3.0	33.9
3.0-5.0	147.3
5.0-7.0	12.3
B-9	
1.0-3.0	No instrument response
5.0-7.0	No instrument response
B-10	
1.0-3.0	No instrument response
3.0-5.0	No instrument response
B-11	
1.0-3.0	No instrument response
3.0-5.0	No instrument response
5.0-7.0	No instrument response
B-12	
1.0-3.0	No instrument response
3.0-5.0	No instrument response
5.0-7.0	No instrument response
B-13	
0.0-2.0	No instrument response
2.0-4.0	No instrument response
4.0-6.0	No instrument response
6.0-8.0	No instrument response

Boring Locations and Depths (feet)	PID Reading
B-14	
1.0-3.0	No instrument response
3.0-5.0	No instrument response
5.0-7.0	No instrument response
B-15	
1.0-3.0	No instrument response
3.0-5.0	No instrument response
5.0-7.0	No instrument response
B-16	
1.0-3.0	No instrument response
3.0-5.0	No instrument response
5.0-7.0	No instrument response
B-17	
0.0-2.0	No instrument response
2.0-4.0	No instrument response
4.0-6.0	No instrument response
6.0-8.0	No instrument response
B-18	
1.0-3.0	No instrument response
3.0-5.0	No instrument response
5.0-7.0	No instrument response
B-19	
1.0-3.0	No instrument response
3.0-5.0	No instrument response
5.0-7.0	No instrument response
B-20	
1.0-3.0	No instrument response
3.0-5.0	No instrument response
5.0-7.0	No instrument response
B-21	
2.5-4.5	No instrument response
4.5-6.5	No instrument response
B-22	
2.0-4.0	No instrument response
4.0-6.0	No instrument response
P-1	
1.5-3.5	No instrument response
3.5-5.5	No instrument response
5.5-7.5	No instrument response
P-2	
0.5-2.5	No instrument response
2.5-4.5	No instrument response
4.5-6.5	No instrument response
P-3	
0.5-2.5	No instrument response
2.5-4.5	No instrument response
4.5-6.5	No instrument response
P-4	
1.0-3.0	2.1
3.0-5.0	10.9
5.0-7.0	10.1

FIGURE

Piscataway on 'dcPiscataway'(J):Project/Whitney Bailey Cox/Aft Demo/Cadd/DAFB-SRVY Site Map (2)

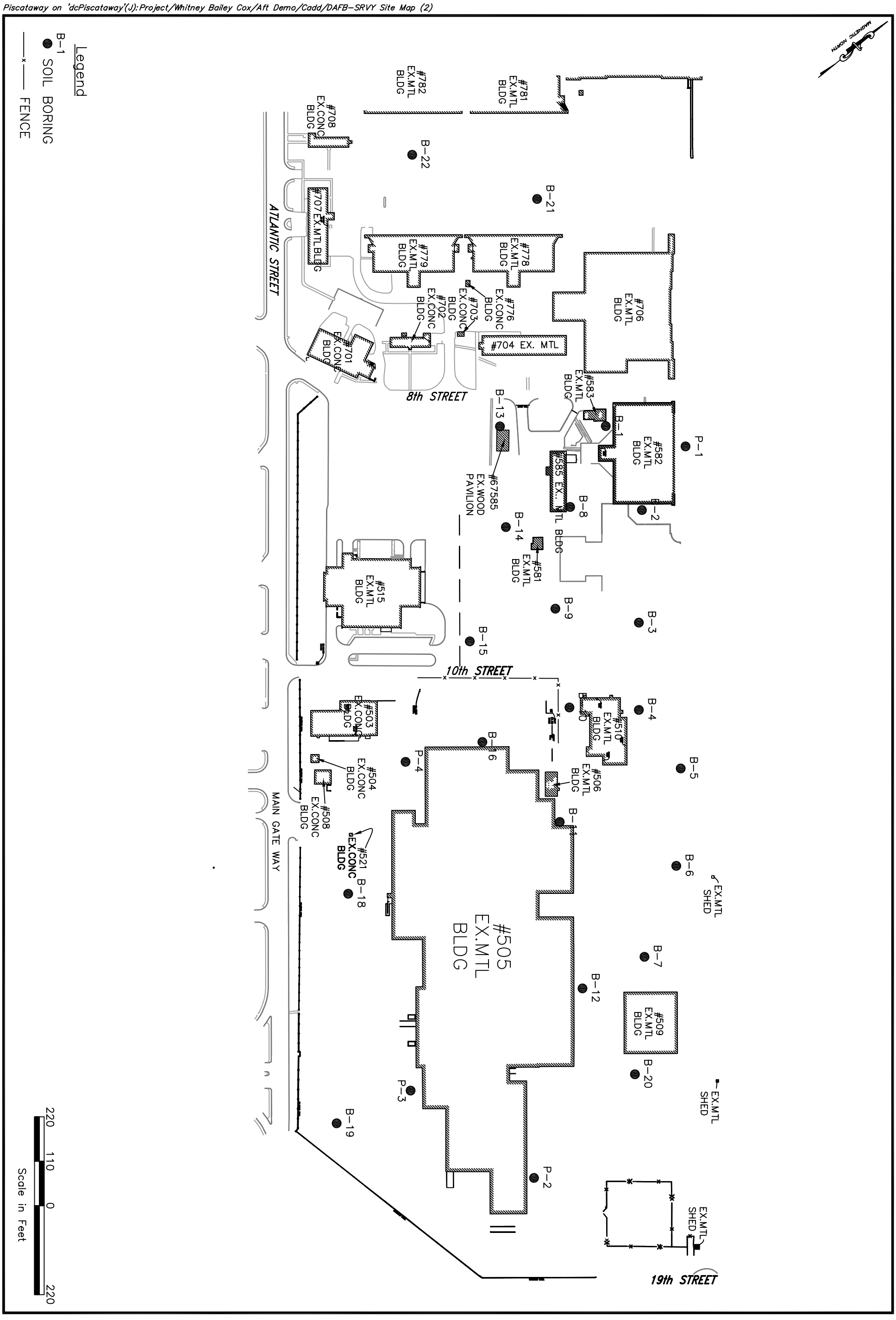

FIGURE NUMBER:	SHEET NUMBER:
1	1 of 1

SOIL BORING LOCATION MAP
(NOVEMBER 4-25, 2003)
AIR FREIGHT TERMINAL
DOVER AIR FORCE BASE
DOVER, DELAWARE

SCALE:	DATE:	PROJECT NUMBER:
AS SHOWN	01/12/04	9000-339

ENSR INTERNATIONAL
2005 CABOT BOULEVARD WEST, SUITE 100
LANGHORNE, PENNSYLVANIA 19047
PHONE: (215) 757-4900
FAX: (215) 757-3904
WEB: HTTP://WWW.ENSR.COM

DESIGNED BY:	REVISIONS			
MA	NO.:	DESCRIPTION:	DATE:	BY:
DRAWN BY:				
/jk				
CHECKED BY:				
APPROVED BY:				

APPENDIX A

SAMPLING AND ANALYSIS PLAN

Amendment No. 0010

Whitney Bailey Cox & Magnani, LLC

Baltimore, Maryland

Sampling and Analysis Plan

Dover Air Force Base

Building Nos. 504, 505, 506, 509, 510, 581, 582, 583, 585, and Pavilion No. 67585

Dover, Delaware

ENSR Consulting * Engineering * Remediation

November 2003

ENSR Project No. 09000-339

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A – Quality Assurance Project Plan

B – Health and Safety Plan

C – Engineering and Design - Requirements for the Preparation of Sampling and Analysis Plans (EM 200-1-3)

D – ENSR Proposal No. 09000-I38 dated August 8, 2003

E – Army Corps of Engineers (ACOE) Request for Proposal (RFP)

1.0 PROJECT BACKGROUND

The U.S. Army Corps of Engineers, Philadelphia District (CENAP) was requested by the Air Mobility Command (AMC), U.S. Air Force to procure a design-build contract and perform design and construction oversight for a new Air Freight Terminal (AFT) at Dover Air Force Base (AFB) in Dover, Delaware. The existing AFT was severely damaged due to heavy snow in February 2003, is old (circa 1950), and cannot be economically upgraded to meet the current and future demands of the AMC. As a part of the Architect-Engineer (A-E) team, ENSR is providing the materials and labor necessary to complete specific portions of this Design-Build Scope of Work, as described in the Architect-Engineer Services, Scope of Work, Contract Number: DACA61-02-D-0002, Contract Action: Task Order 0006, Modification P0002, dated August 8, 2003 (herein referred to as "Project Specifications").

The project includes demolition of the following structures: (1) Marwilling Yard Facility [Building no. 581 – 113sm (1,216 square feet, sf)], Mobility Processing Facility (Building no. 582 – 3,800sm(40,855sf)), Oil/Water Separator and Lift Station [Building no. 583 – 133sm (1,430 sf)], C-5 Parts Store (Building no. 585 – 677sm (7,289sf)), Ramp Services Office [Building no. 506 – 170sm (1,830 sf)], Air Freight Terminal [Building no. 505 – 37,000sm (398,317 sf)], Fire Station [Building no. 510 – 1,454sm (15,645 sf)], Storage Facility [Building no. 504 – 40sm (436 sf)], Material Handling Equipment (MHE) Covered Storage [Building no. 509 – 2,454sm (26,400 sf)], Outdoor C-5 aircraft wash rack (Facility no. 66223), and the Pavilion (Building no. 67585). Portions of the new AFT site are located over abandoned concrete with asphalt surface abandoned taxiways and runway. The pavement will also be removed where necessary as part of the new AFT construction.

At the request of Whitney, Bailey, Cox & Magnani, LLC (WBCM), ENSR is providing this Sampling and Analysis Plan (SAP) regarding the collection and analysis of soils and groundwater for possible subsurface contamination. Details relating to soil and groundwater sampling and the specific techniques used during the sampling program are presented herein.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

Schnabel Engineering (Schnabel) is the lead geotechnical engineer and will perform the soil boring inspection program. The project will be managed from Schnabel's Baltimore, Maryland office. The senior reviewer for the project will be Ken Derrenbacher, P.E. Mr. Derrenbacher has a M.S. in Civil Engineering from the University of Maryland and has over 20 years of experience in geo-technical engineering. The subsurface investigation will be performed under the supervision of Jeffery Sewell, P.E. Mr. Sewell has a M.Eng. from the University of Maryland and over eight years of experience in geotechnical engineering. The field inspector for Schnabel will be either Mickey Edwards or Kelly Turner. Ms. Turner is a staff geologist, and Mr. Edwards is a senior engineering technician who has over 5 years of experience in testing and classifying soils.

American Geotech, Inc. (AGI) will be drilling of soil borings, under the direction of Schnabel. AGI has over 13 years of experience performing geotechnical investigations. The project manager for AGI will be Mr. Kin Chung. ENSR International (ENSR) will perform environmental field screening and soil and groundwater sampling during the geo-technical field program. Mack Astorga is the project manager for ENSR. Mr. Astorga is a senior project scientist with over ten years of experience in subsurface investigations. The soil and groundwater sampling program will be performed under the supervision of David Sherman. Mr. Sherman is a project geoscientist with over six years of experience in subsurface investigations and field sampling protocols. The field scientist for ENSR will be Richard Firely. Mr. Firely has over two years of experience in subsurface investigations and field sampling protocols.

3.0 PROJECT SCOPE AND OBJECTIVES

The purpose of the project work specified herein is to obtain data on the chemical characteristics of subsurface conditions in the proposed construction sites, where excavation or other earth-moving work may potentially be performed as part of the construction and demolition activities. In the event that soils in these work areas do not meet the criteria specified for in Underground Storage Tank (UST) Branch Tier 0, Table 2 (soil cleanup standards) of the Delaware Department of Natural Resource and Environmental Control (DNREC) regulations, ENSR will recommend that the soils be removed from the site(s) and disposed offsite at an approved and licensed/regulated waste disposal facility. Depending on the level of contamination, if any, the soils may need to be disposed as “hazardous” waste. Chemical waste characterization of soils in the construction sites is also required to ensure that proper precautions are taken to minimize worker exposure to contamination during construction and demolition operations.

4.0 NONMEASUREMENT DATA ACQUISITION

ENSR was provided all project information in accordance with the ACOE RFP included as Appendix E of this SAP.

5.0 FIELD ACTIVITIES BY AREA OF CONCERN

Geotechnical soil borings will be used to obtain soil and groundwater samples for analysis of possible subsurface contamination. Based on Schnabel's Drilling and Sampling Plan, soil borings will be advanced at locations in the following areas of concern (AOCs):

Structure	Quantity	Boring Identification	Depth (feet)	Total (feet)
Terminal	16	B-1 to B-16	45	720
Administration Building	2	B-17 and B-18	35	70
DCS Shiff Building	1	B-19	35	35
POL Gas Station Storage	1	B-20	15	15
Area West of 8th Street	2	B-21and B-22	15	30
Pavements	4	P-1 to P-4	10	40
Total	**26**			**910**

These soil boring locations are presented on Figures 1.

5.1 Field Sample Collection and Laboratory Analysis

5.1.1 Soil and Groundwater Sample Collection

A total of 26 soil borings will to be advanced during this project (locations shown on Figure 1) as requested in the RFP. The test borings will be performed using a Simco 2800 HS and/or ATV drill rig using minimum 3.25-inch inside diameter (ID) hollow stem augers. Continuous soil sampling using split-barrel samplers will be performed while advancing the borings. Soils recovered in the split spoon samplers will be visually examined for staining, odors, and other indications of subsurface contamination, and field screened along the entire length of the spoon for the presence of volatile organic compounds (VOCs) using a photoionization detector (PID) or equivalent monitoring instrument capable of detecting VOC vapors.

Schnabel will log and classify soils recovered in the split spoons according to the Unified Soil Classification System. AGI will also perform a standard penetration test (SPT) while advancing each split-barrel sampler. The SPT values will be recorded and utilized as another field classification during the geotechnical evaluation. It is ENSR's understanding that Schnabel will also collect geotechnical samples in order to determine the load bearing characteristics of the subsurface material. This may include collecting Shelby tube samples in areas where plastic zones exist in the subsurface material.

ENSR is responsible for collecting up to 50 soil samples from the proposed 26 soil boring locations. Chemical characterization samples will be collected from the uppermost 2 meters (6.5 feet), where foundation excavation and other earth-moving work would be most likely to occur during construction and demolition activities.

No environmental soil samples will be collected from the depth interval 0 to 0.5 meters (0 to 1.5 feet) below ground surface. Following PID field screening, soil samples will be collected from 0.5 to 1.5 meters (1.5 to 5.0 feet). If field screening of soils from 1.5 to 2 meters (5 feet to 6.5 feet) indicates significantly higher potential contamination (i.e., high PID readings, odor, or staining), then the soil samples will be collected from this depth interval rather than from 0.5 to 1.5 meters (1.5 to 5.0 feet).

Sampling equipment used during soil sample collection activities will be decontaminated prior to use at each sample location according to an U.S. Army Corps of Engineers- (USACE) approved procedure. A decontamination pad, approximately ten feet by 12 feet will be constructed by AGI prior to start of work on pavement in an area designated by District Resident Engineer (DRE). The decontamination pad will be utilized to decontaminate drilling equipment (e.g., augers, split-barrel samplers, and hand-tools) between soil boring locations in order that cross contamination between sampling locations does not occur. Decontamination fluids and any water generated from other site activities will be placed in 55-gallon drums and staged onsite for waste disposal at a location to be determined by the DRE. Both soil and water investigation derived wastes (IDW) will be analyzed prior to disposal.

5.1.2 Laboratory Analysis

Soil samples will be collected and analyzed for gasoline range organics (GRO); diesel range organics (DRO), and an abbreviated list of volatile organic compounds (VOCs) that includes benzene, toluene, ethylbenzene, total xylenes, tertiary-butyl alcohol (TBA), methyl tertiary-butyl ether (MTBE), tertiary-amyl methyl ether, trichloroethene, and 1,1-dichloroethene. Soil samples will also be collected for potential hazardous characterisitics analysis including zero headspace Toxic Characteristic Leaching Procedure (TCLP) VOC analysis, and Resource Conservation Recovery Act (RCRA) waste characteristic parameters of reactivity (sulfide and cyanide), corrosivity, and ignitability. Waste characteristics analyses and TCLP VOC analysis will be performed based on the total analysis results. TCLP is an EPA SW-846 analytical method (Method 1311) that simulates sanitary landfill contaminant leaching in waste samples. Based upon concentrations of the TCLP constituents and guidelines set forth in 40 CFR 261.4, the solid waste samples can be deemed "hazardous" or "non-hazardous". Soil samples will also be collected and analyzed for polychlorinated biphenyls (PCBs).

Soil samples collected for the TCLP VOC analysis will be extracted via the zero headspace extraction method

and placed on laboratory hold pending the results of the total VOC analyses. If the GRO, DRO, and VOC reveal that contamination levels are below DNREC Risk-Based Corrective Action Program (DERBCAP) Tier 0 soil action levels, no analyses will be conducted on the TCLP extracts or on the samples collected for determination of RCRA characteristics (i.e., corrosivity, ignitability, cyanide, and sulfide reactivity). Any extract samples from soil samples that exceed DNREC DERBCAP Tier 0 soil action levels will be analyzed for TCLP VOCs and for RCRA characteristics.

The Encore® sampling method will be employed for all soil samples analyzed for VOCs (SW-846 5035). For each soil sample, three plastic Encore® containers will be utilized as well as sufficient sample containers for determining moisture content.

During the course of the subsurface investigation, if groundwater is encountered at depths between 0.0 to 2 meters (0 to 6.5 feet) below ground surface (bgs), a groundwater sample will also be collected. A minimum of five groundwater samples will be collected as requested to be collected in the RFP.

ENSR will collect all groundwater samples using either a submersible pump with factory-clean polyethylene tubing or a factory-clean polyethylene bailer. Where possible, groundwater samples will be collected using the low-flow sampling technique in combination with a groundwater quality meter to monitor groundwater field parameters including dissolved oxygen (DO), pH, temperature, specific conductivity, and turbidity.

Sampling guidance for these procedures is found in the U.S. EPA Recommended Procedure for Low-Flow Purging and Sampling of Groundwater Monitoring Wells, Bulleting No. QAD023, June 1999. A groundwater sample will be collected immediately upon encountering perched water in case insufficient groundwater is present to allow purging and stabilization of groundwater quality parameters. Sufficient supplies will be available for collection and analysis of up to ten groundwater samples. Any groundwater samples collected will be analyzed for GRO, DRO, and the abbreviated VOC list described above.

Rinsate blanks will be collected at a rate of ten percent each day that dedicated sampling equipment decontamination is performed, and will be analyzed for the same parameters as the primary samples. No VOC trip blanks are needed for soil samples. One trip blank for VOC analysis must be shipped each day that aqueous VOC samples are collected. A trip blank will accompany all coolers containing aqueous VOC samples. It is recommended that all VOC samples collected each day be shipped in one cooler to minimize the number of trip blanks. Matrix spike/matrix spike duplicate (MS/MSD) samples will be collected at a rate of five percent for all analytical parameters describe above.

Laboratory quality assurance/quality control (QA/QC) will include a minimum number of requirements including documentation of ongoing instrument calibration, method blanks (one with every batch of 20 samples, control spikes, duplicated matrix spikes, and percent recoveries for internal quantitation standards and surrogate standards.

6.0 FIELD OPERATIONS DOCUMENTATION

The primary form of field documentation will be the use of a field logbook. The field logbook will serve as a specific record of all field activities that takes place onsite each day. All pages in the logbook will be dated and numbered sequentially. At the start of the each day the following information will be recorded; time of arrival for all relevant personnel, a brief description of the work that will conducted that day, weather, and the project number. A health and safety briefing, using ENSR's site specific Health and Safety Plan (HASP), will be documented including topics and persons in attendance. Calibration of all field equipment, including equipment make, model, and serial number, time, calibration gas/material used, and results of calibration will be noted. Other items noted in the field book will include utility clearance, times that tasks are started and completed chronologically, times samples are collected, how samples are collected, what QA/QC samples were collected, and all notable conversations with clients, project managers, and/or regulators.

ENSR soil boring logs and groundwater purge logs will also be utilized as field records during the field-sampling program. These logs will completed each day by the ENSR field scientist as needed.

In addition to field logbooks, a chain of custody (COC) form will be completed daily in accordance with the ENSR project-specific Quality Assurance Project Plan (QAPP). The COC will contain information specific to each sample collected including field identification, date, time, and analysis requested for each sample. The COC also contains information on sample preservation and laboratory turn-around time. The COC serves as legal ownership and custody of the samples.

7.0 SAMPLE PACKAGING AND SHIPPING REQUIREMENTS

Sample preservation and holding times will be executed in accordance with their applicable U.S. EPA method as listed in the QAPP. Sample preservation will be achieved by packaging all samples in laboratory-supplied coolers at a temperature of 4° Celsius (° C). A copy of the signed COC will be placed in each shipped cooler so that the laboratory can catalog all samples received. Prior to shipping samples, custody seals will be placed on the outside of all coolers containing environmental samples. It is required that samples be shipped the same day of sample collection via over-night carrier to the USACE-approved primary laboratory so that holding times are not exceeded. Each day samples are received at the laboratory, a copy of the COC and the sample receipt form will be faxed to the District Project Manager and the ENSR Project Manager.

8.0 INVESTIGATION DERIVED WASTES (IGW)

Borehole soil cuttings will be placed in 55-gallon drums, properly labeled, and staged in an onsite area to be determined by the DRE. A waste characterization sample of the staged cuttings will be collected and analyzed for TCLP VOC and RCRA hazardous waste characteristics (i.e., resistivity, ignitability, and corrosivity). The results of the TCLP and RCRA characteristics analyses will be used to determine the most cost-effective waste disposal method.

9.0 FIELD ASSESSMENT/THREE PHASE INSPECTION PROCEDURES

ENSR will ensure that quality is maintained throughout all field activity by means of a three-phase control process in accordance with the Engineering and Design - Requirements for the Preparation of Sampling and Analysis Plans (EM 200-1-3). Contractor quality control (CQC) phases (which includes preparatory, initial, and follow-up phases) are performed onsite by contractor-assigned QC officer whether or not a government representative is present. ENSR will summarize the activities of each CQC phase in the daily QC report. The CQC phases are performed for each definable feature of site work. This feature is a task that is separate and distinct from other tasks and has separate control requirements, including soil, groundwater, and containerized waste.

ENSR's CQC officer will be Richard Firely. Mr. Firely will be responsible each day for listing the field equipment used, describing the activities during the phases, identifying each definable feature of site work, and generating a sample table in the field logbook that can be used to match up primary and QA samples, as well as other field control samples required for the project.

10.0 NONCONFORMANCE/CORRECTIVE ACTIONS

Corrective action in the laboratory may occur prior to, during, and after initial analyses. A number of conditions such as broken sample containers, multiple phases, low/high pH readings, and potentially high concentration samples may be identified during sample log in or just prior to analysis. Following consultation with laboratory analysts and operational group leaders, it may be necessary for the Laboratory QA Manager to approve the implementation of corrective action. Conditions during or after analysis may also automatically trigger corrective action or optional procedures. These conditions include dilution of samples, additional sample extract cleanup, automatic reinjection/re-analysis when certain QC criteria are not met.

The analyst may identify the need for corrective action. The operational group leader, in consultation with the staff, will approve the required corrective action to be implemented by the laboratory staff. The Laboratory QA Manager will ensure implementation and documentation of the corrective action. If the nonconformance causes project objectives not to be achieved, the ENSR Data Quality Manager will be notified. All levels of project management, including the USACE, will be contacted for concurrence with the proposed corrective action.

These corrective actions are performed prior to the release of the data from the laboratory. The corrective action will be documented in both the laboratory's corrective action files, and the narrative data report sent from the laboratory to the ENSR Project Manager. If the corrective action does not rectify the situation, the laboratory will contact the ENSR Project Manager, who will determine the action to be taken and inform the appropriate personnel. All laboratory corrective actions are referenced in the QAPP.

The need for corrective action may also be identified during data verification or validation. Potential types of corrective action may include re-sampling by the field team or reinjection/reanalysis of samples by the laboratory. These actions are dependent upon the ability to mobilize the field team and whether the data to be collected is necessary to meet the required QA objectives. If the ENSR Data Quality Officer or ENSR Chemical Data Assessment Specialist identifies a corrective action situation, the ENSR Project Manager (Mack Astorga) and ENSR Project Quality Systems Manager (Sonya Ward) will be notified and will be responsible for informing the appropriate personnel. If the nonconformance could cause the project objectives to not be achieved, all levels of project management, including the USACE, must concur with the proposed corrective action. All corrective actions of this type will be documented by the ENSR Project Manager. All data assessment corrective actions can be referenced in the QAPP.

FIGURES

APPENDIX A

QUALITY ASSURANCE PROJECT PLAN

Amendment No. 0010

Whitney Bailey Cox & Magnani, LLC

Baltimore, Maryland

Quality Assurance Project Plan

Dover Air Force Base
Building Nos. 504, 505, 506, 509, 510, 581, 582, 583, 585, and Pavilion No. 67585
Dover, Delaware

ENSR Consulting * Engineering * Remediation

November 2003

ENSR Project No. 09000-339

DISTRIBUTION LIST

USACE Project Manager
ENSR Project Manager – Mack Astorga
ENSR Data Quality Officer – Sonya Ward, P.G.
ENSR Field Team Leader – David Sherman
ENSR Field Scientist – Richard Firely
STL Project Manager – Eric Lang, STL-Chicago

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1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) presents the organization, data quality objectives (DQOs), planned activities, and specific quality assurance/quality control (QA/QC) procedures associated with the chemical analyses performed for the construction and demolition oversight for a new Air Freight Terminal (AFT) at Dover Air Force Base (AFB) in Dover, Delaware. Specific protocols for sample handling and storage, chain of custody, laboratory analyses, corrective action, and data validation will be described.

This QAPP has been prepared by the U.S. Army Corps of Engineers' (USACE) contractor, ENSR International (ENSR), and is one of two documents contained in the Sampling and Analysis Plan (SAP). The SAP also includes a Field Sampling Plan (FSP), which details sampling procedures, field quality control (QC), equipment decontamination, field chain of custody and shipping procedures, and field documentation, and is included in the QAPP by reference.

This QAPP has been prepared using guidance provided in the USACE document EM-200-1-3, *Requirements for the Preparation of Sampling and Analysis Plans* (USACE, 2001) and Delaware Department of Natural Resources and Environmental Control (DNREC). Other relevant guidance documents included *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (USEPA, 1986), *Chemical Quality Assurance for Hazardous, Toxic, and Radioactive (HTRW) Projects*, EM 200-1-6 (USACE, 1997), and *Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities*, ER 1110-1-263 (USACE, 1998).

2.0 PROJECT ORGANIZATION AND RESPONSIBILITY

The USACE's contractor, ENSR, will oversee the field investigation and sample analysis and will prepare data deliverables. Project management will be provided by ENSR. The various management, QA, field, and laboratory responsibilities of key project personnel are defined below.

2.1 Project Organization Chart

The lines of authority and communication specific to this investigation are presented in Figure 2-1. This chart includes the individuals discussed below.

2.2 Management Responsibilities

USACE Project Manager

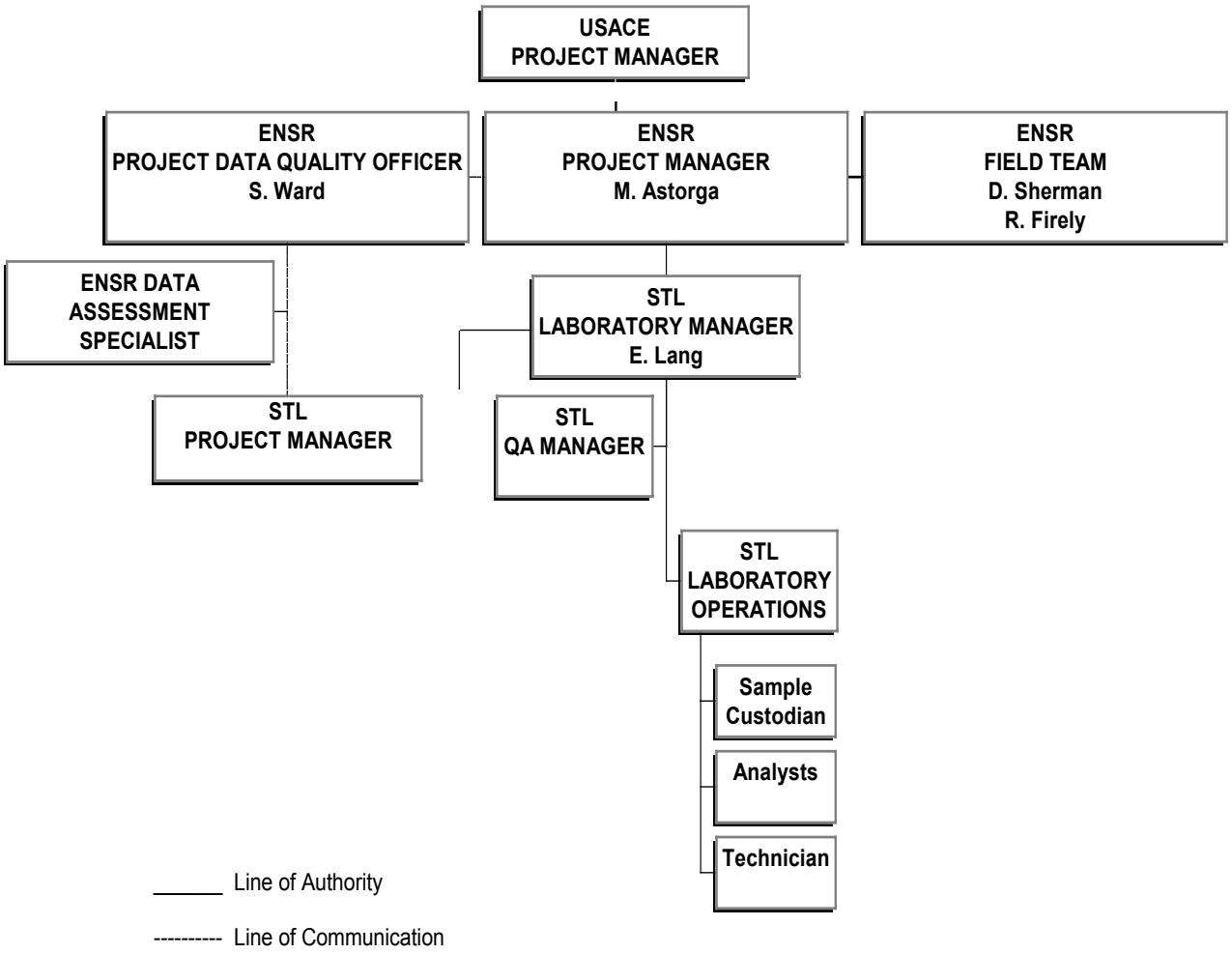
The USACE Project Manager is primarily responsible for project direction and decisions concerning technical issues and strategies, setting the basic program policies applicable to work assignments, and oversight of ENSR. The USACE Project Manager will communicate directly with third parties and other stakeholders and will provide the major point of contact and control for matters concerning the project.

ENSR Project Manager

The ENSR Project Manager, Mack Astorga, has responsibility for technical, financial, and scheduling matters and will serve as the main contact with the USACE and Schnabel Engineering. Other duties, as necessary, include

- Subcontractor procurement,
- Assignment of duties to project staff and orientation of the staff to the specific needs and requirements of the project,
- Ensuring that data assessment activities are conducted in accordance with the QAPP,
- Approval of project-specific procedures and internally prepared plans, drawings, and reports,

Figure 2-1 Project Organization



- Serving as the focus for coordination of all field and laboratory task activities, communications, reports, and technical reviews, and other support functions, and facilitating site activities with the technical requirements of the project, and

- Maintenance of the project file.

2.3 Quality Assurance Responsibilities

ENSR Data Quality Officer

The ENSR Data Quality Officer, Sonya Ward, has overall responsibility for quality assurance oversight of the chemical data analyses. The ENSR Data Quality Officer communicates directly to the ENSR Project Manager and the Project Quality Systems Manager. Specific responsibilities include:

- Preparing the QAPP,

- Reviewing and approving QA procedures, including any modifications to existing approved procedures,

- Ensuring that QA audits of the various phases of the project are conducted as required,

- Providing QA technical assistance to project staff,

- Ensuring that data validation/data assessment is conducted in accordance with the QAPP, and

- Reporting on the adequacy, status, and effectiveness of the QA program to the ENSR Project Manager.

ENSR Chemical Data Assessment Specialist

The ENSR Chemical Data Assessment Specialist reports to the ENSR Data Quality Officer. The Chemical Data Assessment Specialist is responsible for performing verification, review, and validation of the analytical data in accordance with Section 8.0 of the QAPP.

2.4 Laboratory Responsibilities

Severn Trent Laboratories (STL) of Chicago, Illinois will perform the analyses. Responsibilities within the laboratory for this project are defined below.

Laboratory Manager

The Laboratory Manager is ultimately responsible for the data produced by the laboratory. Specific responsibilities include:

- Implementing and adhering to the Laboratory Quality Assurance Management Plan (LQAMP) and all corporate policies and procedures within the laboratory,
- Maintaining adequate staffing documented on organization charts, and
- Implementing internal/external audit findings corrective actions.

Laboratory QA Manager

The Laboratory QA Manager reports directly to the Laboratory Manager. Specific responsibilities include:

- Approving operation-specific Standard Operating Procedures (SOPs),
- Assessing and maintaining the LQAMP implementation within the facility operations,
- Ensuring and improving quality within facility operations,
- Recommending resolutions for ongoing or recurrent nonconformances within the laboratory,
- Performing QA assessments,
- Assisting in the preparation of and approving QAPPs, and
- Preparing a quality reports to management.

Laboratory Project Manager

The Laboratory Project Manager is the liaison between the client and the laboratory staff. Specific responsibilities of the Laboratory Project Manager include:

- Monitoring analytical and QA project requirements for a specified project,
- Reviewing project data packages for completeness and compliance to client needs, and
- Monitoring, reviewing, and evaluating the progress and performance of projects.

Analyst

Each analyst is responsible for:

- Performing analytical methods and data recording in accordance with documented procedures,
- Performing and documenting calibration and preventive maintenance,
- Performing data processing and data review procedures,
- Reporting non-conformances to the appropriate personnel, and
- Ensuring sample and data integrity by adhering to internal chain-of-custody procedures.

Laboratory Sample Custodian

The Sample Custodian ensures implementation of proper sample receipt procedures, including maintenance of chain of custody. Other specific responsibilities include:

- Reporting anomalies associated with condition-upon-receipt of samples to the Laboratory Project Manager,
- Logging samples into the laboratory information management system (LIMS),
- Ensuring that all samples are stored in the proper environment, and
- Assisting with sample disposal.

2.5 Field Responsibilities

ENSR Field Team Leader (FTL)

The ENSR FTL, David Sherman, has overall responsibility for completion of all field activities in accordance with the FSP and QAPP and is the communication link between ENSR project management and the field team. Specific responsibilities of the ENSR FTL include:

- Coordinating activities at the site,
- Assigning specific duties to field team members,
- Mobilizing and demobilizing of the field team and subcontractors to and from the site,
- Directing the activities of subcontractors on site,
- Resolving any logistical problems that could potentially hinder field activities, such as equipment malfunctions or availability, personnel conflicts, or weather dependent working conditions,
- Implementing field QC including issuance and tracking of measurement and test equipment; the proper labeling, handling, storage, shipping, and chain-of-custody procedures used at the time of sampling; and control and collection of all field documentation, and
- Assisting with report preparation.

Field Staff Scientist

The field staff scientist, Richard Firely, reports directly to the ENSR FTL. The responsibilities of the field team include:

- Collecting samples, conducting field measurements, and decontaminating equipment according to documented procedures stated in the QAPP and the field SOPs,
- Ensuring that field instruments are properly operated, calibrated, and maintained, and that adequate documentation is kept for all instruments,
- Ensuring that field documentation and data are complete and accurate, and
- Communicating any nonconformance or potential data quality issues to the ENSR FTL.

3.0 DATA QUALITY OBJECTIVES

Data quality objectives (DQOs) are an integrated set of specifications that define data quality requirements based on the intended use of the data (USACE, 2001). The DQO process determines sample handling procedures, preparation and analytical methods, target analytes and their associated quantitation limits, quality control (QC) samples, and the measurement quality objectives (MQOs).

3.1 Data Use Background

An extensive discussion of the site history, regulatory background, physical description, and results of previous investigations are included in the USACE Statement of Work (SOW) and summarized in the Work Plan. The overall objective of the project is to obtain data on the chemical characteristics of shallow subsurface conditions in the proposed construction sites where excavation or other earthwork may potentially be performed as part of construction activities.

The tasks that will be completed to attain this objective are detailed in the Work Plan. A summary of the tasks is provided below, along with the analyses to be performed, data quality level (DQL), and intended data usage.

Task Description	Analyses	DQL	Intended Data Use
Soil Sample Collection	GRO, DRO, BTEX, tertiary-amyl methyl ether, TBA, MTBE, TCE, 1,1-DCE, zero headspace TCLP extraction, TCLP VOC analysis, reactivity, corrosivity, ignitability, and PCBs.	Definitive	Comparison of soil results to DNREC DERBCAP Tier 0 clean-up levels to determine if material can be backfilled or must be disposed offsite.
Groundwater Sample Collection	GRO, DRO, BTEX, tertiary-amyl methyl ether, TBA, MTBE, TCE, 1,1-DCE.	Definitive	Comparison of soil results to DNREC DERBCAP Tier 0 clean-up levels to determine if material can be backfilled or must be disposed offsite.

Notes:
GRO – Gasoline-range organics
DRO – Diesel-range organics
PCB – Polychlorinated biphenyls
TBA – Tertiary butyl alcohol
MTBE – Methyl tertiary-butyl ether
TCE- Trichloroethene
1,1-DCE – 1,1-Dichloroethene
VOC – Volatile organic compound
BTEX – Benzene, toluene, ethylbenzene, xylenes
TCLP – Toxic characteristics leachability procedure
DERBCAP- Delaware Risk Based Corrective Action Process

The specific analytes that will be tested are identified in Table 3-1. Table 3-1 also specifies the DQO decision criteria and provides the laboratory Method Quantitation Limits (MQLs) for comparison.

3.2 Project Quality Objectives

The design and construction oversight for a new AFT at the AFB will consist of a sampling program and chemical analyses of soil and groundwater. The field investigation is designed to provide information that will allow timely decisions on disposal options and confirmation that the limits of excavation have met specification. Therefore, the sampling and analysis program incorporates the following QA elements:

- A sampling program designed to obtain sufficient data to determine the levels of selected constituents in the media of interest,
- The use of sample collection and handling procedures that will ensure the representativeness and integrity of the samples,
- The use of a laboratory that has been validated by the USACE and certified by DNREC DERBCAP.
- An analytical program designed to generate definitive data of sufficient quality and sensitivity to meet the project objectives,
- Data deliverables that will allow verification and validation of the data and reproduction of the reported results.

3.3 Measurement Quality Objectives

The following section presents the MQOs established for this program for the data quality indicators (DQIs). The DQIs include the quantitative parameters of precision, bias (accuracy), completeness, and sensitivity, as well as the qualitative elements of comparability and representativeness.

3.3.1 Precision

Precision is a measure of the degree to which two or more measurements are in agreement.

Field precision is assessed through the collection and measurement of field duplicates at a rate of one duplicate per 20 analytical samples. Field duplicate collection procedures are discussed in the FSP. Precision will be measured through the calculation of relative percent difference (RPD) as described in Section 6.2.1 of this QAPP. The objectives for field precision RPDs are shown in Tables 3-2 and 3-3.

Precision in the laboratory is assessed through the calculation of RPD for duplicate samples. Duplicate samples may include matrix duplicates or matrix spike/matrix spike duplicates (MS/MSDs), depending on the method. The equation to be used for precision can be found in Section 6.2.1 of this QAPP. Precision control limits are provided in Tables 3-2 and 3-3.

3.3.2 Bias

Bias refers to the systematic or persistent distortion of a measurement process that causes errors in one direction. Accuracy is the degree of agreement between the observed value and an accepted reference or true value. Accuracy includes both random error and bias components.

Bias in the field is assessed through the use of trip blanks and equipment rinsate blanks and through the adherence to all sample handling, preservation, and holding time requirements. The objectives for trip blanks and equipment blanks are shown in Tables 3-2 and 3-3. Field collection procedures associated with trip blanks and equipment rinsate blanks are presented in the FSP.

Laboratory bias is assessed through the analysis of MS/MSDs, laboratory control samples (LCSs), and surrogate compounds, and the subsequent determination of percent recoveries (%Rs). The equations to be used for bias in this project can be found in Section 6.2.2 of this QAPP. Control limits are given in Tables 3-2 and 3-3.

3.3.3 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. "Normal conditions" are defined as the conditions expected if the sampling plan was implemented as planned.

Field completeness is a measure of the amount of valid measurements obtained from all the measurements taken in the project. The equation for completeness is presented in Section 6.2.4 of this QAPP. The field completeness objective is greater than 90 percent.

Laboratory completeness is a measure of the amount of valid measurements obtained from all the measurements taken in the project. The equation for completeness is presented in Section 6.2.4 of this QAPP. The laboratory completeness objective is greater than 95 percent.

3.3.4 Sensitivity

Sensitivity is defined as the quantitation limits established to meet the project objectives. The analytical methodologies chosen for this project were selected based on their ability to attain the DQOs. A listing of MQLs for each target compound can be found in Table 3-1 of this QAPP. DQO criteria are also provided for comparison.

3.3.5 Representativeness

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition within a defined spatial and/or temporal boundary.

Representativeness is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the FSP and QAPP are followed and that proper sampling techniques are used.

Representativeness in the laboratory is ensured by using the proper analytical procedures, appropriate methods, meeting sample holding times, and analyzing and assessing field duplicate samples. The sampling network was designed to provide data representative of the area of concern. During development of this network, consideration was given to past facility processes, existing analytical data, physical setting and processes, and media of concern.

3.3.6 Comparability

Comparability expresses the confidence with which one data set can be compared to another. Comparability is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the FSP and QAPP are followed, proper sampling techniques are used, and that analyses are conducted using standard United States Environmental Protection Agency (USEPA) methodologies.

Table 3-1 Target Analytes, Method Quantitation Limits, and Data Quality Objective Criteria

Associated Samples (see Notes)	Parameter	CAS No.	Soil		Wastewater	
			DQO (Note 4)	MQL	DQO	MQL
	Volatile Organic Compounds (µg/kg or µg/L)					
1, 2, 3	1,1,1-Trichloroethane	71-55-6	800	5		1.8
1, 2, 3	1,1,2,2-Tetrachloroethane	79-34-5	600	5		2.3
2, 3	1,1,2-Trichloroethane	79-00-5		5		1.4
1, 2	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	6000	5		NA
1, 2, 3	1,1-Dichloroethane	75-34-3	200	5		2.4
1, 2, 3	1,1-Dichloroethene	75-35-4	400	5		2.0
2	1,2-Dibromo-3-chloropropane	96-12-8		5		NA
1, 2	1,2-Dibromoethane	106-93-4	100	5		NA
1, 2	1,2-Dichlorobenzene	95-50-1	7900	5		NA
2, 3	1,2-Dichloroethane	107-06-2		5		0.92
2, 3	1,2-Dichloropropane	78-87-5		5		0.93
1	1,2,3-Trichloroproane		400	5		NA
1, 2	1,2,4-Trichlorobenzene	120-82-1	3400	5		NA
1, 2	1,3-Dichlorobenzene	541-73-1	1600	5		NA
1	1,3-Dichloropropane		300	5		NA
1, 2	1,4-Dichlorobenzene	106-46-7	8500	5		NA
1, 2	2-Butanone	78-93-3		10		NA
3	2-Chloroethylvinyl ether	110-75-8		NA		5.2
2	2-Hexanone	591-78-6	300	10		NA
1, 2	4-Methyl-2-pentanone	108-10-1	1000	10		NA
1, 2	Acetone	67-64-1	200	10		NA
3	Acrolein	107-02-8		NA		28
3	Acrylonitrile	107-13-1		NA		31
1, 2, 3	Benzene	71-43-2	60	5		1.4
2, 3	Bromodichloromethane	75-27-4		5		1.1
2, 3	Bromoform	75-25-2		5		2.6
2, 3	Bromomethane	74-83-9		5		2.1
1, 2	Carbon disulfide	75-15-0	2700	10		NA
1, 2, 3	Carbon tetrachloride	56-23-5	600	5		2.0
1, 2, 3	Chlorobenzene	108-90-7	1700	5		1.2
1, 2, 3	Chloroethane	75-00-3	1900	10		1.5
1, 2, 3	Chloroform	67-66-3	300	5		1.3
2, 3	Chloromethane	74-87-3		5		1.8
2,	cis-1,2-Dichloroethene	156-59-2		5		NA
2, 3	cis-1,3-Dichloropropene	10061-01-5		5		1.3
2	Cyclohexane	110-82-7		5		NA
1, 2, 3	Dibromochloromethane	124-48-1	NS	5		1.4
2	Dichlorodifluoromethane	75-71-8		5		NA
1, 2, 3	Ethylbenzene	100-41-4	5500	5		1.5

Associated Samples (see Notes)	Parameter	CAS No.	Soil		Wastewater	
			DQO (Note 4)	MQL	DQO	MQL
2	Isopropylbenzene	98-82-8		5		NA
2	Methyl acetate	79-20-9		5		NA
2	Methylcyclohexane	108-87-2		5		NA
1, 2, 3	Methylene chloride	75-09-2	100	5		1.4
2	Methyl-tert-butyl-ether	1634-04-4		5		NA
2	Styrene	100-42-5		5		NA
1, 2, 3	Tetrachloroethene	127-18-4	1400	5		2.3
1, 2, 3	Toluene	108-88-3	1500	5		2.0
1, 2, 3	trans-1,2-Dichloroethene	156-60-5	300	5		2.1
2, 3	trans-1,3-Dichloropropene	10061-02-6		5		1.3
1, 2, 3	Trichloroethene	79-01-6	700	5		2.4
2, 3	Trichlorofluoromethane	75-69-4		5		1.4
1, 2, 3	Vinyl chloride	75-01-4	200	5		1.6
1, 2	Xylenes (total)	1330-20-7	1200	5		NA
	PCBs (μg/kg or μg/L)					
1,2	Aroclor 1016	12674-11-2	Surface	33		NA
1,2	Aroclor 1221	11104-28-2	soil	67		NA
1,2	Aroclor 1232	11141-16-5	1 mg/kg	33		NA
1,2	Aroclor 1242	53469-21-9		33		NA
1,2	Aroclor 1248	12672-29-6	Subsurface	33		NA
1,2	Aroclor 1254	11097-69-1	soil	33		NA
1, 2	Aroclor 1260	11096-82-5	10 mg/kg	33		NA

Notes:

NA - Analysis not applicable to media
NS – None specified
MDL – Method Detection Limit
DQO – Data quality objective criteria. Sources:
Soil - DNREC - Recommended Soil Cleanup Objectives

SB – Site background
MQL – Method Quantitation Limit (lab-specific)
mg/kg – milligrams per kilogram

1 – Applies to soil excavation and confirmatory samples
2 – Applies to borrow pit samples
3 – Applies to wastewater samples
4- Limited to the following maximum values

μg/kg – micrograms per kilogram
μg/L – micrograms per liter

Total VOCs ≤10 parts per million (ppm)
Total SVOCs ≤500 ppm
Individual SVOCs ≤50 ppm
Total pesticides ≤10 ppm

Table 3-2 Quality Control Performance Criteria for Wastewater Samples

Compound	Blank	Field Duplicate %RPD	Matrix Spike and/or LCS			Surrogate % R
			LCS % R[1]	MS % R[1]	% RPD	
VOCs by USEPA 624						
Toluene-d8	--	--	--	--	--	87-110
4-Bromofluorobenzene	--	--	--	--	--	85-113
1,2-Dichloroethane-d4	--	--	--	--	--	76-118
1,1-Dichloroethene	<RL[2]	30%[3]	10-234	10-234	30	--
Trichloroethene			71-157	71-157	30	--
Benzene			37-151	37-151	30	--
Toluene			47-150	47-150	30	--
Chlorobenzene			37-160	37-160	30	--

[1]All target compounds will be spiked and recovery monitored. Laboratory control limits in place at the time of the analysis will be used. In no cases will the lower limit of acceptable recovery fall below 10%.
[2]Blank (field, trip, method) criteria apply to all target compounds analyzed and reported for a particular method (see Table 3-1 for list of analytes), with the exception of the common laboratory contaminants specified in the laboratory SOPs.
[3]Field duplicate criteria apply to all target analytes analyzed and reported for a particular method (see Table 3-1 for lists of analytes).
Laboratory control limits are periodically updated. The latest control limits will be utilized at the time of sample analysis.

Table 3-3 Quality Control Performance Criteria for Soil Samples

Compound	Blank	Field Duplicate %RPD	Matrix Spike and/or LCS			Surrogate % R
			LCS % R[1]	MS % R[1]	% RPD	
VOCs by SW-846 8260B						
Toluene-d8	--	--	--	--	--	71-128
4-Bromofluorobenzene	--	--	--	--	--	42-149
Dibromofluoromethane	--	--	--	--	--	70-127
1,1-Dichloroethene	<RL[2]	30%[3]	70-130	59-172	30	--
Trichloroethene			70-130	62-137	30	--
Benzene			70-130	66-142	30	--
Toluene			70-130	59-139	30	--
Chlorobenzene			70-130	60-133	30	--

[1]All target compounds will be spiked and recovery monitored in the LCS with the exception of pesticides/ PCBs. Laboratory control limits in place at the time of the analysis will be used. In no cases will the lower limit of acceptable recovery fall below 10%.
[2]Blank (field, trip, method) criteria apply to all target compounds analyzed and reported for a particular method (see Table 1-2 for list of analytes), with the exception of the common laboratory contaminants specified in the laboratory SOPs.
[3]Field duplicate criteria apply to all target analytes analyzed for a particular method (see Table 1-2).
[4]Within the limits specified on the Certificate of Analysis provided by the vendor.
Laboratory control limits are periodically updated. The latest control limits will be utilized at the time of sample analysis.

4.0 SAMPLE RECEIPT, HANDLING, CUSTODY AND HOLDING TIME REQUIREMENTS

Sample handling in the field and sample packaging and shipping procedures are included in the FSP.

4.1 Sample Receipt

Samples will be received and logged in by the designated Laboratory Sample Custodian or his/her designee. Upon sample receipt, the Laboratory Sample Custodian will

- Examine the shipping containers to verify that the custody tape is intact,
- Examine all sample containers for damage,
- Determine if the temperature required for the requested testing program has been maintained during shipment and document the temperature on the sample receipt form,
- Compare samples received against those listed on the chain of custody,
- Verify that sample holding times have not been exceeded,
- Examine all shipping records for accuracy and completeness,
- Determine sample pH (if applicable) and record on the sample receipt form,
- Sign and date the chain of custody immediately (if shipment is accepted) and attach the waybill,
- Note any problems associated with the coolers and/or samples on the cooler receipt form and notify the Laboratory Project Manager, who will be responsible for contacting the client,
- Attach laboratory sample container labels with unique laboratory identification and test,
- Place the samples in the proper laboratory storage.

4.2 Handling and Storage

Following receipt, samples will be logged in according to the following procedure:

- The samples will be entered into the LIMS. At a minimum, the following information will be entered: project name or identification, unique sample numbers (both client and internal

laboratory, type of sample, required tests, date and time of laboratory receipt of samples, and field ID provided by field personnel.

- The Laboratory Project Manager and operational group leader will be notified of sample arrival.

- The completed chain of custody, waybills, and any additional documentation (including client notification and correspondence) will be placed in the project file.

Additional detail on laboratory custody procedures for sample receiving, sample identification, sample control, and record retention are described in STL SOPs.

4.3 Sample Holding Times

A summary of sample container, preservation, and holding time requirements is presented in Table 4-1 (aqueous media) and Table 4-2 (solid media) of the QAPP.

Table 4-1 Aqueous Sample Container, Preservation, and Holding Time Requirements

Parameter	Container [1, 2]	Preservation	Holding Time [3]
VOCs	3-40 ml glass vials with Teflon-lined septum caps	HCl to pH <2; no headspace; cool 4°C	14 days
SVOCs	2-1 L amber glass with Teflon-lined lids	Cool 4°C	Extract within 7 days, analyze within 40 days
Organochlorine pesticides/PCBs	2-1 L amber glass with Teflon-lined lids	Cool 4°C	Extract within 7 days, analyze within 40 days
Metals	1-500 ml plastic	HNO_3 to pH <2; cool 4°C	Mercury - 28 days, other metals - 180 days

[1] Triple volume will be collected for MS/MSD samples.
[2] Equivalent bottles that meet the specifications of the method may be provided by the laboratory.
[3] Holding time begins from date of sample collection.

Notes: SVOC = Semivolatile organic compounds

Table 4-2 Solid Sample Container, Preservation, and Holding Time Requirements

Parameter	Container [1, 2]	Preservation	Holding Time [3]
VOCs	3 EnCore® samplers	Cool 4°C	Preserve within 48 hours, analyze within 14 days
% Solids	1-2 oz. plastic	Cool 4°C	None
SVOCs, organochlorine pesticides, PCBs	1-8 oz. wide-mouth glass with Teflon-lined lid	Cool 4°C	Extract within 14 days, analyze within 40 days
Metals	1-8 oz. wide-mouth glass with Teflon-lined lid	Cool 4°C	Mercury - 28 days Other metals – 180 days
TCLP VOCs	1-4 oz. wide-mouth glass with Teflon-lined lid	Cool 4°C	14 days to TCLP extraction; 14 days to analysis
TCLP SVOCs, pesticides	1-8 oz. wide-mouth glass with Teflon-lined lid	Cool 4°C	14 days to TCLP extraction, 7 days to SW-846 extraction, 40 days to analysis
TCLP Metals, ignitability, reactivity, corrosivity	1-8 oz. wide-mouth glass with Teflon-lined lid	Cool 4°C	Metals – 180 days (28 for Hg) to TCLP extraction, 180 days (28 for Hg) to analysis Other parameters – None specified

[1] Double volume will be collected for MS/MSD or MS/duplicate samples except for VOCs (7 EnCore™ samplers will be collected).
[2] Equivalent bottles that meet the specifications of the method may be provided by the laboratory.
[3] Holding time begins from date of sample collection.

5.0 ANALYTICAL PROCEDURES

5.1 Chemical Analyses

All samples collected during field sampling activities for the removal actions will be analyzed by STL:

Severn Trent Laboratories
2417 Bond Street
University Park, Illinois 60466
(708) 534-5200
fax (708) 534-5211

Table 5-1 summarizes the analyte groups of interest, appropriate laboratory SOP number, and USEPA reference method for the analytes evaluated in the investigation.

5.2 Preventive Maintenance

As part of their LQAMP, a routine preventative maintenance program is conducted by the laboratory to minimize the occurrence of instrument failure and other system malfunctions. Designated laboratory employees regularly perform routine schedule maintenance and repair of (or coordinate with the vendor for repair of) all instruments. All maintenance that is performed is documented in the laboratory's operating record. All laboratory instruments are maintained in accordance with manufacturer's specifications. Table 5-2 provides the frequency with which components of key analytical instruments will be serviced. Table 5-3 provides a summary of the monitoring of laboratory equipment. Additional requirements are included in Appendix I of the USACE document EM 200-1-3 (USACE, 2001).

5.3 Calibration Procedures and Frequency

Calibration procedures for a specific laboratory instrument will consist of initial calibrations, initial calibration verifications, and continuing calibration verifications. The laboratory SOPs contain a description of the calibration procedures for a specific laboratory instrument, including their frequency, acceptance criteria, and the conditions that will require recalibration. This information is summarized in Table 5-4. Additional requirements are included in Appendix I of the USACE document EM 200-1-3 (USACE, 2001).

The laboratory maintains documentation for each instrument which includes the following information: instrument identification, serial number, and date of calibration, analyst, calibration solutions, and the samples associated with these calibrations.

5.4 Laboratory QC Procedures

STL has a QC program in place to ensure the reliability and validity of the analysis performed at the laboratories. All analytical procedures are documented in writing as SOPs and each SOP includes a QC section that addresses the minimum QC requirements for the procedure. The internal QC checks differ slightly for each individual procedure but in general the QC requirements include the following:

- Method blanks
- Reagent/preparation blanks (inorganic parameters)
- Instrument blanks
- MS/MSDs
- Surrogate spikes
- Laboratory duplicates
- LCSs
- Internal standard areas (gas chromatography/mass spectrometry [GC/MS] analysis)
- Mass tuning (GC/MS analysis)
- Endrin/DDT degradation checks (gas chromatography/electron capture detector [GC/ECD] analysis)
- Second, dissimilar column confirmation (GC/ECD)
- ICP serial dilutions
- ICP interference check samples

Table 5-5 summarizes the QC for each method. Additional details on QC requirements are included in Appendix I of the USACE document EM 200-1-3 (USACE, 2001).

5.5 Performance and System Audits

5.5.1 Field Audits

A field systems audit will be conducted at the discretion of the ENSR Project Manager. The purpose of the audit will be to ensure that the approved procedures documented in the FSP and QAPP are being followed. The field audit will be conducted by the ENSR Data Quality Officer and will entail an examination of field sampling records, field measurement results, field instrument operating and calibration records, sample collection, handling, and packaging procedures, QA procedures, chain of custody, sample documentation, etc. (Figure 5-1). If significant deficiencies are noted during the initial audit, follow-up audits will be conducted.

During the audit, the auditor will keep detailed notes of audit findings. Preliminary results of the audit will be reviewed with the ENSR Field Manager while on site to ensure that deficiencies adversely affecting data quality are immediately identified and corrective measures initiated. Upon completion of

the audit, the ENSR Data Quality Officer will prepare a written audit report, which summarizes the audit findings, identifies deficiencies and recommends corrective actions. This report will be submitted to the ENSR Project Quality Systems Manager and to the ENSR Project Manager, who will be responsible for ensuring that corrective measures are implemented and documented. The results of the audit process will be included in the QA reports to management, as described in Section 9 of the QAPP.

5.5.2 Laboratory Audits

5.5.2.1 Internal

Internal audits of laboratory systems and processes will be conducted periodically (a minimum of once annually) by the Laboratory QA Manager. The laboratory systems audits will include an examination of laboratory documentation on sample receiving, log-in, and storage; chain-of-custody procedures; sample preparation and analysis procedures, and instrument operating records. The auditor should ensure that all SOPs and method detection limit studies are current and appropriate for the matrices being analyzed. The Laboratory QA Manager will follow the procedures described in the LQAMP for internal systems audits.

Performance evaluation (PE) samples will be run periodically. These samples may be either commercially purchased or prepared by the Laboratory QA Manager, but will be blind to the laboratory. The Laboratory QA Manager will evaluate the analytical results of these PE samples to monitor laboratory performance.

5.5.2.2 External

Laboratory systems audits are conducted periodically by ENSR as part of their analytical subcontractor monitoring program. The laboratory audit includes a review of the following areas (Figure 5-2):

- QA organization and procedures,
- Personnel training and qualifications,
- Sample log-in procedures,
- Sample storage facilities,
- Analyst technique
- Adherence to laboratory SOPs and project QAPP,
- Compliance with QA/QC objectives,
- Instrument calibration and maintenance,
- Data recording, reduction, review, and reporting, and
- Cleanliness and housekeeping.

Preliminary results of the systems audit will be discussed with the Laboratory Manager, Laboratory Project Manager, and Laboratory QA Manager. A written report that summarizes audit findings and

recommends corrective actions will be prepared and submitted to the Laboratory Manager for response, and to the ENSR Project Manager and ENSR Project Quality Systems Manager. The results of the audit, including resolution of any deficiencies, will be included in the QA reports to management, as described in Section 9.

5.6 Nonconformance/Corrective Actions

5.6.1 Laboratory Corrective Actions

Corrective action in the laboratory may occur prior to, during, and after initial analyses. A number of conditions such as broken sample containers, multiple phases, low/high pH readings, and potentially high concentration samples may be identified during sample log-in or just prior to analysis. Following consultation with laboratory analysts and operational group leaders, it may be necessary for the Laboratory QA Manager to approve the implementation of corrective action. Conditions during or after analysis may also automatically trigger corrective action, or optional procedures. These conditions include dilution of samples, additional sample extract cleanup, and automatic reinjection/reanalysis when certain QC criteria are not met, etc. Table 5-5 summarizes corrective actions for internal QC checks.

The analyst may identify the need for corrective action. The operational group leader, in consultation with the staff, will approve the required corrective action to be implemented by the laboratory staff. The Laboratory QA Manager will ensure implementation and documentation of the corrective action. If the nonconformance causes project objectives not to be achieved, the ENSR Data Quality Manager will be notified. All levels of project management, including the USACE, will be contacted for concurrence with the proposed corrective action.

These corrective actions are performed prior to release of the data from the laboratory. The corrective action will be documented in both the laboratory's corrective action files, and the narrative data report sent from the laboratory to the ENSR Project Manager. If the corrective action does not rectify the situation, the laboratory will contact the ENSR Project Manager, who will determine the action to be taken and inform the appropriate personnel.

5.6.2 Data Assessment Corrective Actions

The need for corrective action may be identified during data verification or validation. Potential types of corrective action may include re-sampling by the field team or reinjection/reanalysis of samples by the laboratory. These actions are dependent upon the ability to mobilize the field team and whether the data to be collected is necessary to meet the required QA objectives. If the ENSR Data Quality Officer or ENSR Chemical Data Assessment Specialist identifies a corrective action situation, the ENSR Project Manager and ENSR Project Quality Systems Manager will be notified and will be responsible for informing the appropriate personnel. As stated in Section 5.6.1, if the nonconformance causes the project objectives not be achieved, all levels of project management, including the USACE, must

concur with the proposed corrective action. All corrective actions of this type will be documented by the ENSR Project Manager.

Table 5-1 Summary of Analytical Methods

Analyte Group[1]	Laboratory SOP Number[2]	Equivalent USEPA Method Number[3]
Aqueous Samples		
VOCs	VOC-624	USEPA 624
Solid Samples		
VOCs	VOC-8260B	SW-846 5035 (USEPA, 1986)[4] SW-846 8260B (USEPA, 1986)[4]
PCBs/Pesticides	SOC-CLP PEST	ASP (2000)/OLM04.2
TCLP extraction	MET-TCLP, MET-TZHE	SW-846 1311 (USEPA, 1986)[4]
Corrosivity	GEN-9045	SW-846 9045 (USEPA, 1986)[4]
Ignitability	GEN-OCIGN	SW-846 1010 (USEPA, 1986)[4]
Reactive Cyanide	GEN-RS/RCN GEN-9012 MIDI	SW-846 Chapter 7/9010B (USEPA, 1986)[4]
Reactive Sulfide	GEN-RS/RCN	SW-846 Chapter 7/9030B (USEPA, 1986)[4]

[1]See Table 3-1 for the compounds in each analyte group
[2]The most recent version of the SOP will be used at the time of analysis.
[3]References: refer to Section 10
[4]Includes updates through June 1997

Table 5-2 Preventive Maintenance for Laboratory Instruments

Instrument	Spare Parts	Activity	Frequency
GC/MS (SW-846 Methods 8260B/ 8270C and USEPA Methods 624/625)	Septa Carrier gas Filters Columns	Change septum Check carrier gas, column flow and/or inlet pressure Change carrier gas Change gas filters Change trap on Tekmar Change GC column Clean MS source Monitor vacuum Leak-check septum Check gas flow Clean VOA purge glassware Cut capillary column Replace line Replace BNA seal Clean injector port	Daily Daily As needed Semi-annually/as needed As needed As needed As needed Daily As needed As needed As needed As needed As needed As needed Daily Weekly
GC (SW-846 Methods 8081A/ 8082)	Columns Port liners Syringes	Clean detectors Check reactor temperature of ECD Clip column leader Clean injector port Check gas supply Check flow and/or inlet pressure Replace column Replace injection port liner Check syringe Change syringe	As needed Daily Daily Daily Daily Daily As needed As column change or as needed Daily As needed
ICP (SW-846 Method 6010B)	Gases O-rings Tubing	Check gases Check argon tank pressure Check aspiration tubing Check vacuum pump gauge Check cooling water system Check nebulizer Check capillary tubing Check peristaltic pump tubing Check high voltage switch Check exhaust screens Check torch, glassware, aerosol injector tube, bonnet Clean plasma torch assembly Clean nebulizer and drain chamber Clean filters Replace tubing Check o-rings	Daily Daily Daily Daily Daily Daily Daily Daily Daily Daily Daily Monthly or as needed Monthly or as needed Monthly or as needed Monthly or as needed Monthly or as needed Monthly or as needed
CVAAS (SW-846 Methods 7470A/ 7471A)	Tubing Lamps	Change drying tube Check tubing/change tubing Check gas pressure Check aperture reading Check/change lamp Clean optical cell Lubricate pump	Daily Daily/As needed Daily Daily As needed As needed As needed

Table 5-3 Monitoring of Laboratory Equipment

Equipment Type	Activity	Frequency
Ovens	Temperature monitoring Electronics serviced	Daily As needed
Refrigerators	Temperature monitoring Refrigerant system and electronics serviced	Twice daily As needed
Balances	Calibration Manufacturer cleaning and servicing	Daily or before use Annually
High-purity water system	Conductance monitoring	Daily

Table 5-4 Summary of Calibration Frequency and Criterion for Laboratory Analytical Instruments

Instrument and Method	Calibration Frequency	Calibration Standards	Acceptance Criteria
GC/MS VOCs by SW-846 8260B	Initial: As needed	Minimum 5 standards	CCC %RSD ≤30 SPCC RRF ≥0.10 or ≥ 30 (see SOP for individual compound requirements)
	Continuing: Every 12 hours	Mid-level standard	CCC %D ≤20 SPCC RRF same as initial
GC/MS VOCs by USEPA 624B	Initial: As needed	Minimum of 3 standards (one near the MDL)	%RSD <35
	Continuing: Each day	20 μg/L standard	Table 5 of the method
GC/ECD PCBs/Pesticides by ASP/ OML04.2	Initial: As needed	Minimum of 5 standards for Aroclors 1016 and 1260. Minimum of one standard (mid-level) for each of remaining aroclors.	%RSD ≤20
	Continuing: Every 12 hours	Mid-level standard of aroclors 1016 and 1260	%D ≤15
	Ending	Mid-level standard of aroclors 1016 and 1260	%D ≤15

Table 5-5 Internal QC Checks

Parameter/ Method	QC Check	Frequencies	Control Limits[1]	Laboratory Corrective Actions
VOCs USEPA 8260B	Method blanks	One per 12 hr analytical shift of a similar matrix	No target analytes above RL (see SOP)	Reextraction/reanalysis of entire batch
	Surrogate spikes	Every sample, blank, standard prior to extraction	Control limits listed in Tables 3-2 and 3-3.	Reextract or flag data (see SOP)
	MS/MSD samples	One pair per analytical batch	Control limits listed in Tables 3-2 and 3-3	Check LCS, reanalyze, flag results
	LCS	One per analytical batch	Control limits listed in Tables 3-2 and 3-3	Reextraction/reanalysis of entire batch
	Internal standards	Every sample, blank, standard prior to analysis	-50 to +100% of cont. cal. standard	Reanalysis
	GC/MS mass tuning	At beginning of each 12 hr analytical shift	Control criteria listed in SOP	Recalibrate instrument until control criteria are met
VOCs USEPA 624	Method blanks	One per 10 samples	No target analytes above QL	Reextraction/reanalysis of entire batch
	Surrogate spikes	Every sample, blank, standard prior to extraction	Control limits listed in Tables 3-1 and 3-2.	Reextract or flag data
	MS samples	One pair per 10 samples	Control limits listed in Tables 3-1 and 3-2	Check LCS, reanalyze, flag results
	LCS	One per 10 samples	Control limits listed in Tables 3-1 and 3-2	Reextraction/reanalysis of entire batch
	Internal standards	Every sample, blank, standard prior to analysis	Area within -50 to +100% and RT within 0.5 min of IS in associated calibration standard	Reanalyze sample if no interference present
	GC/MS mass tuning	At beginning of each 24 hr analytical shift	Control criteria listed in SOP	Recalibrate instrument until control criteria are met
PCBs/Pesticides ASP/OLM04.2	Method blanks	One per analytical batch	No target analytes above RL	Reextraction/reanalysis of entire batch
	Surrogate spikes	Every sample, blank, standard prior to extraction	Control limits listed in Tables 3-2 and 3-3.	Reextract or flag data (see SOP)
	MS/MSD samples	One pair per analytical batch	Control limits listed in Tables 3-2 and 3-3.	Check LCS, reanalyze, flag results
	LCS	One per analytical batch	Control limits listed in Tables 3-2 and 3-3.	Reextraction/reanalysis of entire batch
	2nd column confirmation	Every sample	RPD <40	Flag data

Parameter/ Method	QC Check	Frequencies	Control Limits[1]	Laboratory Corrective Actions

Notes:
MS/MSD = Matrix Spike/Matrix Spike Duplicate
IS = Internal Standard
RL = Reporting Limit
%R = Percent Recovery
RT = Retention Time
LCS = Laboratory Control Standard
RPD = Relative Percent Difference
SOP = Standard Operating Procedure
GC/ECD = Gas Chromatograph/Electron Capture Detector
ICP = Inductively Coupled Plasma

Analytical batch defined as maximum of 20 field samples of a similar matrix

Figure 5-1 Example of Field Audit Checklist

Project: **Site Location:** **Auditor:**	
1. Was project-specific training held?	
2. Are copies of project plan (FSP, QAPP) on site and available to personnel?	
3. Are samples being collected in accordance with the project plan?	
4. Do the numbers and locations of samples conform to the project plan?	
5. Are sample locations staked or otherwise marked?	
6. Are samples labeled in accordance with the project plan?	
7. Is equipment decontamination in accordance with the project plan?	
8. Is field instrumentation being operated and calibrated in accordance with the project plan?	
9. Are samples being preserved and containerized in accordance with the project plan?	
10. Are QC samples in accordance with the types, collection procedures, and frequencies specified in the project plan?	
11. Are chain-of-custody procedures and documents in conformance with the project plan?	
12. Are field records complete, accurate, up-to-date, and in conformance to good recordkeeping procedures?	
13. Are modifications to the project plan being communicated, approved, and documented appropriately?	
Additional Comments:	
Auditor:	**Date:**

Figure 5-2 Example of Laboratory Systems Audit Checklist

Project: **Facility Location:** **Auditor:**	
Is there a written QA Program Plan/Manual?	
Is there a designated QA Officer?	
Are facilities and equipment adequate to perform the analyses of interest?	
Review procedures and engineering controls for minimizing cross contamination.	
Review most recent interlaboratory PE sample results and recent Agency audits.	
Review SOP system. Review techniques for conformance to approved SOPs.	
Are personnel qualified and trained? Is there a formal training program and are records of training and proficiency maintained?	
Is there a designated sample custodian? Is there a sample inspection checklist? Are sample log-in procedures defined in an SOP?	
Is the laboratory area secure?	
Review internal chain-of-custody procedures.	
Are instruments operated and calibrated in accordance with SOPs? Are records of calibration maintained?	
Is equipment maintained according to written protocols? Are routine and non-routine maintenance procedures documented?	
Are samples being analyzed in conformance to the cited methods?	
Are QC samples and checks being performed at the frequencies stated in the cited methods?	
Are records complete, accurate, up-to-date, and in conformance to good recordkeeping procedures?	
How are project-specific requirements communicated to the bench level?	
Review data reduction, review, and reporting processes.	
Review data archival process (paper and electronic).	
Review audit and corrective action program.	
Additional Comments:	
Auditor:	**Date:**

6.0 DATA REDUCTION/CALCULATION OF DATA QUALITY INDICATORS

6.1 Data Reduction

The equations that will be employed in reducing analytical data are presented in the analytical SOPs identified in Table 5.1 of this QAPP and will be consistent with data reduction procedures stated in the analytical methods. All sample results (including detection limits associated with non-detected results) will be corrected for sample-specific factors such as analytical dilutions, sample volume, and percent moisture (soils and other solid samples).

6.2 Calculation of Data Quality Indicators

6.2.1 Precision

The RPD between the matrix spike and matrix spike duplicate, or sample and matrix duplicate in the case of select inorganic parameters, and field duplicate pair is calculated to compare to precision DQOs (Section 3.3.1 of this QAPP). The RPD will be calculated according to the following formula.

$$RPD = \frac{(Amount\ in\ Sample\,1 - Amount\ in\ Sample\,2)}{0.5\,(Amount\ in\ Sample\,1 + Amount\ in\ Sample\,2)}\,x\,100$$

6.2.2 Bias

In order to assure the accuracy of the analytical procedures, a field sample will be spiked with a known amount of the analytes listed in Tables 3.2 and 3.3. At a minimum, one spiked sample ("matrix spike") should be included in every set of 20 samples tested on each instrument, for each sample matrix to be tested (i.e., soil, wastewater). The increase in concentration of the analyte observed in the spiked sample, due to the addition of a known quantity of the analyte, compared to the reported value of the same analyte in the unspiked sample, determines percent recovery (%R).

Bias is similarly assessed by determining %Rs for surrogate compounds added to each field and QC sample to be analyzed for organic parameters. Bias for all analyses will be further assessed through determination of %Rs for LCSs (as well as matrix spike samples).

%R for MS/MSD results will be determined according to the following equation:

$$\%R = \frac{(Amount\ in\ Spiked\ Sample - Amount\ in\ Sample)}{Known\ \text{Amount}\ Added}\,x\,100$$

%R for LCS and surrogate compound results will be determined according to the following equation:

$$\%R = \frac{Experimental\ Concentration}{Known\ Amount\ \text{Added}} x100$$

6.2.3 Sample Quantitation/Reporting Limits

The sample quantitation limits achieved will be compared to the target MQLs listed in Table 3-1. Sample quantitation limits will be reported by the laboratory as corrected for analytical dilutions, percent solids, and sample volume. If multiple analyses are required because of analytical dilutions, the laboratory will report all analytical runs in order to ensure that the lowest possible quantitation limits are reported.

6.2.4 Completeness

Completeness is the ratio of the number of valid sample results to the total number of samples analyzed with a specific matrix and/or analysis. Following completion of the analytical testing, the percent completeness will be calculated by the following equation:

$$Completeness = \frac{(number\ of\ valid\ measurements)}{(number\ of\ measurements\ planned)} x100$$

7.0 LABORATORY OPERATIONS DOCUMENTATION

This section discusses the requirements for laboratory record keeping, reporting, and document archival. Field records are discussed in the FSP.

7.1 Laboratory Records

Laboratory record keeping will be performed according to the following protocol. All information related to analysis will be documented in controlled laboratory logbooks, instrument printouts, or other approved forms. All entries that are not generated by an automated data system will be made neatly and legibly in permanent, waterproof ink. Information will not be erased or obliterated. Corrections will be made by drawing a single line through the error and entering the correct information adjacent to the cross-out. All changes will be initialed, dated, and, if appropriate, accompanied by a brief explanation. Unused pages or portions of pages will be crossed out to prevent future data entry. Analytical laboratory records will be reviewed by the operational group leaders on a regular basis and by the Laboratory QA Manager periodically, to verify adherence to documentation requirements.

7.2 Data Reporting Procedures

Prior to being reported, the data will be subjected to the review process described in Section 8.1.

7.2.1 Data Package Format and Contents

Sample results will be provided as faxed data within the established rapid turnaround times (TAT) required for this project (Section 7.3.1). Hard copy deliverables will be provided within standard TAT. The laboratory will provide at least one copy of the hard copy report, which will conform to an ASP Category B deliverable.

7.2.2 Electronic Deliverables

An electronic data deliverable (EDD) will be provided on the same schedule as the hard copy data package. The EDD will be provided in EQUIS format. At a minimum, the EDD will contain client and laboratory sample IDs, sample results, units, sample quantitation limits, method detection limits, sample collection dates and times, sample preparation dates and times, analysis dates and times, methodologies for analysis and preparation, sample matrix, dilution factors, laboratory qualifiers, laboratory name, and batch IDs.

7.3 Data Management Procedures

7.3.1 Laboratory Turnaround Time

The TAT for all laboratory analytical results will be five business days.

7.3.2 Data Archival/Retention Requirements

Records relevant to sample analysis and the reporting of results will include:

- Sample receipt and log in,
- Chain of custody,
- Client correspondence,
- Sample preparation,
- Sample analysis,
- Instrument tuning and calibration,
- Equipment maintenance,
- Standard and reagent preparation,
- SOPs,
- Control limits,
- MDL studies,
- Peer or supervisory reviews, and
- QA audits.

Records will be maintained in a secured, limited access area as described in the LQAMP. Records will be retained for the duration of the project and for a minimum of 5 years after its termination.

7.3.3 Data Management

The data management strategy comprises the following elements:

- Assignment of unique sample codes. This code is used to track the sample from collection, through the analysis, to reporting.

- Verification and validation of analytical data (Section 8 of this QAPP).

- Loading of laboratory EDDs into a database. At a minimum, the database will contain the following fields: sample identifier, sample location, sample media type, sampling date, analysis date, laboratory analysis identifier, analyte name, concentration value, measurement units, and data qualifiers.

- Database access. Access to the database will be limited to authorized users and will be controlled by password access.

8.0 DATA ASSESSMENT PROCEDURES

8.1 Data QC Review

Prior to being released as final, laboratory data will proceed through a tiered review process. Data verification starts with the analyst who performs a 100 percent review of the data to ensure the work was done correctly the first time. It is the responsibility of the analyst to ensure that the verification of data in his or her area is complete. The data reduction and initial verification process must ensure that:

- Sample preparation and analysis information is correct and complete,
- Analytical results are correct and complete,
- The appropriate SOPs have been followed and are identified in the project records,
- Proper documentation procedures have been followed,
- All non-conformances have been documented,
- Special sample preparation and analytical requirements have been met,
- The data generated have been reported with the appropriate number of significant figures as defined by the analytical method or otherwise specified by the client.

Following the completion of the initial verification by the analyst performing the data reduction, a systematic check of the data will be performed by an experienced peer, operational group leader, or designee. This check will be performed to ensure that initial review has been completed correctly and thoroughly. Included in this review will be an assessment of the acceptability of the data with respect to:

- Adherence of the procedure used to the requested analytical method SOP,
- Correct interpretation of chromatograms, mass spectra, etc.,
- Correctness of numerical input when computer programs are used (checked randomly),
- Correct identification and quantitation of constituents with appropriate qualifiers,
- Numerical correctness of calculations and formulas (checked randomly)
- Acceptability of QC data,

- Documentation that instruments were operating according to method specifications (calibrations, performance checks, etc.),

- Documentation of dilution factors, standard concentrations, etc.,

- Sample holding time assessment.

A third-level review will be performed by the Laboratory Project Manager before results are submitted to clients. This review serves to verify the completeness of the data report and to ensure that project requirements are met for the analyses performed.

A narrative to accompany the final report will be finalized by the Laboratory Project Manager. This narrative will include relevant comments collected during the earlier reviews.

8.2 Data Verification/Validation

8.2.1 Verification of Laboratory Sample Results

Sample results received as faxes within the expedited TAT will be reviewed to ensure consistency with the MQOs (Section 3.3). This review will be the responsibility of the Data Quality Officer and will entail an evaluation of the associated QC results as follows:

- Laboratory and field blank results will be assessed to determine if contamination caused by laboratory or field activities could result in sample results that are false positives or biased high (or low in the case of negative blank contamination for metals).

- Surrogate recoveries will be reviewed for high or low biases. Surrogate recoveries of less than 10% may result in the associated data being rejected or qualified for use.

- LCS recoveries will be assessed for high or low biases. Recoveries of less than 10% may result in the associated data being rejected or qualified for use.

- MS/MSD recoveries and RPDs will be reviewed to determine bias and/or poor precision. Matrix spike recoveries of less than 10% may result in the associated data being rejected or qualified for use.

- Field duplicate results will be evaluated for agreement (as RPDs) to identify possible sample heterogeneity or problems with sample collection procedures.

Significant data quality issues noted during the verification will be brought to the immediate attention of the ENSR Project Manager.

8.2.2 Validation of Analytical Data Packages

Validation is defined as a review of the analytical data consistent with USEPA's *Contract Laboratory Program, National Functional Guidelines for Organic Data Review*, and *Contract Laboratory Program, National Functional Guidelines for Inorganic Data Review* (United States Environmental Protection Agency, 1999 and 1994), modified to reflect SW-846 procedures and project-specific criteria defined in Section 3.0 of this QAPP. Essentially, all technical holding times will be reviewed, instrument performance check samples will be evaluated, and results of initial and continuing calibrations will be reviewed and evaluated. Also, the results of all blanks, surrogate spikes, MS/MSDs, LCSs, and target compound identification and quantitation will be reviewed/evaluated by the data validator.

The overall completeness of each data package will also be evaluated by the data validator. Completeness checks will be administered on all data to determine whether deliverables specified in the QAPP are present.

Validation will be performed by ENSR under the direction of the ENSR Data Quality Officer and will be conducted in the event that significant data quality issues are noted during the verification process or at the request of the ENSR Project Manager.

Upon completion of the validation, a report will be prepared. This report will summarize the samples reviewed, elements reviewed, any non-conformances with the established criteria, and validation actions (including application of data qualifiers). Data qualifiers will be consistent with USEPA guidelines (USEPA, 1999 and 1994) and will consist of the following:

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ The analyte was not detected above the sample reporting limit; however, the reporting limit is approximate.
U The sample was analyzed for, but was not detected above the sample reporting limit.
R The sample result is rejected due to serious deficiencies. The presence or absence of the analyte cannot be verified.

8.2.3 Verification of Electronic Data

All data that is manually entered into the database will be proofed 100 percent against the original. Electronic data will be checked 100 percent after loading against laboratory data sheets for completeness and spot checked for accuracy.

8.3 DQO Reconciliation

The field and laboratory data collected during this investigation will be used to achieve the objectives identified in Section 3 of this QAPP. The QC results associated with each analytical parameter for each matrix will be compared to the MQOs presented in Section 3.3 of this QAPP. Only data generated in association with QC results meeting the stated acceptance criteria (i.e., data determined to be valid) will be considered usable for decision making purposes.

In addition, the data obtained will be both qualitatively and quantitatively assessed on a project-wide, matrix-specific, and parameter-specific basis. This assessment will be performed by the ENSR Project Manager, in conjunction with the ENSR Data Quality Officer, and the results presented and discussed in detail in the final report. Factors to be considered in this assessment of field and laboratory data will include, but not necessarily be limited to, the following.

- Conformance to the field methodologies and SOPs proposed in the FSP,
- Conformance to the analytical SOPs provided in the QAPP,
- Adherence to proposed sampling strategy,
- Presence of elevated detection limits due to matrix interferences or contaminants present at high concentrations,
- Presence of analytes not expected to be present at the facility,
- Conformance to verification/validation protocols included in the QAPP for laboratory data,
- Unusable data sets (qualified as “R”) based on the data verification and validation results,
- Data sets identified as usable for limited purposes (qualified as “J”) based on the data validation results,
- Effect of qualifiers applied as a result of data verification/validation on the ability to implement the project decision rules,
- Status of all issues requiring corrective action,
- Effect of nonconformance (procedures or requirements) on project objectives,
- Adequacy of the data as a whole in meeting the project objectives, and
- Identification of any remaining data gaps and need to reevaluate project decision rules.

9.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

QA reports will be submitted to the ENSR Project Manager and the ENSR Project Quality Systems Manager to ensure that any problems identified during the sampling and analysis programs are investigated and the proper corrective measures taken in response. The QA reports will include:

- All results of field and laboratory audits,
- Problems noted during data validation and assessment, and
- Significant QA/QC problems, recommended corrective actions, and the outcome of corrective actions.

QA reports will be prepared by the ENSR Data Quality Officer and submitted on an as-needed basis.

10.0 REFERENCES

USACE. 2001. *Requirements for the Preparation of Sampling and Analysis Plan*. EM 200-1-3.

USACE. 1998. *Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Removal Activities*. ER 1110-1-263.

USACE. 1997. *Chemical Quality Assurance for Hazardous, Toxic and Radioactive Waste (HTRW) Projects*. EM 200-1-6.

USEPA. 1983. *Methods for Chemical Analysis of Water and Wastes*, EPA 600/4-79-020, March 1983.

USEPA. 1986. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, *SW-846*, November 1986, through update III (June 1997).

USEPA. 1994a. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.* EPA-540/R-94-012.

USEPA. 1994b. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA-540/R-94-013.

DRAFT
QUALITY ASSURANCE PROJECT PLAN
for
CONSTRUCTION AND DEMOLITION OF AIR FREIGHT TERMINAL
at
SEAD-59 AND SEAD-71
DOVER AIR FORCE BASE, DOVER, DE

(Revision 0)

November 2003

Prepared by:
ENSR INTERNATIONAL

Prepared for:
UNITED STATES ARMY
ENGINEERING AND SUPPORT CENTER
HUNTSVILLE, ALABAMA

	November 3, 2003	
ENSR Project Manager		Date
	November 3, 2003	
ENSR Data Quality Officer		Date

APPENDIX B

HEALTH AND SAFETY PLAN

ENSR

HEALTH AND SAFETY PLAN

Environmental and Geotechnical Subsurface Investigation
Proposed Air Freight Terminal
Dover Air Force Base
Dover, Deleware

Prepared by: Kathleen Harvey_____

Approved by: _____ Date: _____
ENSR Project Manager

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Introduction

1.1 HASP Applicability

This site-specific Health and Safety Plan (HASP) has been developed by ENSR Corporation (ENSR). It establishes the health and safety procedures needed to minimize any potential risk to ENSR and contractor personnel implementing the geotechnical and environmental subsurface investigation at the proposed new Air Freight Terminal (AFT) at Dover Air Force Base (AFB) in Dover, Deleware. ENSR is performing this work in conjunction with Whitney, Bailey Cox and Magnani, LLC.

The provisions of this plan apply to all ENSR personnel and ENSR subcontractor personnel who may potentially be exposed to safety and/or health hazards related to activities described in Section 3.0 of this document. Proposed subcontractors to ENSR include:

- Schnable Engineering - Geotechnical Engineers
- American Geotech - Drilling Contractor

This HASP has been written to comply with the requirements of the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) and the United States Army Corps of Engineers Safety and Requirements Manual, EM 385-1-1. All activities covered by this HASP must be conducted in complete compliance with this HASP and with all applicable federal, state, and local health and safety regulations. Personnel covered by this HASP who cannot or will not comply will be excluded from site activities.

This plan will be distributed to each employee involved with investigative activities covered by this HASP. Each employee must sign a copy of the attached health and safety plan receipt and acceptance form (see Attachment A).

This HASP only pertains to the tasks that are listed in Section 3.0. A task specific HASP or addenda to this HASP will be developed at a later date for any other subsequent investigative/remedial activities at the site.

1.2 Organization/Responsibilities

The implementation of health and safety at this project location will be the shared responsibility of the ENSR Project Manager (PM), the ENSR Regional Health and Safety Manager (RHSM), the ENSR Project Site Safety Officer (SSO) and all other ENSR and contractor personnel.

1.2.1 ENSR Project Manager

The ENSR PM (Mack Astorga) is the individual who has the primary responsibility for ensuring the overall health and safety of this project. As such, the PM is responsible for ensuring that the requirements of this HASP are implemented. Some of the PM's specific responsibilities include:

- Assuring that all personnel to whom this HASP applies have received a copy of it;
- Providing the RHSM with updated information regarding environmental conditions at each site and the scope of site work;
- Providing adequate authority and resources to the on-site SSO to allow for the successful implementation of all necessary safety procedures;
- Supporting the decisions made by the SSO and RHSM;
- Maintaining regular communications with the SSO and, if necessary, the RHSM; and,
- Coordinating the activities of all subcontractors and ensuring that they are aware of the pertinent health and safety requirements for this project.

1.2.2 ENSR Regional Health and Safety Manager

The ENSR RHSM (Kathleen Harvey) is the individual responsible for the preparation, interpretation and modification of this HASP. Modifications to this HASP which may result in less stringent precautions cannot be undertaken by the PM or the SSO without the approval of the RHSM. Specific duties of the RHSM include:

- Writing, approving and amending the HASP for this project;
- Advising the PM and SSO on matters relating to health and safety at each site;
- Recommending appropriate personal protective equipment (PPE) and air monitoring instrumentation to protect personnel from potential site hazards;
- Conducting accident investigations; and,
- Maintaining regular contact with the PM and SSO to evaluate site conditions and new information which might require modifications to the HASP.

1.2.3 ENSR Site Safety Officer

All ENSR field technicians are responsible for implementing the safety requirements specified in this HASP. However, one field technician will serve as the SSO at each site covered by this SSHP. The SSO will be appointed by the PM. The SSO will be on-site during all activities covered by this HASP. The SSO is responsible for enforcing the requirements of this HASP once work begins. The SSO has the authority to immediately correct all situations where noncompliance with this HASP is noted and to immediately stop work in cases where an immediate danger is perceived. Some of the SSO's specific responsibilities include:

- Assuring that all personnel to whom this HASP applies have submitted a completed copy of the HASP receipt and acceptance form;
- Assuring that all personnel to whom this HASP applies have attended a pre-entry briefing prior to entering an exclusion zone;
- Maintaining a high level of health and safety consciousness among employees at the work site;
- Procuring the air monitoring instrumentation and performing air monitoring for ENSR activities;
- Verifying that all PPE and health and safety equipment used by ENSR is in good working order;
- Setting up and maintaining the decontamination zone and assuring proper cleanup of all site personnel;
- Notifying the PM of all noncompliance situations and stopping work in the event that an immediate danger situation is perceived;
- Monitoring and controlling the safety performance of all personnel within the established restricted areas to ensure that required safety and health procedures are being followed;
- Conducting accident/incident investigations and preparing accident/incident investigation reports;
- Conducting the pre-entry briefing as required by Section 10.2.1 of the HASP; and,
- Initiating emergency response procedures in accordance with Section 11.0 of this HASP.

1.2.4 ENSR Field Personnel and Covered Contractor Personnel

All ENSR field personnel and contractor personnel covered by this HASP are responsible for following the health and safety procedures specified in this HASP and for performing their work in a safe and responsible manner. Some of the specific responsibilities of the field personnel are as follows:

- Reading the HASP in its entirety prior to the start of on-site work;
- Submitting a completed HASP Acceptance Form and documentation of medical surveillance and training to the ENSR PM prior to the start of work;
- Attending the required pre-entry briefing prior to beginning on-site work;
- Bringing forth any questions or concerns regarding the content of the HASP to the PM or the SSO prior to the start of work;
- Reporting all accidents, injuries and illnesses, regardless of their severity, to the ENSR SSO; and
- Complying with the requirements of this HASP and the requests of the SSO.

1.2.5 Contractors

In addition to other requirements referenced in this HASP, all contractors are required to:

- Ensuring, via daily inspections, that their equipment is in good working order;
- Operating their equipment in a safe manner;
- Appointing one employee as the SSO who will interact with the ENSR SSO when necessary;
- Providing ENSR with copies of material safety data sheets (MSDS) for all hazardous materials brought on-site; and,
- Providing all the required PPE and respiratory protection for their employees.

1.3 Modification of the HASP/Modification of Change

The procedures in this HASP have been developed based on information collected during a previous base-wide Remedial Investigation. The procedures in this HASP have been developed

based on current knowledge regarding the specific chemical and physical hazards that are known or anticipated for the proposed geotechnical/environmental subsurface investigation. Every effort has been made to address the chemical hazards that may be encountered during the implementation of the work plan. Similarly, this document also discusses the physical hazards associated with the proposed remedial activities. However, unanticipated site-specific conditions or situations may occur during the implementation of this project that are not addressed in this document. As such, this HASP must be considered a *working document* that is subject to change to meet the needs of this dynamic project.

Therefore, ENSR and their contractors will complete a Job Hazard Analysis (JHA) prior to the beginning of each major phase of work to ensure that all chemical and physical hazards have been properly addressed. The use of new techniques will be reviewed and if new hazards are associated with the proposed changes, they will be documented on the JHA. An effective control measure must also be identified for each new hazard. JHAs will be reviewed by the Site Safety Officer (SSO) prior to being implemented. Once approved, the JHAs will be reviewed with all field staff during the daily safety meeting. The JHA form to be used for this program is presented in this HASP as Attachment B.

Any significant modifications must be incorporated into the written document as addenda and the HASP must be reissued. The ENSR PM will ensure that all personnel covered by this HASP receive copies of all issued addenda. Sign-off forms will accompany each addendum and must be signed by all personnel covered by the addendum. Sign-off forms will be submitted to the ENSR PM. The HASP addenda should be distributed during the daily safety meeting so that they can be reviewed and discussed. Attendance forms will be collected during the meeting.

2. Site Description and History

2.1 Site Location

ENSR understands that the United States Army Corps of Engineers, Philadelphia District has been requested by the Air Mobility Command (AMC) of the United States Air Force to procure a design-build contract and perform design and construction oversight for a new Air Freight Terminal (AFT) at Dover Air Force Base. The existing AFT (Building 505) was severely damaged due to heavy snow in February 2003, is old (circa 1950) and cannot be economically upgraded to meet the current and future needs of the AMC.

The current AFT is located at Atlantic Street and 10th Avenue on the Dover AFB. This area is located in near and close proximity to C-5 aircraft parking areas.

2.2 Potential Soil and Groundwater Contamination

During a base-wide remedial investigation (RI), areas located northwest of existing Building 505 were investigated due to a potential release of JP-4 in this area. The areas investigated are referred to as ST05 and ST37. Soil and groundwater samples collected during the RI and during subsequent sampling events indicate that these areas have been impacted by JP-4. It is therefore possible that the area of proposed investigation around existing Building 505 may also be impacted with similar types of contamination.

3. Scope of Work

3.1 Purpose of Investigation

The primary objectives of this project is to perform a geotechnical foundation investigation in the area of the proposed new AFT and to characterize soils in the proposed footprint to determine how soils will be managed and disposed of during the construction of the new AFT.

3.2 Field Tasks

The following field tasks will be implemented during the proposed soil investigation:

- Advance up to 30 soil borings, using hollow stem auger drilling techniques, around Building 505;
- Collect soil samples from each boring for subsequent laboratory analyses;
- Collect groundwater samples, using low-flow sampling techniques, for subsequent laboratory analyses; and,
- Collect samples of drummed soil cuttings for characterization analysis

4. Chemical Hazard Assessment and Controls

4.1 Chemical Hazards

The potential chemical hazard associated with the proposed investigation is Jet fuel JP-4 and its constituents.

4.1.1 Jet Fuel (JP-4)

Jet fuel JP-4 (jet propellant 4) is a complex combination of hydrocarbons including straight chain hydrocarbons, monocycloparaffins, aromatic hydrocarbons (i.e. benzene, toluene, ethylbenzene and xylenes) and olefins (for turbine engines only). The main component of jet fuel JP-4 is kerosene. Jet fuel is a moderate skin, eye and respiratory irritant. Acute effects of systemic exposure via inhalation of vapors includes central nervous system depression. Symptoms of which include; dizziness, headache, nausea, giddiness, staggering gait and other drunken-like behaviors.

The Occupational Safety and Health Administration (OSHA) has not established a permissible exposure limit (PEL) specifically for jet fuels. The National Institute of Safety and Health (NIOSH) has established a recommended exposure limit (REL) of 100 mg/m3 or 15 ppm for kerosene, which is the major component of JP-4.

In the absence of a specific OSHA PEL for jet fuel and kerosene, all action levels for the donning of respiratory protection will be based in NIOSH's REL of 15 ppm for kerosene.

4.2 Hazardous Substances Brought On-Site by ENSR or ENSR Subcontractors

A material safety data sheet (MSDS) must be available for each hazardous substance that ENSR or ENSR subcontractors bring on the property. This includes solutions/chemicals that will be used to decontaminate sampling equipment and calibration gases for monitoring instrumentation. All containers of hazardous materials must be labeled in accordance with OSHA's Hazard Communication Standard.

4.3 Chemical Hazard Assessment/Control

4.3.1 Hazard Assessment

Based on previous investigations in areas located in close proximity to the area currently being investigated and the historical use of jet fuels at the base, the field team should expect to encounter petroleum-related contamination during the proposed investigation. The potential routes of exposure to the contaminants of concern include the inhalation of petroleum vapors during drilling and direct dermal contact with soils and/or groundwater during sampling.

4.3.2 Hazard Control

ENSR will use a combination of exposure controls during the proposed investigations:

- ENSR will be conducting air monitoring to determine the presence of petroleum and/or volatile organic vapors during the proposed soil boring program. As a precaution, if exposures exceed the action levels as defined in Section 6.1, respiratory protection as discussed in Section 7.2, will be donned.

- To avoid direct dermal contact with contaminated media, protective clothing, as described in Section 7.1, will be required when collecting samples and decontaminating sampling equipment.

- Although highly unlikely, exposure to all of the contaminants of concern may occur via ingestion (hand-to-mouth transfer). The decontamination procedures described in Section 9.0 address personal hygiene issues that will limit the potential for contaminant ingestion.

5. Physical Hazards and Controls

5.1 Coordination with Base Flight Operations

The proposed investigation is being conducted near and in close proximity to C-5 aircraft parking areas. Coordination with Base flight operations manager will be required for work near the aircraft parking areas.

5.2 Vehicular Traffic

If work is being performed in a high traffic area (i.e. parking lot, shipping/receiving area, loading dock), the following precautions should be followed. All are designed to draw attention to you and to warn other people of your presence:

- Notify the property owner of your work location, dates of work and the anticipated work times. Suggest the possibility of a detour around the work area.

- Wear an orange safety vest. If work is being performed at dawn, dusk or evening the vests must have reflective tape.

- Set up traffic cones 50 feet in front of the work area. "Men at Work" signs should also be placed in a conspicuous area to warn others of your presence.

5.3 Utility Hazards

5.3.1 Underground Utilities

The State of Deleware requires that a utility clearance be performed at least two (2) days prior to initiation of any subsurface work. The proposed drilling contractor will contact Miss Utility (1-800-282-8555 to request a mark-out of natural gas, electric, telephone, cable television, water and sewer lines in the proposed drilling locations. Work will not begin until the required utility clearances have been performed. Public utility clearance organizations typically do not mark-out underground utility lines that are located on private property. As such, the contractor must exercise due diligence and try to identify the location of any private utilities on the properties being investigated. The contractor can fulfill this requirement in several ways, including:

- obtaining as-built drawings for the areas being investigated from the property owner;

- visually reviewing each proposed drilling locations with the property owner or knowledgeable site representative;

- performing a geophysical survey to locate utilities or hiring a private line locating firm to determine the location of utility lines that are present at the property;

- identifying a no-drill zone or relocate proposed boring locations; or

- hand digging in the proposed drilling locations if insufficient data is available to accurately determine the location of the utility lines.

5.3.2 Overhead Utility Hazards

Be particularly aware of overhead power lines in the work area. Any vehicle or mechanical equipment capable of having parts of its structure elevated (drill rig, crane etc.) near energized overhead lines shall be operated so that a clearance of at least 10 feet is maintained. If the voltage is higher than 50kV, the clearance shall be increased 4 inches for every 10kV over that voltage.

5.4 Drilling Hazards

Use of a drill rig to advance soil borings will require all personnel in the vicinity of the operating rig to wear steel-toed boots, hardhats, hearing protection and safety eyewear. Personnel shall not remain in the vicinity of operating equipment unless it is required for their work responsibilities. Additionally, the following safety requirements must be adhered to:

- All drill rigs and other machinery with exposed moving parts must be equipped with an operational emergency stop device. Drillers and geologists must be aware of the location of this device. This device must be tested prior to job initiation and periodically thereafter. The driller and helper shall not simultaneously handle augers unless there is a standby person to activate the emergency stop.

- The driller must never leave the controls while the tools are rotating unless all personnel are kept clear of rotating equipment.

- A long-handled shovel or equivalent must be used to clear drill cuttings away from the hole and from rotating tools. Hands and/or feet are not to be used for this purpose.

- A remote sampling device must be used to sample drill cuttings if the tools are rotating or if the tools are readily capable of rotating. Samplers must not reach into or near the rotating equipment. If personnel must work near any tools that could rotate, the driller must shut down the rig prior to initiating such work.

- Drillers, helpers and geologists must secure all loose clothing and jewelry when in the vicinity of drilling operations.

- Only equipment approved by the manufacturer may be used in conjunction with site equipment and specifically to attach sections of drilling tools together. Pins that protrude excessively from augers shall not be allowed

- No person shall climb the drill mast while tools are rotating.

- No person shall climb the drill mast without the use of ANSI-approved fall protection (approved belts, lanyards and a fall protection slide rail) or portable ladder which meets the requirements of OSHA standards.

5.5 Cuts and Lacerations

Employees are at an increased risk of cutting themselves with the knives used to cut tubing used to collect groundwater samples. A tube cutter should be used for this purpose to eliminate the potential cut hazard. If knives or blades are used to cut the tubing, follow the safety precautions listed below:

- Keep your free hand out of the way

- Secure your work if cutting through thick material

- Use only sharp blades; dull blades require more force that results in less knife control

- Pull the knife toward you; pulling motions are easier to manage

- Don't put your knife in your pocket

- Use a self-retracting blade

- Wear leather or Kevlar™ gloves when using knives or blades.

5.6 Noise Exposure

The use of the drilling rig may generate noise levels that will require the use of hearing protection in the immediate vicinity. The work location is also located near and in close proximity to the C-5 aircraft parking areas. The planes drive by the work area and the noise levels exceed 85 dbA.

Appropriate earmuffs or earplugs should be worn to prevent overexposure during drilling and flight operations in the vicinity of the work area. Due to the level of noise generated by C-5 aircraft, the following noise protectors will be worn by ENSR and contractors during flight operations:

- Howard Leight Leightening™ Muff (NRR 31) in combination with E-A-R™ ear plugs

This combination of protectors will provide a total NRR of approximately 34.

5.7 Back Safety

Using the proper techniques to lift and move heavy pieces of equipment is important to reduce the potential for back injury. The following precautions should be implemented when lifting or moving heavy objects:

- Use mechanical devices to move objects that are too heavy to be moved manually (i.e. use a drum dolly/truck to move drums of investigation-derived waste).
- If mechanical devices are not available, ask another person to assist you.
- Bend at the knees, not the waist. Let your legs do the lifting.
- Do not twist while lifting.
- Bring the load as close to you as possible before lifting.
- Be sure the path you are taking while carrying a heavy object is free of obstructions and slip, trip and fall hazards.

5.8 Cold Stress

Types of Cold Stress

Cold injury is classified as either localized, as in frostbite, frostnip or chilblain; or generalized, as in hypothermia. The main factors contributing to cold injury are exposure to humidity and high winds, contact with wetness and inadequate clothing.

The likelihood of developing frostbite occurs when the face or extremities are exposed to a cold wind in addition to cold temperatures. The freezing point of the skin is about 30° F. The fluids around the cells of the body tissue freeze, causing the skin to turn white. This freezing is due to

exposure to extremely low temperatures. As wind velocity increases, heat loss is greater and frostbite will occur more rapidly.

Symptoms of Cold Stress

The first symptom of frostbite is usually an uncomfortable sensation of coldness, followed by numbness. There may be a tingling, stinging or aching feeling in the effected area. The most vulnerable parts of the body are the nose, cheeks, ears, fingers and toes.

Symptoms of hypothermia, a condition of abnormally low body temperature, include uncontrollable shivering and sensations of cold. The heartbeat slows and may become irregular, the pulse weakens and the blood pressure changes. Pain in the extremities and severe shivering can be the first warning of dangerous exposure to cold.

Maximum severe shivering develops when the body temperature has fallen to 95° F. This must be taken as a sign of danger and exposure to cold must be immediately terminated. Productive physical and mental work is limited when severe shivering occurs.

Methods to Prevent Cold Stress

When the ambient temperature, or a wind chill equivalent, falls to below 40° F (American Conference of Governmental Industrial Hygienists recommendation), site personnel who must remain outdoors should wear insulated coveralls, insulated boot liners, hard hat helmet liners and insulated hand protection. Wool mittens are more efficient insulators than gloves. Keeping the head covered is very important, since 40% of body heat can be lost when the head is exposed. If it is not necessary to wear a hard hat, a wool knit cap provides the best head protection. A face mask may also be worn.

Persons should dress in several layers rather than one single heavy outer garment. The outer piece of clothing should ideally be wind and waterproof. Clothing made of thin cotton fabric or synthetic fabrics such as polypropylene is ideal since it helps to evaporate sweat. Polypropylene is best at wicking away moisture while still retaining its insulating properties. Loosely fitting clothing also aids in sweat evaporation. Denim is not a good protective fabric. It is loosely woven which allows moisture to penetrate. Socks with a high wool content are best. If two pairs of socks are worn, the inner sock should be smaller and made of cotton, polypropylene or a similar type of synthetic material that wick away moisture. If clothing becomes wet, it should be taken off immediately and a dry set of clothing put on.

If wind conditions become severe, it may become necessary to shield the work area temporarily. The SSO and the PM will determine if this type of action is necessary. Heated break trailers or a

designated area that is heated should be available if work is performed continuously in the cold at temperatures, or equivalent wind chill temperatures, of 20° F.

Dehydration occurs in the cold environment and may increase the susceptibility of the worker to cold injury due to significant change in blood flow to the extremities. Drink plenty of fluids, but limit the intake of caffeine.

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6. Air Monitoring

6.1 Direct Reading Instruments

Petroleum-related contamination may encountered during the proposed investigation. Therefore, the ENSR field team will be using a photoionization detector (PID) to screen the work areas and employee breathing zones for the presence of total VOCs during the proposed activities.

Instrument 1 - RaeSystems Mini-Rae 2000 PID with a 10.6 ev lamp

A RaeSystems Mini-Rae 2000 PID with a 10.6 ev lamp will be used to monitor the breathing zone of personnel during all subsurface investigations, soil removal and sampling activities. When the PID indicates sustained (15 minute) breathing zone vapor concentrations in excess of 15 units or more, Level C respiratory protection, as described in Section 7.2, will be donned. This action limit is based on the NIOSH REL for kerosene and the reported response factor (1.0) of kerosene to the selected monitoring instrument.

6.2 Personal Air Sampling

Personal air sampling will not be conducted by ENSR during the activities covered by this HASP.

6.3 Calibration and Recordkeeping

Equipment used by ENSR will be calibrated in accordance with the manufacturer's instructions and ENSR's standard operating procedures. A log of PID reading will be kept in the field notebook. Daily calibration information will also be recorded in the field notebook.

7. Personal Protective Equipment

Personal protective equipment (PPE) will be worn during these activities to prevent on-site personnel from being injured by the safety hazards posed by the site and/or the activities being performed. In addition, chemical protective clothing will be worn to prevent direct dermal contact with the site's chemical contaminants. The following table describes the PPE and chemical protective clothing to be worn for general site activities and for certain specific tasks.

7.1 Chemical Protective Clothing

PPE Item	Task 1	Task 2	Task 3
Hard Hat	✓	✓	
Steel Toed Safety Shoes	✓	✓	✓
Traffic Vest (if work is being conducted in high traffic area)			
Safety Glasses with Sideshields	✓	✓	✓
Kevlar gloves			*
Inner PVC/Outer Nitrile Gloves		✓	✓
Hearing Protection (Howard Leight Leightening Muff with E-A-R plugs)	✓	✓	**

Task 1 – Soil Boring

Task 2 – Sample Collection During Soil Boring

Task 3 - Groundwater Sampling
* - when cutting tubing
** - when C-5's are operating

7.2 Respiratory Protection

A RaeSystems Mini-Rae 2000 PID with a 10.6 ev lamp will be used to monitor the breathing zone of personnel during all subsurface investigation and sampling activities. When the PID indicates sustained (15 minute) breathing zone vapor concentrations in excess of 15 units or more, the following respiratory protection will be donned:

Level C Respiratory Protection - Half-mask air-purifying respirator with organic vapor cartridges

Respiratory protection should also be donned if odors become objectionable at any time or if respiratory tract irritation is noticed.

All employees who are expected to don respiratory protection must have successfully passed a qualitative or quantitative fit-test within the past year for the brand, model and size respirator they plan to don during the proposed activities.

7.3 Other Protective Equipment

The following additional safety items should be available at the site:

- Portable, hand-held eyewash bottles
- First aid kit
- Multi-purpose fire extinguisher (on machinery is sufficient)
- Portable phones

8. Site Control

8.1 Site Access

Base passes are required for all personnel working at the site. Passes will be issued by the Contracting Officer.

8.2 Designation of Zones

To prevent both exposure of unprotected personnel and migration of contamination due to tracking by personnel or equipment, work areas along with personal protective equipment requirements will be clearly identified.

ENSR designates work areas or zones as suggested in the "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," NIOSH/OSHA/USCG/EPA, November, 1985. They recommend the areas surrounding each of the work areas to be divided into three zones:

- Exclusion or "hot" Zone
- Contamination Reduction Zone (CRZ)
- Support Zone

8.2.1 Exclusion Zone

An exclusion zone will be established around each drilling location. This zone will serve to protect base visitors and employees from any chemical or physical hazards that are associated with the implementation of the proposed investigations. The perimeter of the exclusion zone for the drilling activities will be marked with Caution tape or indicated by traffic cones. All personnel entering an exclusion zone must wear the prescribed level of protective equipment.

8.2.2 Contamination Reduction Zone

The decontamination zone will be established adjacent to each work area. Personnel will remove contaminated gloves and other disposable items in this area and place them in a plastic bag until they can be properly disposed of.

8.2.3 Support Zone

At this site the support zone will include the area outside of the exclusion zone.

8.3 Safety Practices

The following measures are designed to augment the specific health and safety guidelines provided in this plan.

- The "buddy system" will be used at all times by all field personnel. No one is to perform field work alone. Standby team member must be intimately familiar with the procedures for initiating an emergency response.

- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in the immediate work area and the decontamination zone.

- Smoking is prohibited in all work areas. Matches and lighters are not allowed in these areas.

- Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking or any other activities.

- Beards or other facial hair that interfere with respirator fit are prohibited.

- The use of alcohol or illicit drugs is prohibited during the conduct of field operations.

- All equipment must be decontaminated or properly discarded before leaving the site in accordance with the project work plan.

9. Decontamination

9.1 Personal Decontamination

Proper decontamination is required of all personnel before leaving the site. Decontamination will occur within the contamination reduction zone. Disposable PPE will be removed in the decontamination zone and placed in garbage bags.

If worn, respirators will be cleaned after each use with respirator wipe pads and will be stored in plastic bags after cleaning.

Regardless of the type of decontamination system required, a container of potable water and liquid soap should be made available so employees can wash their hands and face before leaving the site for lunch or for the day.

10. Medical Monitoring and Training Requirements

10.1 Medical Monitoring

All personnel performing activities covered by this HASP must be active participants in a medical monitoring program that complies with 29 CFR 1910.120(f). Each individual must have completed an annual surveillance examination and/or an initial baseline examination within the last year prior to performing any work on the site covered by this HASP.

10.2 Health and Safety Training

10.2.1 HAZWOPER

All personnel performing activities covered by this HASP must have completed the appropriate training requirements specified in 29 CFR 1910.120(e). Each individual must have completed an annual 8-hour refresher-training course and/or initial 40-hour training course within the last year prior to performing any work on the sites covered by this HASP.

10.2.2 Pre-Entry Briefing

The SSO will conduct a pre-entry briefing before site activities begin. HASP receipt and acceptance sheets will be collected at this meeting. Short safety refresher meetings will be conducted, as needed, throughout the duration of the project. Attendance of the pre-entry meeting is mandatory and will be documented by the ENSR SSO. An attendance form is presented in Attachment C.

11. Emergency Response

OSHA defines emergency response as any "response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual-aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result in an uncontrolled release of a hazardous substance." According to ENSR policy, ENSR personnel shall not participate in any emergency response where there are potential safety or health hazards (i.e., fire, explosion, or chemical exposure). ENSR response actions will be limited to evacuation and medical/first aid as described within this section below. As such this section is written to comply with the requirements of 29 CFR 1910.38 (a).

The basic elements of an emergency evacuation plan include:

- employee training,
- alarm systems,
- escape routes,
- escape procedures,
- critical operations or equipment,
- rescue and medical duty assignments,
- designation of responsible parties,
- emergency reporting procedures and
- methods to account for all employees after evacuation.

11.1 Employee Training

Employees must be instructed in the site-specific aspects of emergency evacuation. On-site refresher or update training is required anytime escape routes or procedures are modified or personnel assignments are changed.

11.2 Alarm Systems/Emergency Signals

An emergency communication system must be in effect at all sites. The most simple and effective emergency communication system in many situations will be direct verbal communications. Each site must be assessed at the time of initial site activity and periodically as the work progresses. Verbal communications must be supplemented anytime voices can not be clearly perceived above ambient noise levels (i.e., noise from heavy equipment; drilling rigs, backhoes, etc.) and anytime a clear line-of-sight can not be easily maintained amongst all ENSR personnel because of distance, terrain or other obstructions.

11.2.1 ENSR Work Area

Verbal communications will be adequate to warn employees of hazards associated with the immediate work area. ENSR personnel will be equipped with portable telephones to facilitate communications with base and/or local emergency responders.

11.2.2 Base Specific Emergencies

The SSO will determine if any specific procedures are to be followed in the event of a base-related emergency. These procedures will be reviewed with the field team during the pre-entry briefing.

11.3 Escape Routes and Procedures

The escape route from the site will be via Atlantic Street or 10th Avenue to the closest gate of the base. The routes will be verified with a facility representative and reviewed during the pre-entry briefing.

11.4 Rescue and Medical Duty Assignments

The phone numbers of the police and fire departments, ambulance service, local hospital, and ENSR representatives are provided in the emergency reference sheet. This sheet will be posted in the site vehicle.

In the event an injury or illness requires more than first aid treatment, the SSO will accompany the injured person to the medical facility and will remain with the person until release or admittance is determined. The escort will relay all appropriate medical information to the on-site project manager and the RHSM.

If the injured employee can be moved from the accident area, he or she will be brought to the CRZ where their PPE will be removed. If the person is suffering from a back or neck injury the person will not be moved and the requirements for decontamination do not apply. The SSO must familiarize the responding emergency personnel about the nature of the site and the injury. If the responder feels that the PPE can be cut away from the injured person's body, this will be done on-site. If this not feasible, decontamination will be performed after the injured person has been stabilized.

11.5 Designation of Responsible Parties

The SSO is responsible for initiating emergency response. In the event the SSO can not fulfill this duty, the alternate SSO will take charge. All personnel on site are responsible for knowing the escape route from the site and where to assemble after evacuation.

11.6 Employee Accounting Method

The SSO is responsible for identifying all ENSR personnel on-site at all times. On small, short duration jobs this can be done informally, using head-counts, as long as accurate accounting is possible.

11.7 Accident Reporting and Investigation

11.7.1 ENSR Requirements

Any incident (other than minor first aid treatment) resulting in injury, illness or property damage requires an accident investigation and report. The investigation should be conducted as soon as emergency conditions are under control. The purpose of the investigation is not to attribute blame but to determine the pertinent facts so that repeat or similar occurrences can be avoided. An ENSR accident investigation form is presented in Attachment D of this HASP. The injured ENSR employee's supervisor and the RHSM should be notified immediately of the injury.

If a subcontractor employee is injured, they are required to notify the ENSR SSO. Once the incident is under control, the subcontractor will submit a copy of their company's accident investigation report to the ENSR SSO.

11.7.2 Army Corp Reporting Requirements

Any incident (other than minor first aid treatment) resulting in injury, illness or property damage must also be reported to the Army Corp of Engineers via their Accident Investigation Report which is presented in Attachment E.

EMERGENCY REFERENCES

Ambulance:	Dialing 9-1-1 will contact the Base Dispatcher
Fire:	Dialing 9-1-1 will contact the Base Dispatcher
Police:	Dialing 9-1-1 will contact the Base Dispatcher
Medical Services:	302-674-4700 Kent Memorial Hospital 640 South State St Dover
Directions to Hospitals:	From 10th Street, head north-west on Atlantic Street. Go 0.8 miles and turn left onto Hwy 1.Go 0.1 miles and bear right onto unnamed road to US 113 North. Go less than 0.1 miles and bear right onto US 113 North. Go 2 miles and turn left onto Roberta Ave. Go 0.1 and turn left onto US 13 South. Go 0.7 miles and turn right onto Pine St. Go 0.4 miles and turn right onto 13 Alt. Go 0.3 miles to Kent County Hospital.

ENSR Project Representatives:

ENSR/WESTFORD, MA	978-589-3000
-Kathleen Harvey (RHSM)	x 3325
ENSR/LANGHORNE, PA	215-757-5900
-Mack Astorga (PM)	

Attachment A

Health and Safety Plan Receipt and Acceptance Form

ENSR

Health and Safety Plan Receipt and Acceptance Form

Environmental and Geotechnical Subsurface Investigation
Air Freight Terminal
Dover Air Force Base
Dover, Deleware

I have received a copy of the Health and Safety Plan prepared for the above-referenced site and activities. I have read and understood its contents and I agree that I will abide by its requirements.

Name (Print) _____

Signature _____ Date: _____

Representing (Print) _____

Company Name

Attachment B

Job Hazard Analysis Form

Job Hazard Analysis Form

PRINCIPAL STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
SAFETY EQUIPMENT	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**

ENSR

Attachment C

Health and Safety Plan Pre-Entry Briefing Attendance Form

ENSR

Health and Safety Plan Pre-Entry Briefing Attendance Form

Environmental and Geotechnical Subsurface Investigation
Air Freight Terminal
Dover Air Force Base
Dover, Deleware

Briefing Conducted By: _____

Date Performed: _____

Printed Name	Signature	Representing

Attachment D

Supervisor's Accident Investigation Report Form

SUPERVISOR'S ACCIDENT INVESTIGATION REPORT

Injured Employee _____ Job Title _____

Home Office _____ Division/Department _____

Date/Time of Accident _____

Location of Accident _____

Witnesses to the Accident _____

Injury Incurred? _____ Nature of Injury

_____

Engaged in What Task When Injured? _____

_____

Will Lost Time Occur? _____ How Long? _____ Date Lost Time Began

Were Other Persons Involved/Injured? _____

_____

How Did the Accident Occur? _____

_____

_____

_____

What Could Be Done to Prevent Recurrence of the Accident? _____

_____

_____

What Actions Have You Taken Thus Far to Prevent Recurrence? _____

_____

_____

Supervisor's Signature _____ Title _____ Date

Reviewer's Signature _____ Title _____ Date _____

Note: If the space provided on this form is insufficient, provide additional information on a separate page and attach. The completed accident investigation report must submitted to the Regional Health and Safety Manager within two days of the occurrence of the accident.

(For Safety Staff only)	REPORT NO.	EROC CODE	UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT (For Use of this Form See Attached Instructions and USACE Suppl to AR 385-40)	REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)

1. ACCIDENT CLASSIFICATION

PERSONNEL CLASSIFICATION	INJURY/ILLNESS/FATAL	PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED	DIVING
GOVERNMENT ☐ CIVILIAN ☐ MILITARY	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ CONTRACTOR	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ PUBLIC	☐ FATAL ☐ OTHER		☐	

2. PERSONAL DATA

a. Name *(Last, First, MI)*

b. AGE

c. SEX ☐ MALE ☐ FEMALE

d. SOCIAL SECURITY NUMBER

e. GRADE

f. JOB SERIES/TITLE

g. DUTY STATUS AT TIME OF ACCIDENT ☐ ON DUTY ☐ TDY ☐ OFF DUTY

h. EMPLOYMENT STATUS AT TIME OF ACCIDENT ☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ VOLUNTEER ☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL ☐ TEMPORARY ☐ STUDENT ☐ OTHER *(Specify)*

3. GENERAL INFORMATION

a. DATE OF ACCIDENT *(month/day/year)*

b. TIME OF ACCIDENT *(Military time)* hrs

c. EXACT LOCATION OF ACCIDENT

d. CONTRACTOR'S NAME (1) PRIME: (2) SUBCONTRACTOR:

e. CONTRACT NUMBER ☐ CIVIL WORKS ☐ MILITARY ☐ OTHER *(SPECIFY)*

f. TYPE OF CONTRACT ☐ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER *(SPECIFY)*

g. HAZARDOUS/TOXIC WASTE ACTIVITY ☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER *(Specify)*

4. CONSTRUCTION ACTIVITIES ONLY *(Fill in line and corresponding code number in box from list - see instructions)*

a. CONSTRUCTION ACTIVITY (CODE) #

b. TYPE OF CONSTRUCTION EQUIPMENT (CODE) #

5. INJURY/ILLNESS INFORMATION *(Include name on line and corresponding code number in box for items e, f & g - see instructions)*

a. SEVERITY OF ILLNESS/INJURY (CODE) #

B. ESTIMATED DAYS LOST

C. ESTIMATED DAYS HOSPITALIZED

D. ESTIMATED DAYS RESTRICTED DUTY

e. BODY PART AFFECTED (CODE)
PRIMARY #
SECONDARY (CODE) #

f. NATURE OF ILLNESS / INJURY (CODE) #

g. TYPE AND SOURCE OF INJURY/ILLNESS
TYPE (CODE) #
SOURCE (CODE) #

6. PUBLIC FATALITY *(Fill in line and correspondence code number in box - see instructions)*

a. ACTIVITY AT TIME OF ACCIDENT (CODE) #

b. PERSONAL FLOATATION DEVICE USED? ☐ YES ☐ NO ☐ N/A

7. MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE ☐ PICKUP/VAN ☐ AUTOMOBILE ☐ TRUCK ☐ OTHER *(Specify)*

b. TYPE OF COLLISION ☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END ☐ BROADSIDE ☐ ROLL OVER ☐ BACKING ☐ OTHER *(Specify)*

c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
(1) FRONT SEAT			
(2) REAR SEAT			

8. PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM	B. OWNERSHIP	C. $ AMOUNT OF DAMAGE
(1)		
(2)		
(3)		

9. VESSEL/FLOATING PLANT ACCIDENT *(Fill in line and correspondence code number in box from list - see instructions)*

a. TYPE OF VESSEL/FLOATING PLANT (CODE) #

b. TYPE OF COLLISION/MISHAP (CODE) #

10. ACCIDENT DESCRIPTION *(Use additional paper, if necessary)*

See attached page.

APPENDIX C

Engineering and Design - Requirements for the Preparation of Sampling and Analysis Plans

(EM 200-1-3)

APPENDIX D

ENSR Proposal No. 09000-I38 dated August 8, 2003

APPENDIX E

Army Corps of Engineers (ACOE) Request for Proposal (RFP)

APPENDIX B

LABORATORY ANALYTICAL REPORTS

Amendment No. 0010

SEVERN TRENT STL

STL Chicago
2417 Bond Street
University Park, IL 60466

Tel: 708 534 5200 Fax: 708 534 5211
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SEVERN TRENT LABORATORIES ANALYTICAL REPORT

JOB NUMBER: 221990

Prepared For:

ENSR
2005 Cabot Boulevard West
Suite 100
Langhorne, PA 19047

Project: Dover AFB

Attention: Mack Astorga

Date: 11/25/2003

Signature

Name: Eric A. Lang

Title: Project Manager

E-Mail: elang@stl-inc.com

11/26/03
Date

STL Chicago
2417 Bond Street
University Park, IL 60466

PHONE: (708) 534-5200
FAX..: (708) 534-5211

This Report Contains (49) Pages

Severn Trent Laboratories Chicago
GC/MS Case Narrative

ENSR
Dover AFB
Job Number: 221990
VOA DATA

1. The samples were prepared and analyzed within the recommended hold times from the date of collection.

2. The Method Blanks and Extraction Blanks had all target compounds below the reporting limits.

3. The LCS samples had all controlled spike recoveries within the in-house generated QC limits.

4. Matrix Spike and Matrix Spike Duplicate analyses were not performed on this sample set.

5. The volatile samples had all surrogate recoveries within the in-house generated QC limits.

6. The water and TCLP samples were prepared using Method 5030. The soil samples were prepared for the low level soil procedure using Method 5035. The samples were analyzed following SW846 Method 8260B and 8000B. All initial and continuing calibration criteria were met per method or SOP (for minimum R values for certain compounds). The low point in the initial calibration verifies the base reporting limits. The target compounds were quantitated using the initial calibration.

7. The volatile samples had all internal standard areas and retention times within the acceptance limits as compared to the corresponding calibration verification standard.

8. The water samples were analyzed using a 25-mL purge volume. The TCLP samples were analyzed using a 5.0-mL purge volume. Due to the nature of the TCLP method, a 1/20 (for TCLP) dilution factor was automatically added into the method. The soil samples were analyzed using the 5035 low level soil procedure. The soil results and reporting limits were adjusted to account for the sample weights, the analytical procedure and on a dry weight basis.

John Nagel
GC/MS Dept.

11-20-03
Date

STL Chicago
Extractable Hydrocarbon Case Narrative

ENSR
Dover AFB
Job# 221990-1 and 2
Diesel Range Organics (DRO)

1. The water sample associated with this SDG was extracted based on SW846 Method 3510. The soil sample was extracted based on the SW846 method 3541. The extracts were analyzed for DRO based on SW846 method 8015B. A HP5890 gas chromatograph equipped with a flame ionization detector and a Xti-5 column was used for the analysis.

2. All required holding times were met for the extraction and analysis.

3. The method blanks were below the reporting limit for DRO.

4. The surrogate compounds used for this analysis were o-Terphenyl and 2-Fluorobiphenyl. All surrogate recoveries were within statistical control limits except the blank spike associated with the soil sample (prep batch 101070), which had 2-Fluorobiphenyl with 112% recovery.

5. All blank spike recoveries were within statistical control limits. A solution of Diesel Fuel was used for spiking.

6. A matrix spike and a matrix spike duplicate were not performed on a sample from this SDG.

7. A Diesel Fuel #2 standard was used for quantitating DRO results, using a hydrocarbon range from C10 through C28. An alkane standard ranging from C8 through C36 was analyzed for qualitative purposes.

8. All initial and continuing standard calibrations associated with these samples were in control.

9. DRO was not detected in either sample.

Patti Gibson
Organics Section Manager

11/26/03
Date

Severn Trent Laboratories Chicago
GC Volatile Case Narrative

ENSR-DOVER AFB
Job Number: 221990
Method 8015G

1. All required holding times were met for the analysis.

2. The Method Blanks had all target compounds below the reporting limits.

3. The surrogate compounds used for this analysis were 4-Bromofluorobenzene and a,a,a-Trifluorotoluene. All surrogate recoveries were within the in-house generated QC limits.

4. The LCS (Laboratory Control Sample) had all spike recoveries within the in-house generated QC limits.

5. The Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis had all spike recoveries and the RPD value within the in-house generated QC limits.

6. The initial and continuing standard calibrations associated with these samples were within control limits.

7. The samples were analyzed as low-level waters and soils for GRO (GRO) based on SW846 methods 5030 and 8015B. A HP 5890 gas chromatograph equipped with a flame-ionization detector (FID) and a Tekmar LSC 2000/2016 ALS was used for the analysis of these samples. The soil results are on a dry weight basis.

Gary Rynkar
GC/VOA Section Manager

11/25/13
Date

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SAMPLE INFORMATION
Date: 11/25/2003

Job Number.: 221990
Customer...: ENSR
Attn.....: Mack Astorga

Project Number.....: 20003849
Customer Project ID....: DOVER AFB
Project Description....: Dover AFB

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
221990-1	B-3(3.5-5.5)	Soil	11/04/2003	11:30	11/05/2003	09:30
221990-2	FB110403	Water	11/04/2003	12:15	11/05/2003	09:30

Amendment No. 0010

LABORATORY TEST RESULTS

Job Number: 221990

Date:11/25/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: B-3(3.5-5.5)
Date Sampled.....: 11/04/2003
Time Sampled.....: 11:30
Sample Matrix.....: Soil

Laboratory Sample ID: 221990-1
Date Received.....: 11/05/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102211		11/11/03 0329	mgk
	Aroclor 1221, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	102211		11/11/03 0329	mgk
	Aroclor 1232, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	102211		11/11/03 0329	mgk
	Aroclor 1242, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	102211		11/11/03 0329	mgk
	Aroclor 1248, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	102211		11/11/03 0329	mgk
	Aroclor 1254, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	102211		11/11/03 0329	mgk
	Aroclor 1260, 3541 Solid*	18	U		1.5	18	1.00000	ug/Kg	102211		11/11/03 0329	mgk
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.6	U		2.8	4.6	1.00000	mg/Kg	101995		11/16/03 0154	mgk
Method	% Solids Determination											
	% Solids, Solid	88.2			0.10	0.10	1	%	102103		11/19/03 0000	daj
	% Moisture, Solid	11.8			0.10	0.10	1	%	102103		11/19/03 0000	daj
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	57	U		11	57	1.00000	ug/Kg	101732		11/14/03 0504	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	0.9	U			0.89	1	mg/Kg	102104		11/19/03 1004	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	101932		11/17/03 1730	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	5.3				0.2	1	pH Units	101529		11/13/03 0840	nrp
	Temperature at Analysis, Solid	19.0				1.0	1	pH Units	101529		11/13/03 0840	nrp

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 221990

Date:11/25/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: B-3(3.5-5.5)
Date Sampled.....: 11/04/2003
Time Sampled.....: 11:30
Sample Matrix.....: Soil

Laboratory Sample ID: 221990-1
Date Received.....: 11/05/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	230	U		84	230	1	mg/Kg	101193		11/10/03 1314	bs
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	7.4	U		1.5	7.4	1.00000	ug/Kg	102177		11/18/03 1442	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	7.4	U		0.95	7.4	1.00000	ug/Kg	102177		11/18/03 1442	jdn
	Benzene, Solid*	7.4	U		0.98	7.4	1.00000	ug/Kg	102177		11/18/03 1442	jdn
	Trichloroethene, Solid*	7.4	U		0.88	7.4	1.00000	ug/Kg	102177		11/18/03 1442	jdn
	Toluene, Solid*	7.4	U		1.5	7.4	1.00000	ug/Kg	102177		11/18/03 1442	jdn
	Ethylbenzene, Solid*	7.4	U		1.6	7.4	1.00000	ug/Kg	102177		11/18/03 1442	jdn
	Xylenes (total), Solid*	7.4	U		4.3	7.4	1.00000	ug/Kg	102177		11/18/03 1442	jdn
	tert-Butyl alcohol, Solid*	300	U		220	300	1.00000	ug/Kg	102177		11/18/03 1442	jdn
	tert-amyl methyl ether, Solid*	7.4	U		0.92	7.4	1.00000	ug/Kg	102177		11/18/03 1442	jdn
	Vinyl chloride, TCLP Leach	100	U		25	100	1.0000	ug/L	101159		11/07/03 1645	jdn
	1,1-Dichloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	101159		11/07/03 1645	jdn
	2-Butanone (MEK), TCLP Leach	100	U		25	100	1.0000	ug/L	101159		11/07/03 1645	jdn
	Chloroform, TCLP Leach	100	U		25	100	1.0000	ug/L	101159		11/07/03 1645	jdn
	Carbon tetrachloride, TCLP Leach	100	U		25	100	1.0000	ug/L	101159		11/07/03 1645	jdn
	Benzene, TCLP Leach	100	U		25	100	1.0000	ug/L	101159		11/07/03 1645	jdn
	1,2-Dichloroethane, TCLP Leach	100	U		25	100	1.0000	ug/L	101159		11/07/03 1645	jdn
	Trichloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	101159		11/07/03 1645	jdn
	Tetrachloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	101159		11/07/03 1645	jdn
	Chlorobenzene, TCLP Leach	100	U		25	100	1.0000	ug/L	101159		11/07/03 1645	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 221990

Date:11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB110403
Date Sampled.....: 11/04/2003
Time Sampled.....: 12:15
Sample Matrix.....: Water

Laboratory Sample ID: 221990-2
Date Received.....: 11/05/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016	0.96	U		0.33	0.96	1.00000	ug/L	102004		11/17/03 0508	mgk
	Aroclor 1221	0.96	U		0.88	0.96	1.00000	ug/L	102004		11/17/03 0508	mgk
	Aroclor 1232	0.96	U		0.42	0.96	1.00000	ug/L	102004		11/17/03 0508	mgk
	Aroclor 1242	0.96	U		0.37	0.96	1.00000	ug/L	102004		11/17/03 0508	mgk
	Aroclor 1248	0.96	U		0.40	0.96	1.00000	ug/L	102004		11/17/03 0508	mgk
	Aroclor 1254	0.96	U		0.25	0.96	1.00000	ug/L	102004		11/17/03 0508	mgk
	Aroclor 1260	0.96	U		0.29	0.96	1.00000	ug/L	102004		11/17/03 0508	mgk
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO)	0.25	U		0.058	0.25	1.00000	mg/L	101997		11/11/03 1754	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO)	50	U		7.1	50	1.00000	ug/L	101736		11/06/03 0746	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide	0.010	U			0.010	1	mg/L	101903		11/17/03 1625	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint)	>200					1	degrees F	101188		11/10/03 0700	jmk
9040B	pH (Liquid)											
	Corrosivity (pH-Liquids)	5.98			0.20	0.20	1	pH Units	101130		11/07/03 1602	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide	2.5	U		2.5	2.5	1	mg/L	101196		11/10/03 1304	bs
8260B	Volatile Organics (5mL Purge)											
	1,1-Dichloroethene	5.0	U		1.7	5.0	1.00000	ug/L	102199		11/19/03 1114	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 221990

Date:11/25/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: FB110403
Date Sampled.....: 11/04/2003
Time Sampled.....: 12:15
Sample Matrix.....: Water

Laboratory Sample ID: 221990-2
Date Received.....: 11/05/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Methyl-tert-butyl-ether (MTBE)	5.0	U		2.0	5.0	1.00000	ug/L	102199		11/19/03 1114	jdn
	Benzene	5.0	U		0.96	5.0	1.00000	ug/L	102199		11/19/03 1114	jdn
	Trichloroethene	5.0	U		1.6	5.0	1.00000	ug/L	102199		11/19/03 1114	jdn
	Toluene	5.0	U		1.1	5.0	1.00000	ug/L	102199		11/19/03 1114	jdn
	Ethylbenzene	5.0	U		0.93	5.0	1.00000	ug/L	102199		11/19/03 1114	jdn
	Xylenes (total)	5.0	U		1.8	5.0	1.00000	ug/L	102199		11/19/03 1114	jdn
	tert-Butyl alcohol	200	U		30	200	1.00000	ug/L	102199		11/19/03 1114	jdn
	tert-amyl methyl ether	5.0	U		0.47	5.0	1.00000	ug/L	102199		11/19/03 1114	jdn

* In Description = Dry Wgt.

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LABORATORY CHRONICLE

Job Number: 221990

Date: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 221990-1 Client ID: B-3(3.5-5.5)

Date Recvd: 11/05/2003 Sample Date: 11/04/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102103		11/19/2003	0000	
5030A	5030 Purge & Trap	1	101731		11/14/2003	0200	
5030B	5030CP TCLP/SPLP Prep	1	101112		11/07/2003	1645	
5035	5035 Archon Closed Purge & Trap	1	102027		11/18/2003	1442	
5035	5035 Preservation High (Methanol)	1	102180		11/06/2003	0415	
5035	5035 Preservation Low	1	102179		11/06/2003	0415	
5035	5035 Preservation Low	2	102179		11/06/2003	0416	
EDD	Electronic Data Deliverable	1					
3541	Extraction Soxhlet (DRO)	1	101070		11/08/2003	0920	
3541	Extraction Soxhlet (PCBs)	1	101005		11/07/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	101932	101932	11/17/2003	1730	
8082	PCB Analysis	1	102211	101005	11/11/2003	0329	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102104	102104	11/19/2003	1004	
7.3.4.2/9034	Reactivity, Sulfide	1	101193	101193	11/10/2003	1314	
1311	TCLP Zero Headspace Extraction	1	100795		11/05/2003	1630	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	101995	101070	11/16/2003	0154	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	101732	101731	11/14/2003	0504	1.00000
8260B	Volatile Organics	1	101159	101112-100795	11/07/2003	1645	1.0000
8260B	Volatile Organics	1	102177	102179-102027	11/18/2003	1442	1.00000
9045C	pH (Soil)	1	101529	101529	11/13/2003	0840	

Lab ID: 221990-2 Client ID: FB110403

Date Recvd: 11/05/2003 Sample Date: 11/04/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030 5 mL Purge Prep	1	102152		11/19/2003	1114	
5030A	5030 Purge & Trap	1	101735		11/05/2003	2100	
3520C	Extraction Continuous Liq/Liq (PCBs)	1	101116		11/10/2003	0915	
3510C	Extraction Sep. Funnel (Diesel)	1	100856		11/06/2003	1145	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	101188	101188	11/10/2003	0700	
8082	PCB Analysis	1	102004	101116	11/17/2003	0508	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	101903	101903	11/17/2003	1625	
7.3.4.2/9034	Reactivity, Sulfide	1	101196	101196	11/10/2003	1304	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	101997	100856	11/11/2003	1754	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	101736	101735	11/06/2003	0746	1.00000
8260B	Volatile Organics (5mL Purge)	1	102199	102152	11/19/2003	1114	1.00000
9040B	pH (Liquid)	1	101130	101130	11/07/2003	1602	

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SURROGATE RECOVERIES REPORT

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Diesel Range Organics (DRO)
Method Code...: 8015D

Test Matrix...: Water
Batch(s).....: 101997

Prep Batch..: 100856

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCS			11/11/2003	88	90
MB			11/11/2003	81	89
221990- 2		FB110403	11/11/2003	85	89

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 119
OTERPH	o-Terphenyl (surr)	58 - 119

Method.....: TPH - Diesel Range Organics (DRO)
Method Code...: 8015D

Test Matrix...: 3541 Solid
Batch(s).....: 101995

Prep Batch..: 101070

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCS			11/15/2003	112*	110
MB			11/15/2003	78	79
221990- 1		B-3(3.5-5.5)	11/16/2003	78	87

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 103
OTERPH	o-Terphenyl (surr)	44 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Gasoline Range Organics (GRO)
Method Code...: 8015G

Test Matrix...: Solid
Batch(s).....: 101732

Prep Batch..: 101731

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/14/2003	104	108
MB			11/14/2003	95	96
221990- 1		B-3(3.5-5.5)	11/14/2003	91	91
221990- 1	MS	B-3(3.5-5.5)	11/14/2003	101	106
221990- 1	MSD	B-3(3.5-5.5)	11/14/2003	98	103

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	68 - 113
BRFLBE	4-Bromofluorobenzene (surr)	41 - 125

Method.....: TPH - Gasoline Range Organics (GRO)
Method Code...: 8015G

Test Matrix...: Water
Batch(s).....: 101736

Prep Batch..: 101735

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/06/2003	102	114
MB			11/06/2003	100	101
221990- 2		FB110403	11/06/2003	93	95

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	79 - 110
BRFLBE	4-Bromofluorobenzene (surr)	67 - 124

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SURROGATE RECOVERIES REPORT

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: PCB Analysis
Method Code...: 8082

Test Matrix...: 3541 Solid
Batch(s).....: 102211

Prep Batch..: 101005

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			11/11/2003	97	58
MB			11/11/2003	84	51
221990- 1		B-3(3.5-5.5)	11/11/2003	111	81

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	33 - 131
TCX	Tetrachloro-m-xylene (surr)	42 - 122

Method.....: PCB Analysis
Method Code...: 8082

Test Matrix...: Water
Batch(s).....: 102004

Prep Batch..: 101116

Lab ID	DT	Sample ID	Date	DCB	TCX
LCD			11/17/2003	28	90
LCS			11/17/2003	50	87
MB			11/17/2003	78	103
221990- 2		FB110403	11/17/2003	38	81

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 116
TCX	Tetrachloro-m-xylene (surr)	33 - 111

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SURROGATE RECOVERIES REPORT

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics (5mL Purge)
Method Code...: 8260.5

Test Matrix...: Water
Batch(s).....: 102199

Prep Batch..: 102152

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/19/2003	90	101	96	105
MB			11/19/2003	94	93	97	104
221990-	2	FB110403	11/19/2003	93	93	100	102

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	66 - 132
BRFLBE	4-Bromofluorobenzene (surr)	79 - 122
DBRFLM	Dibromofluoromethane (surr)	66 - 132
TOLD8	Toluene-d8 (surr)	78 - 128

STL Chicago is part of Severn Trent Laboratories, Inc.

SURROGATE RECOVERIES REPORT

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: TCLP Leach
Batch(s).....: 101159

Prep Batch..: 101112

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/07/2003	89	92	93	102
EB3			11/07/2003	90	93	92	101
LCS			11/07/2003	88	96	91	101
MB			11/07/2003	89	93	93	101
221990-	1	B-3(3.5-5.5)	11/07/2003	90	92	93	103

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	66 - 132
BRFLBE	4-Bromofluorobenzene (surr)	79 - 122
DBRFLM	Dibromofluoromethane (surr)	66 - 132
TOLD8	Toluene-d8 (surr)	78 - 128

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 102177

Prep Batch..: 102027

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/18/2003	96	98	97	100
MB			11/18/2003	102	95	105	99

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 102177

Prep Batch..: 102053

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB3			11/18/2003	115	99	89	107

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 102177

Prep Batch..: 102179

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/18/2003	113	95	100	99
221990-	1	B-3(3.5-5.5)	11/18/2003	107	97	100	106

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SURROGATE RECOVERIES REPORT

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 102177
Prep Batch..: 102179

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 102177
Prep Batch..: 102181

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/18/2003	98	101	89	108

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 102177
Prep Batch..: 102184

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/18/2003	93	96	90	107

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 102004

Analyst...: mgk

LCD	Laboratory Control Sample Duplicate	003JWLPCBC	101116-003		11/17/2003	0225

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.340	4.487	5.001	0.500	U	87	%	62-104	
							3	R	20	
Aroclor 1260	ug/L	3.941	4.502	5.010	0.500	U	79	%	69-105	
							13	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003JWLPCBC	101116-002		11/17/2003	0152

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 102004

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.487		5.001	0.500 U	90	%	62-104	
Aroclor 1260	ug/L	4.502		5.010	0.500 U	90	%	69-105	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101116-001		11/17/2003	0119

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 102004

Analyst...: mgk

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	0.500	U							
Aroclor 1221	ug/L	0.500	U							
Aroclor 1232	ug/L	0.500	U							
Aroclor 1242	ug/L	0.500	U							
Aroclor 1248	ug/L	0.500	U							
Aroclor 1254	ug/L	0.500	U							
Aroclor 1260	ug/L	0.500	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003JWLPCBC	101005-002		11/11/2003	0257

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 102211

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	140.823		166.700	16.700 U	84	%	60-112	
Aroclor 1260, 3541 Solid	ug/Kg	157.627		167.000	16.700 U	94	%	64-119	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101005-001		11/11/2003	0224

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 102211

Analyst...: mgk

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1221, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1232, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1242, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1248, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1254, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1260, 3541 Solid	ug/Kg	16.700	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003HWLDIEA	101070-002		11/15/2003	1140

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 101995

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	69.378		66.670	4.199 U	104	%	70-106	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 101995

Analyst...: mgk

MB	Method Blank		101070-001		11/15/2003	1101

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	4.199 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003HWLD1EA	100856-002		11/11/2003	1400

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 101997

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.649915		2.000000	0.125000 U	82	%	57-107	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 101997

Analyst...: mgk

MB	Method Blank		100856-001		11/11/2003	1321

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	0.125000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K140SA	101731-002		11/14/2003	0429

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1314
Batch.....: 101732

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	424.538		400.000	50.000 U	106	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1314
Batch.....: 101732

Analyst...: wre

MB	Method Blank		101731-001		11/14/2003	0353

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	50.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MS	Matrix Spike	G03K140SA	221990-1		11/14/2003	0540

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1314
Batch.....: 101732

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	448.771		453.500	56.689 U	99	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MSD	Matrix Spike Duplicate	G03K14DSA	221990-1		11/14/2003	0615

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1314
Batch.....: 101732

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	460.065	448.771	453.500	56.689	U	101	%	79-130	
							2	R	30	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K05DSA	101735-002		11/06/2003	0042

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1112
Batch.....: 101736

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	445.453		400.000	50.000 U	111	%	85-124	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101735-001		11/06/2003	0006

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 101736
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	50.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	672,90,845	101112-006		11/07/2003	1430

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL16
Batch.....: 101159

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Vinyl chloride, TCLP Leach	ug/L	100.000	U							
1,1-Dichloroethene, TCLP Leach	ug/L	100.000	U							
2-Butanone (MEK), TCLP Leach	ug/L	100.000	U							
Chloroform, TCLP Leach	ug/L	100.000	U							
Carbon tetrachloride, TCLP Leach	ug/L	100.000	U							
Benzene, TCLP Leach	ug/L	100.000	U							
1,2-Dichloroethane, TCLP Leach	ug/L	100.000	U							
Trichloroethene, TCLP Leach	ug/L	100.000	U							
Tetrachloroethene, TCLP Leach	ug/L	100.000	U							
Chlorobenzene, TCLP Leach	ug/L	100.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL16
Batch.....: 101159

Analyst...: jdn

EB3	DI Blank	221928	101112-007		11/07/2003	1600

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Vinyl chloride, TCLP Leach	ug/L	100.000	U							
1,1-Dichloroethene, TCLP Leach	ug/L	100.000	U							
2-Butanone (MEK), TCLP Leach	ug/L	100.000	U							
Chloroform, TCLP Leach	ug/L	100.000	U							
Carbon tetrachloride, TCLP Leach	ug/L	100.000	U							
Benzene, TCLP Leach	ug/L	100.000	U							
1,2-Dichloroethane, TCLP Leach	ug/L	100.000	U							
Trichloroethene, TCLP Leach	ug/L	100.000	U							
Tetrachloroethene, TCLP Leach	ug/L	100.000	U							
Chlorobenzene, TCLP Leach	ug/L	100.000	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K07DSB	101112-005		11/07/2003	1045

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL16
Batch.....: 101159

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Vinyl chloride, TCLP Leach	ug/L	705.600		1000.000	100.000 U	71	%	50-141	
1,1-Dichloroethene, TCLP Leach	ug/L	1001.930		1000.000	100.000 U	100	%	48-132	
2-Butanone (MEK), TCLP Leach	ug/L	948.090		1000.000	100.000 U	95	%	55-140	
Chloroform, TCLP Leach	ug/L	969.122		1000.000	100.000 U	97	%	66-127	
Carbon tetrachloride, TCLP Leach	ug/L	1093.322		1000.000	100.000 U	109	%	66-121	
Benzene, TCLP Leach	ug/L	1039.460		1000.000	100.000 U	104	%	68-130	
1,2-Dichloroethane, TCLP Leach	ug/L	978.370		1000.000	100.000 U	98	%	68-125	
Trichloroethene, TCLP Leach	ug/L	1113.318		1000.000	100.000 U	111	%	71-128	
Tetrachloroethene, TCLP Leach	ug/L	1094.976		1000.000	100.000 U	109	%	74-123	
Chlorobenzene, TCLP Leach	ug/L	1044.632		1000.000	100.000 U	104	%	77-121	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101112-004		11/07/2003	1000

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL16
Batch.....: 101159

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Vinyl chloride, TCLP Leach	ug/L	100.000	U							
1,1-Dichloroethene, TCLP Leach	ug/L	100.000	U							
2-Butanone (MEK), TCLP Leach	ug/L	100.000	U							
Chloroform, TCLP Leach	ug/L	100.000	U							
Carbon tetrachloride, TCLP Leach	ug/L	100.000	U							
Benzene, TCLP Leach	ug/L	100.000	U							
1,2-Dichloroethane, TCLP Leach	ug/L	100.000	U							
Trichloroethene, TCLP Leach	ug/L	100.000	U							
Tetrachloroethene, TCLP Leach	ug/L	100.000	U							
Chlorobenzene, TCLP Leach	ug/L	100.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-221990	102179-003		11/18/2003	1158

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	*222202	102184*003		11/18/2003	1225

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U						
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U						
Benzene, Solid	ug/Kg	5.000	U						
Trichloroethene, Solid	ug/Kg	5.000	U						
Toluene, Solid	ug/Kg	5.000	U						
Ethylbenzene, Solid	ug/Kg	5.000	U						
Xylenes (total), Solid	ug/Kg	5.000	U						
tert-Butyl alcohol, Solid	ug/Kg	200.000	U						
tert-amyl methyl ether, Solid	ug/Kg	5.000	U						

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	~222174	102181-005		11/18/2003	1253

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB3	DI Blank	-222328	102053-005		11/18/2003	1320

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000 U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000 U							
Benzene, Solid	ug/Kg	5.000 U							
Trichloroethene, Solid	ug/Kg	5.000 U							
Toluene, Solid	ug/Kg	5.000 U							
Ethylbenzene, Solid	ug/Kg	5.000 U							
Xylenes (total), Solid	ug/Kg	5.000 U							
tert-amyl methyl ether, Solid	ug/Kg	5.000 U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K180SG	102027-014		11/18/2003	1122

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	45.629		50.000	5.000	U	91	%	51-132	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	50.080		50.000	5.000	U	100	%	61-132	
Benzene, Solid	ug/Kg	48.144		50.000	5.000	U	96	%	72-128	
Trichloroethene, Solid	ug/Kg	48.719		50.000	5.000	U	97	%	75-129	
Toluene, Solid	ug/Kg	48.995		50.000	5.000	U	98	%	75-125	
Ethylbenzene, Solid	ug/Kg	49.416		50.000	5.000	U	99	%	79-123	
Xylenes (total), Solid	ug/Kg	148.963		150.000	5.000	U	99	%	82-125	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102027-013		11/18/2003	1034

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K19DS8	102152-002		11/19/2003	1051

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)
Equipment Code....: GCL16
Batch.....: 102199
Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	42.015		50.000	5.000 U	84	%	48-132	
Methyl-tert-butyl-ether (MTBE)	ug/L	43.739		50.000	5.000 U	87	%	49-139	
Benzene	ug/L	47.692		50.000	5.000 U	95	%	68-130	
Trichloroethene	ug/L	52.266		50.000	5.000 U	105	%	71-128	
Toluene	ug/L	50.035		50.000	5.000 U	100	%	72-122	
Ethylbenzene	ug/L	52.459		50.000	5.000 U	105	%	78-121	
Xylenes (total)	ug/L	153.542		150.000	5.000 U	102	%	76-129	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990

Report Date.: 11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102152-001		11/19/2003	1029

Test Method.....: 82608
Method Description.: Volatile Organics (5mL Purge)
Equipment Code....: GCL16
Batch.....: 102199
Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	5.000	U							
Methyl-tert-butyl-ether (MTBE)	ug/L	5.000	U							
Benzene	ug/L	5.000	U							
Trichloroethene	ug/L	5.000	U							
Toluene	ug/L	5.000	U							
Ethylbenzene	ug/L	5.000	U							
Xylenes (total)	ug/L	5.000	U							
tert-Butyl alcohol	ug/L	200.000	U							
tert-amyl methyl ether	ug/L	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990 Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: Method
Method Description.: % Solids Determination
Parameter.....: % Solids
Batch.....: 102103
Equipment Code....:
Analyst...: daj
Test Code.: %SOLID

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102103-001		%	0.1000 U								11/19/2003	0000
MD	221990-1		%	89.00000			88.20000	0.9		R	5.0	11/19/2003	0000

Test Method.....: 7.3.3.2/9014
Method Description.: Reactivity, Cyanide
Parameter.....: Reactivity, Cyanide
Batch.....: 101903
Equipment Code....: SPEC4
Analyst...: rnm
Test Code.: REACCN

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	101903-004		mg/L	-0.00010								11/17/2003	1616
LCS	101903-005	I03ISTCN2	mg/L	0.09110		0.10000	-0.00010	91		%	80-120	11/17/2003	1617

Test Method.....: 7.3.3.2/9014
Method Description.: Reactivity, Cyanide
Parameter.....: Reactivity, Cyanide
Batch.....: 102104
Equipment Code....: SPEC1
Analyst...: rnm
Test Code.: REACCN

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102104-004		mg/L	-0.00270								11/19/2003	1001
LCS	102104-005	I03ISTCN2	mg/L	0.09880		0.10000		99		%	85-115	11/19/2003	1001

Test Method.....: 9040B
Method Description.: pH (Liquid)
Parameter.....: pH
Batch.....: 101130
Equipment Code....:
Analyst...: nrp
Test Code.: PH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	101130-002	I03KPH7B	pH Units	7.08000		7.00000		0.08000		A	0.20000	11/07/2003	1556
LCDP	101130-003	I03KPH7B	pH Units	7.07000		7.00000		0.07000		A	0.20000	11/07/2003	1558
MDPH	221990-2		pH Units	5.97000			5.98000	0.01000		A	0.20000	11/07/2003	1603

Test Method.....: 9045C
Method Description.: pH (Soil)
Parameter.....: pH
Batch.....: 101529
Equipment Code....:
Analyst...: nrp
Test Code.: PH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	101529-002	I03GPH7B	pH Units	6.98000		7.00000		0.02000		A	0.20000	11/13/2003	0826
LCDP	101529-003	I03GPH7B	pH Units	7.00000		7.00000		0.00		A	0.20000	11/13/2003	0828

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 221990 Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: 7.3.4.2/9034 Batch.....: 101193 Analyst...: bs
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result		QC Result	True Value	Orig. Value		QC Calc.	F	*	Limits	Date	Time
MB	101193-014		mg/Kg	91.00	U									11/10/2003	1310
LCS	101193-015	I03HSTSF1	mg/Kg	91.00	U		151.10	91.00	U	42		%	0-200	11/10/2003	1312

Test Method.....: 7.3.4.2/9034 Batch.....: 101196 Analyst...: bs
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result		QC Result	True Value	Orig. Value		QC Calc.	F	*	Limits	Date	Time
MB	101196-001		mg/L	1.00000	U									11/10/2003	1245
LCS	101196-002	I03HSTSF1	mg/L	3.30000			3.02300	1.00000	U	109		%	80-120	11/10/2003	1247

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 11/25/2003

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Soil, sediment and sludge sample results are reported on a "dry weight" basis except when analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received" basis unless noted differently.
3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
4) The test results for the noted analytical method(s) meet the requirements of NELAC. Lab Cert. ID# 100201
5) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report)

Inorganic Qualifiers (Q-Column)

U Analyte was not detected at or above the stated limit.
< Not detected at or above the reporting limit.
J Result is less than the RL, but greater than or equal to the method detection limit.
B Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.
S Result was determined by the Method of Standard Additions.
F AFCEE: Result is less than the RL, but greater than or equal to the method detection limit.

Inorganic Flags (Flag Column)

^ ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
+ MSA correlation coefficient is less than 0.995.
4 MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
E SD: Serial dilution exceeds the control limits.
H MB, EB1, EB2, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.
N MS, MSD: Spike recovery exceeds the upper or lower control limits.
W AS(GFAA) Post-digestion spike was outside 85-115% control limits.

Organic Qualifiers (Q - Column)

U Analyte was not detected at or above the stated limit.
ND Compound not detected.
J Result is an estimated value below the reporting limit or a tentatively identified compound (TIC).
Q Result was qualitatively confirmed, but not quantified.
C Pesticide identification was confirmed by GC/MS.
Y The chromatographic response resembles a typical fuel pattern.
Z The chromatographic response does not resemble a typical fuel pattern.
E Result exceeded calibration range, secondary dilution required.
F AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)

Organic Flags (Flags Column)

B MB: Batch QC is greater than reporting limit.
* LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits.
^ EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
A Concentration exceeds the instrument calibration range
a Concentration is below the method Reporting Limit (RL)
B Compound was found in the blank and sample.
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
H Alternate peak selection upon analytical review
I Indicates the presence of an interfence, recovery is not calculated.
M Manually integrated compound.
P The lower of the two values is reported when the % difference between the results of two GC columns is

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 11/25/2003

greater than 25%.

Abbreviations

AS	Post Digestion Spike (GFAA Samples - See Note 1 below)
Batch	Designation given to identify a specific extraction, digestion, preparation set, or analysis set
CAP	Capillary Column CCB Continuing Calibration Blank
CCV	Continuing Calibration Verification
CF	Confirmation analysis of original
C1	Confirmation analysis of A1 or D1
C2	Confirmation analysis of A2 or D2
C3	Confirmation analysis of A3 or D3
CRA	Low Level Standard Check - GFAA; Mercury
CRI	Low Level Standard Check - ICP
CV	Calilbration Verification Standard
Dil Fac	Dilution Factor - Secondary dilution analysis
D1	Dilution 1
D2	Dilution 2
D3	Dilution 3
DLFac	Detection Limit Factor
DSH	Distilled Standard - High Level
DSL	Distilled Standard - Low Level
DSM	Distilled Standard - Medium Level
EB1	Extraction Blank 1
EB2	Extraction Blank 2
EB3	DI Blank
ELC	Method Extracted LCS
ELD	Method Extracted LCD
ICAL	Initial calibration
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ISA	Interference Check Sample A - ICAP
ISB	Interference Check Sample B - ICAP
Job No.	The first six digits of the sample ID which refers to a specific client, project and sample group
	Lab ID An 8 number unique laboratory identification
LCD	Laboratory Control Standard Duplicate
LCS	Laboratory Control Standard with reagent grade water or a matrix free from the analyte of interest
MB	Method Blank or (PB) Preparation Blank
MD	Method Duplicate
MDL	Method Detection Limit
MLE	Medium Level Extraction Blank
MRL	Method Reporting Limit Standard
MSA	Method of Standard Additions
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not Detected
PREPF	Preparation factor used by the Laboratory's Information Management System (LIMS)
PDS	Post Digestion Spike (ICAP)
RA	Re-analysis of original
A1	Re-analysis of D1
A2	Re-analysis of D2
A3	Re-analysis of D3
RD	Re-extraction of dilution
RE	Re-extraction of original
RC	Re-extraction Confirmation
RL	Reporting Limit
RPD	Relative Percent Difference of duplicate (unrounded) analyses
RRF	Relative Response Factor
RT	Retention Time

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 11/25/2003

RTW	Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number
SCB	Seeded Control Blank
SD	Serial Dilution (Calculated when sample concentration exceeds 50 times the MDL)
UCB	Unseeded Control Blank
SSV	Second Source Verification Standard
SLCS	Solid Laboratory Control Standard(LCS)
PHC	pH Calibration Check LCSP pH Laboratory Control Sample
LCDP	pH Laboratory Control Sample Duplicate
MDPH	pH Sample Duplicate
MDFP	Flashpoint Sample Duplicate
LCFP	Flashpoint LCS
G1	Gelex Check Standard Range 0-1
G2	Gelex Check Standard Range 1-10
G3	Gelex Check Standard Range 10-100
G4	Gelex Check Standard Range 100-1000

Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCS S=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Note 2: The MD calculates an absolute difference (A) when the sample concentration is less than 5 times the reporting limit. The control limit is represented as +/- the RL.

Amendment No. 0010

221990

STL EDISON

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

PAGE ___ OF ___

Name (for report and invoice): Mack Astorga	Samplers Name (Printed): Rich Firely	Site/Project Identification: DOVER AFB
Company: ENSR International	P.O. #	State (Location of site): NJ: ☐ NY: ☐ Other: DE
Address: 2005 Cabot Boulevard West, Suite 100		Regulatory Program:
City: Langhorne State: PA	Analysis Turnaround Time: Standard ☐	LAB USE ONLY Project No:
Phone: 215-757-4900 Fax: 215-757-3904	Rush Charges Authorized For: 2 Week ☐ 1 Week ☑ Other ☐	Job No:

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

	Sample Identification	Date	Time	Matrix	No. of. Cont.	8260B TCLP*	8260B PP VOA	GRO	DRO	8082 PCB	Reactivity Cyanide Sulfide	Corrosivity	Ignitability				Sample Numbers
1	B-3(3.5-5.5)	11/4/03	1130	Soil	6	X	X	X	X	X	X	X	X				
2	FB110403	11/4/03	1215	AQ	9	X	X	X	X	X	X	X	X				
	Custody seals 67932+67902																
	Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH				Soil:	1	1,6	1	1	1	1	1	1				
	6 = Other Encore, 7 = Other ____				Water:	1	1,2	1,2	1	1	1	1	1				

Special Instructions PPVOA-BTEX, tert-amyl methyl ether, TBA, MTBE, TCE, 1,1-DCE *-On Hold

Water Metals Filtered (Yes/No)? ____

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	ENSR	11/4/03 1430	1) [signature]	STL 11/5/03 0930
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL-6003

Note Number : 50598 JOB
Date : 11/05/2003
Author : jtl
Subject : SDR

Project Code....:

Location Code...: 57222
Job/Sales Order.: 221990 DOVER AFB

Customer........: ENSR ENSR
Contact Location: LANGHOR PA Langhorne, PA
Contact.........: ASTORGA M Mack Astorga

Invoice.........:

Batch...........:

Note For........:

REC'D 1-1L AMBER BROKEN , 1 REMAINS

Amendment No. 0010

SEVERN TRENT STL

STL Chicago
2417 Bond Street
University Park, IL 60466

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SEVERN TRENT LABORATORIES
ANALYTICAL REPORT

JOB NUMBER: 222038

Prepared For:

ENSR
2005 Cabot Boulevard West
Suite 100
Langhorne, PA 19047

Project: Dover AFB

Attention: Mack Astorga

Date: 11/25/2003

Signature

11/26/03
Date

Name: Eric A. Lang

Title: Project Manager

E-Mail: elang@stl-inc.com

STL Chicago
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FAX..: (708) 534-5211

This Report Contains (46) Pages

Severn Trent Laboratories Chicago
GC/MS Case Narrative

ENSR
Dover AFB
Job Number: 222038
VOA DATA

1. The samples were prepared and analyzed within the recommended hold times from the date of collection.

2. The Method Blanks and Extraction Blanks had all target compounds below the reporting limits.

3. The LCS samples had all controlled spike recoveries within the in-house generated QC limits.

4. Matrix Spike and Matrix Spike Duplicate analyses were not performed on this sample set.

5. The volatile samples had all surrogate recoveries within the in-house generated QC limits.

6. The water and TCLP samples were prepared using Method 5030. The soil samples were prepared for the low level soil procedure using Method 5035. The samples were analyzed following SW846 Method 8260B and 8000B. All initial and continuing calibration criteria were met per method or SOP (for minimum R values for certain compounds). The low point in the initial calibration verifies the base reporting limits. The target compounds were quantitated using the initial calibration.

7. The volatile samples had all internal standard areas and retention times within the acceptance limits as compared to the corresponding calibration verification standard.

8. The water samples were analyzed using a 25-mL purge volume. The TCLP samples were analyzed using a 5.0-mL purge volume. Due to the nature of the TCLP method, a 1/20 (for TCLP) dilution factor was automatically added into the method. The soil samples were analyzed using the 5035 low level soil procedure. The soil results and reporting limits were adjusted to account for the sample weights, the analytical procedure and on a dry weight basis.

John Nagel
GC/MS Dept.

11-20-03
Date

STL Chicago
Extractable Hydrocarbon Case Narrative

ENSR
Dover AFB
Job# 222038-1 and 2
Diesel Range Organics (DRO)

1. The water sample associated with this SDG was extracted based on SW846 Method 3510. The soil sample was extracted based on the SW846 method 3541. The extracts were analyzed for DRO based on SW846 method 8015B. A HP5890 gas chromatograph equipped with a flame ionization detector and a Xti-5 column was used for the analysis.

2. All required holding times were met for the extraction and analysis.

3. The method blanks were below the reporting limit for DRO.

4. The surrogate compounds used for this analysis were o-Terphenyl and 2-Fluorobiphenyl. All surrogate recoveries were within statistical control limits except the blank spike associated with the soil sample (prep batch 101070), which had 2-Fluorobiphenyl with 112% recovery.

5. All blank spike recoveries were within statistical control limits. A solution of Diesel Fuel was used for spiking.

6. A matrix spike and a matrix spike duplicate were not performed on a sample from this SDG.

7. A Diesel Fuel #2 standard was used for quantitating DRO results, using a hydrocarbon range from C10 through C28. An alkane standard ranging from C8 through C36 was analyzed for qualitative purposes.

8. All initial and continuing standard calibrations associated with these samples were in control.

9. DRO was not detected in either sample.

Patti Gibson
Organics Section Manager

11/25/03
Date

Severn Trent Laboratories Chicago
GC Volatile Case Narrative

ENSR-DOVER AFB
Job Number: 222038
Method 8015G

1. All required holding times were met for the analysis.

2. The Method Blanks had all target compounds below the reporting limits.

3. The surrogate compounds used for this analysis were 4-Bromofluorobenzene and a,a,a-Trifluorotoluene. All surrogate recoveries were within the in-house generated QC limits.

4. The LCS (Laboratory Control Sample) had all spike recoveries within the in-house generated QC limits.

5. A Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis was not performed on these samples.

6. The initial and continuing standard calibrations associated with these samples were within control limits.

7. The samples were analyzed as low-level waters and soils for GRO (GRO) based on SW846 methods 5030 and 8015B. A HP 5890 gas chromatograph equipped with a flame-ionization detector (FID) and a Tekmar LSC 2000/2016 ALS was used for the analysis of these samples. The soil results are on a dry weight basis.

Gary Rynkar
GC/VOA Section Manager

11/25/13
Date

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SAMPLE INFORMATION
Date: 11/25/2003

Job Number.: 222038
Customer...: ENSR
Attn.....: Mack Astorga

Project Number.....: 20003849
Customer Project ID....: DOVER AFB
Project Description....: Dover AFB

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
222038-1	B-4(3.5-5.5)	Soil	11/05/2003	10:30	11/06/2003	09:50
222038-2	FB110503	Water	11/05/2003	10:50	11/06/2003	09:50

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222038

Date:11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-4(3.5-5.5)
Date Sampled.....: 11/05/2003
Time Sampled.....: 10:30
Sample Matrix.....: Soil

Laboratory Sample ID: 222038-1
Date Received.....: 11/06/2003
Time Received.....: 09:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.0	18	1.00000	ug/Kg	102211		11/11/03 0402	mgk
	Aroclor 1221, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102211		11/11/03 0402	mgk
	Aroclor 1232, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102211		11/11/03 0402	mgk
	Aroclor 1242, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102211		11/11/03 0402	mgk
	Aroclor 1248, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102211		11/11/03 0402	mgk
	Aroclor 1254, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102211		11/11/03 0402	mgk
	Aroclor 1260, 3541 Solid*	18	U		1.5	18	1.00000	ug/Kg	102211		11/11/03 0402	mgk
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.7	U		2.9	4.7	1.00000	mg/Kg	101995		11/16/03 0232	mgk
Method	% Solids Determination											
	% Solids, Solid	88.5			0.10	0.10	1	%	102103		11/19/03 0000	daj
	% Moisture, Solid	11.5			0.10	0.10	1	%	102103		11/19/03 0000	daj
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	56	U		11	56	1.00000	ug/Kg	101732		11/14/03 0912	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	1.7	U			1.7	1	mg/Kg	102104		11/19/03 1005	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	102080		11/19/03 0823	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	4.8				0.2	1	pH Units	101529		11/13/03 0842	nrp
	Temperature at Analysis, Solid	19.0				1.0	1	pH Units	101529		11/13/03 0842	nrp

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222038

Date:11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-4(3.5-5.5)
Date Sampled.....: 11/05/2003
Time Sampled.....: 10:30
Sample Matrix.....: Soil

Laboratory Sample ID: 222038-1
Date Received.....: 11/06/2003
Time Received.....: 09:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	230	U		84	230	1	mg/Kg	101193		11/10/03 1316	bs
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	7.2	U		1.4	7.2	1.00000	ug/Kg	101966		11/17/03 1651	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	7.2	U		0.92	7.2	1.00000	ug/Kg	101966		11/17/03 1651	jdn
	Benzene, Solid*	7.2	U		0.94	7.2	1.00000	ug/Kg	101966		11/17/03 1651	jdn
	Trichloroethene, Solid*	7.2	U		0.84	7.2	1.00000	ug/Kg	101966		11/17/03 1651	jdn
	Toluene, Solid*	7.2	U		1.4	7.2	1.00000	ug/Kg	101966		11/17/03 1651	jdn
	Ethylbenzene, Solid*	7.2	U		1.6	7.2	1.00000	ug/Kg	101966		11/17/03 1651	jdn
	Xylenes (total), Solid*	7.2	U		4.1	7.2	1.00000	ug/Kg	101966		11/17/03 1651	jdn
	tert-Butyl alcohol, Solid*	290	U		210	290	1.00000	ug/Kg	101966		11/17/03 1651	jdn
	tert-amyl methyl ether, Solid*	7.2	U		0.89	7.2	1.00000	ug/Kg	101966		11/17/03 1651	jdn
	Vinyl chloride, TCLP Leach	100	U		25	100	1.0000	ug/L	101856		11/17/03 1916	jdn
	1,1-Dichloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	101856		11/17/03 1916	jdn
	2-Butanone (MEK), TCLP Leach	100	U		25	100	1.0000	ug/L	101856		11/17/03 1916	jdn
	Chloroform, TCLP Leach	100	U		25	100	1.0000	ug/L	101856		11/17/03 1916	jdn
	Carbon tetrachloride, TCLP Leach	100	U		25	100	1.0000	ug/L	101856		11/17/03 1916	jdn
	Benzene, TCLP Leach	100	U		25	100	1.0000	ug/L	101856		11/17/03 1916	jdn
	1,2-Dichloroethane, TCLP Leach	100	U		25	100	1.0000	ug/L	101856		11/17/03 1916	jdn
	Trichloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	101856		11/17/03 1916	jdn
	Tetrachloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	101856		11/17/03 1916	jdn
	Chlorobenzene, TCLP Leach	100	U		25	100	1.0000	ug/L	101856		11/17/03 1916	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222038

Date:11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB110503
Date Sampled.....: 11/05/2003
Time Sampled.....: 10:50
Sample Matrix.....: Water

Laboratory Sample ID: 222038-2
Date Received.....: 11/06/2003
Time Received.....: 09:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016	0.50	U		0.17	0.50	1.00000	ug/L	102004		11/17/03 0257	mgk
	Aroclor 1221	0.50	U		0.46	0.50	1.00000	ug/L	102004		11/17/03 0257	mgk
	Aroclor 1232	0.50	U		0.22	0.50	1.00000	ug/L	102004		11/17/03 0257	mgk
	Aroclor 1242	0.50	U		0.19	0.50	1.00000	ug/L	102004		11/17/03 0257	mgk
	Aroclor 1248	0.50	U		0.21	0.50	1.00000	ug/L	102004		11/17/03 0257	mgk
	Aroclor 1254	0.50	U		0.13	0.50	1.00000	ug/L	102004		11/17/03 0257	mgk
	Aroclor 1260	0.50	U		0.15	0.50	1.00000	ug/L	102004		11/17/03 0257	mgk
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO)	0.13	U		0.029	0.13	1.00000	mg/L	101997		11/11/03 1832	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO)	50	U		7.1	50	1.00000	ug/L	101733		11/12/03 1046	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide	0.010	U			0.010	1	mg/L	101903		11/17/03 1626	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint)	>200					1	degrees F	101964		11/18/03 0645	jmk
9040B	pH (Liquid)											
	Corrosivity (pH-Liquids)	5.61			0.20	0.20	1	pH Units	101130		11/07/03 1605	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide	2.5	U		2.5	2.5	1	mg/L	101196		11/10/03 1306	bs
8260B	Volatile Organics (5mL Purge)											
	1,1-Dichloroethene	5.0	U		1.7	5.0	1.00000	ug/L	102199		11/19/03 1136	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222038

Date:11/25/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: FB110503
Date Sampled.....: 11/05/2003
Time Sampled.....: 10:50
Sample Matrix.....: Water

Laboratory Sample ID: 222038-2
Date Received.....: 11/06/2003
Time Received.....: 09:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Methyl-tert-butyl-ether (MTBE)	5.0	U		2.0	5.0	1.00000	ug/L	102199		11/19/03 1136	jdn
	Benzene	5.0	U		0.96	5.0	1.00000	ug/L	102199		11/19/03 1136	jdn
	Trichloroethene	5.0	U		1.6	5.0	1.00000	ug/L	102199		11/19/03 1136	jdn
	Toluene	5.0	U		1.1	5.0	1.00000	ug/L	102199		11/19/03 1136	jdn
	Ethylbenzene	5.0	U		0.93	5.0	1.00000	ug/L	102199		11/19/03 1136	jdn
	Xylenes (total)	5.0	U		1.8	5.0	1.00000	ug/L	102199		11/19/03 1136	jdn
	tert-Butyl alcohol	200	U		30	200	1.00000	ug/L	102199		11/19/03 1136	jdn
	tert-amyl methyl ether	5.0	U		0.47	5.0	1.00000	ug/L	102199		11/19/03 1136	jdn

* In Description = Dry Wgt.

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LABORATORY CHRONICLE

Job Number: 222038 Date: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222038-1 Client ID: B-4(3.5-5.5) Date Recvd: 11/06/2003 Sample Date: 11/05/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102103		11/19/2003	0000	
5030A	5030 Purge & Trap	1	101731		11/14/2003	0200	
5030B	5030CP TCLP/SPLP Prep	1	101847		11/17/2003	1916	
5035	5035 Archon Closed Purge & Trap	1	101913		11/17/2003	1651	
5035	5035 Preservation High (Methanol)	1	101954		11/07/2003	0550	
5035	5035 Preservation Low	1	101953		11/07/2003	0550	
5035	5035 Preservation Low	2	101953		11/07/2003	0550	
EDD	Electronic Data Deliverable	1					
3541	Extraction Soxhlet (DRO)	1	101070		11/08/2003	0920	
3541	Extraction Soxhlet (PCBs)	1	101005		11/07/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102080	102080	11/19/2003	0823	
8082	PCB Analysis	1	102211	101005	11/11/2003	0402	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102104	102104	11/19/2003	1005	
7.3.4.2/9034	Reactivity, Sulfide	1	101193	101193	11/10/2003	1316	
1311	TCLP Zero Headspace Extraction	1	101574		11/13/2003	1405	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	101995	101070	11/16/2003	0232	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	101732	101731	11/14/2003	0912	1.00000
8260B	Volatile Organics	1	101966	101953-101913	11/17/2003	1651	1.00000
8260B	Volatile Organics	1	101856	101847-101574	11/17/2003	1916	1.0000
9045C	pH (Soil)	1	101529	101529	11/13/2003	0842	

Lab ID: 222038-2 Client ID: FB110503 Date Recvd: 11/06/2003 Sample Date: 11/05/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030 5 mL Purge Prep	1	102152		11/19/2003	1136	
5030A	5030 Purge & Trap	1	101399		11/12/2003	0311	
3520C	Extraction Continuous Liq/Liq (PCBs)	1	101116		11/10/2003	0915	
3510C	Extraction Sep. Funnel (Diesel)	1	100856		11/06/2003	1145	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	101964	101964	11/18/2003	0645	
8082	PCB Analysis	1	102004	101116	11/17/2003	0257	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	101903	101903	11/17/2003	1626	
7.3.4.2/9034	Reactivity, Sulfide	1	101196	101196	11/10/2003	1306	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	101997	100856	11/11/2003	1832	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	101733	101399	11/12/2003	1046	1.00000
8260B	Volatile Organics (5mL Purge)	1	102199	102152	11/19/2003	1136	1.00000
9040B	pH (Liquid)	1	101130	101130	11/07/2003	1605	

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SURROGATE RECOVERIES REPORT

Job Number.: 222038 Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: Water Prep Batch..: 100856
Method Code...: 8015D Batch(s).....: 101997

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCS			11/11/2003	88	90
MB			11/11/2003	81	89
222038- 2		FB110503	11/11/2003	83	78

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 119
OTERPH	o-Terphenyl (surr)	58 - 119

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: 3541 Solid Prep Batch..: 101070
Method Code...: 8015D Batch(s).....: 101995

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCS			11/15/2003	112*	110
MB			11/15/2003	78	79
222038- 1		B-4(3.5-5.5)	11/16/2003	62	71

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 103
OTERPH	o-Terphenyl (surr)	44 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222038 Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Water Prep Batch..: 101399
Method Code...: 8015G Batch(s).....: 101733

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/12/2003	97	110
MB			11/12/2003	95	98
222038- 2		FB110503	11/12/2003	95	99

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	79 - 110
BRFLBE	4-Bromofluorobenzene (surr)	67 - 124

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Solid Prep Batch..: 101731
Method Code...: 8015G Batch(s).....: 101732

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/14/2003	104	108
MB			11/14/2003	95	96
222038- 1		B-4(3.5-5.5)	11/14/2003	89	91

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	68 - 113
BRFLBE	4-Bromofluorobenzene (surr)	41 - 125

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SURROGATE RECOVERIES REPORT

Job Number.: 222038 Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: 3541 Solid
Batch(s).....: 102211
Prep Batch..: 101005

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			11/11/2003	97	58
MB			11/11/2003	84	51
222038- 1		B-4(3.5-5.5)	11/11/2003	110	80

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	33 - 131
TCX	Tetrachloro-m-xylene (surr)	42 - 122

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: Water
Batch(s).....: 102004
Prep Batch..: 101116

Lab ID	DT	Sample ID	Date	DCB	TCX
LCD			11/17/2003	28	90
LCS			11/17/2003	50	87
MB			11/17/2003	78	103
222038- 2		FB110503	11/17/2003	36	96

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 116
TCX	Tetrachloro-m-xylene (surr)	33 - 111

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SURROGATE RECOVERIES REPORT

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics (5mL Purge)
Method Code...: 8260.5

Test Matrix...: Water
Batch(s).....: 102199

Prep Batch..: 102152

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/19/2003	90	101	96	105
MB			11/19/2003	94	93	97	104
222038- 2		FB110503	11/19/2003	94	93	100	103

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	66 - 132
BRFLBE	4-Bromofluorobenzene (surr)	79 - 122
DBRFLM	Dibromofluoromethane (surr)	66 - 132
TOLD8	Toluene-d8 (surr)	78 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222038 Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: TCLP Leach
Batch(s).....: 101856
Prep Batch..: 101847

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/17/2003	86	93	92	101
EB1			11/17/2003	87	94	93	101
LCS			11/17/2003	84	100	93	101
MB			11/17/2003	85	94	92	100
222038-	1	B-4(3.5-5.5)	11/17/2003	86	95	92	102

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	66 - 132
BRFLBE	4-Bromofluorobenzene (surr)	79 - 122
DBRFLM	Dibromofluoromethane (surr)	66 - 132
TOLD8	Toluene-d8 (surr)	78 - 128

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 101966
Prep Batch..: 101913

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCD			11/17/2003	97	98	97	100
LCS			11/17/2003	102	101	94	108
MB			11/17/2003	101	96	102	105

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 101966
Prep Batch..: 101953

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/17/2003	113	97	103	102
222038-	1	B-4(3.5-5.5)	11/17/2003	110	100	100	103

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 101966
Prep Batch..: 101955

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/17/2003	112	102	100	108

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SURROGATE RECOVERIES REPORT

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 101966

Prep Batch..: 101955

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 101966

Prep Batch..: 101957

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/17/2003	114	99	101	103

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	003JWLPCBC	101116-003		11/17/2003	0225

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 102004

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.340	4.487	5.001	0.500 U	87	%	62-104	
						3	R	20	
Aroclor 1260	ug/L	3.941	4.502	5.010	0.500 U	79	%	69-105	
						13	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 102004

Analyst...: mgk

LCS	Laboratory Control Sample	003JWLPCBC	101116-002		11/17/2003	0152

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.487		5.001	0.500 U	90	%	62-104	
Aroclor 1260	ug/L	4.502		5.010	0.500 U	90	%	69-105	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101116-001		11/17/2003	0119

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 102004

Analyst...: mgk

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	0.500	U							
Aroclor 1221	ug/L	0.500	U							
Aroclor 1232	ug/L	0.500	U							
Aroclor 1242	ug/L	0.500	U							
Aroclor 1248	ug/L	0.500	U							
Aroclor 1254	ug/L	0.500	U							
Aroclor 1260	ug/L	0.500	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 102211

Analyst...: mgk

LCS	Laboratory Control Sample	003JWLPCBC	101005-002		11/11/2003	0257

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	140.823		166.700	16.700 U	84	%	60-112	
Aroclor 1260, 3541 Solid	ug/Kg	157.627		167.000	16.700 U	94	%	64-119	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101005-001		11/11/2003	0224

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 102211

Analyst...: mgk

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1221, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1232, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1242, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1248, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1254, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1260, 3541 Solid	ug/Kg	16.700	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003HWLDIEA	101070-002		11/15/2003	1140

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 101995

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	69.378		66.670	4.199 U	104	%	70-106	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 101995
Analyst...: mgk

MB	Method Blank		101070-001		11/15/2003	1101

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	4.199 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003HWLDIEA	100856-002		11/11/2003	1400

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 101997

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.649915		2.000000	0.125000 U	82	%	57-107	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 101997
Analyst...: mgk

MB	Method Blank		100856-001		11/11/2003	1321

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	0.125000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 101732
Analyst...: wre

LCS	Laboratory Control Sample	G03K14DSA	101731-002		11/14/2003	0429

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	424.538		400.000	50.000	U	106	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 22203B

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 101732
Analyst...: wre

MB	Method Blank		101731-001		11/14/2003	0353

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	50.000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K120SA	101399-002		11/12/2003	0341

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 101733
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	463.972		400.000	50.000 U	116	%	85-124	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 101733
Analyst...: wre

MB	Method Blank		101399-001		11/12/2003	0306

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	50.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038 Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222054	101847-004		11/17/2003	1101

Test Method.....: 8260B
Method Description.: Volatile Organics
Equipment Code....: GCL16
Batch.....: 101856
Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Vinyl chloride, TCLP Leach	ug/L	100.000	U							
1,1-Dichloroethene, TCLP Leach	ug/L	100.000	U							
2-Butanone (MEK), TCLP Leach	ug/L	100.000	U							
Chloroform, TCLP Leach	ug/L	100.000	U							
Carbon tetrachloride, TCLP Leach	ug/L	100.000	U							
Benzene, TCLP Leach	ug/L	100.000	U							
1,2-Dichloroethane, TCLP Leach	ug/L	100.000	U							
Trichloroethene, TCLP Leach	ug/L	100.000	U							
Tetrachloroethene, TCLP Leach	ug/L	100.000	U							
Chlorobenzene, TCLP Leach	ug/L	100.000	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	*222318	101847-005		11/17/2003	1124

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL16
Batch.....: 101856

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Vinyl chloride, TCLP Leach	ug/L	100.000	U						
1,1-Dichloroethene, TCLP Leach	ug/L	100.000	U						
2-Butanone (MEK), TCLP Leach	ug/L	100.000	U						
Chloroform, TCLP Leach	ug/L	100.000	U						
Carbon tetrachloride, TCLP Leach	ug/L	100.000	U						
Benzene, TCLP Leach	ug/L	100.000	U						
1,2-Dichloroethane, TCLP Leach	ug/L	100.000	U						
Trichloroethene, TCLP Leach	ug/L	100.000	U						
Tetrachloroethene, TCLP Leach	ug/L	100.000	U						
Chlorobenzene, TCLP Leach	ug/L	100.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K170SB	101847-002		11/17/2003	0949

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL16
Batch.....: 101856

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Vinyl chloride, TCLP Leach	ug/L	888.034		1000.000	100.000	U	89	%	50-141	
1,1-Dichloroethene, TCLP Leach	ug/L	934.396		1000.000	100.000	U	93	%	48-132	
2-Butanone (MEK), TCLP Leach	ug/L	884.378		1000.000	100.000	U	88	%	55-140	
Chloroform, TCLP Leach	ug/L	947.804		1000.000	100.000	U	95	%	66-127	
Carbon tetrachloride, TCLP Leach	ug/L	1032.924		1000.000	100.000	U	103	%	66-121	
Benzene, TCLP Leach	ug/L	1003.520		1000.000	100.000	U	100	%	68-130	
1,2-Dichloroethane, TCLP Leach	ug/L	911.630		1000.000	100.000	U	91	%	68-125	
Trichloroethene, TCLP Leach	ug/L	1101.822		1000.000	100.000	U	110	%	71-128	
Tetrachloroethene, TCLP Leach	ug/L	1139.348		1000.000	100.000	U	114	%	74-123	
Chlorobenzene, TCLP Leach	ug/L	1065.880		1000.000	100.000	U	107	%	77-121	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101847-001		11/17/2003	0904

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL16
Batch.....: 101856

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Vinyl chloride, TCLP Leach	ug/L	100.000	U							
1,1-Dichloroethene, TCLP Leach	ug/L	100.000	U							
2-Butanone (MEK), TCLP Leach	ug/L	100.000	U							
Chloroform, TCLP Leach	ug/L	100.000	U							
Carbon tetrachloride, TCLP Leach	ug/L	100.000	U							
Benzene, TCLP Leach	ug/L	100.000	U							
1,2-Dichloroethane, TCLP Leach	ug/L	100.000	U							
Trichloroethene, TCLP Leach	ug/L	100.000	U							
Tetrachloroethene, TCLP Leach	ug/L	100.000	U							
Chlorobenzene, TCLP Leach	ug/L	100.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222038	101953-003		11/17/2003	1406

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222211	101955-007		11/17/2003	1434

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222287	101957-013		11/17/2003	1501

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	V03K170SB	101913-016		11/17/2003	2126

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	46.475	51.416	50.000	5.000	U	93	%	51-132	
							10	R	20	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	50.354	45.092	50.000	5.000	U	101	%	61-132	
							11	R	20	
Benzene, Solid	ug/Kg	49.071	50.214	50.000	5.000	U	98	%	72-128	
							2	R	20	
Trichloroethene, Solid	ug/Kg	48.546	52.997	50.000	5.000	U	97	%	75-129	
							9	R	20	
Toluene, Solid	ug/Kg	48.216	54.811	50.000	5.000	U	96	%	75-125	
							13	R	20	
Ethylbenzene, Solid	ug/Kg	49.647	50.938	50.000	5.000	U	99	%	79-123	
							3	R	20	
Xylenes (total), Solid	ug/Kg	148.264	158.294	150.000	5.000	U	99	%	82-125	
							7	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038 Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K170SB	101913-015		11/17/2003	1328

Test Method.....: 8260B Equipment Code....: GCL6 Analyst...: jdn
Method Description.: Volatile Organics Batch.....: 101966

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	51.416		50.000	5.000 U	103	%	51-132	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	45.092		50.000	5.000 U	90	%	61-132	
Benzene, Solid	ug/Kg	50.214		50.000	5.000 U	100	%	72-128	
Trichloroethene, Solid	ug/Kg	52.997		50.000	5.000 U	106	%	75-129	
Toluene, Solid	ug/Kg	54.811		50.000	5.000 U	110	%	75-125	
Ethylbenzene, Solid	ug/Kg	50.938		50.000	5.000 U	102	%	79-123	
Xylenes (total), Solid	ug/Kg	158.294		150.000	5.000 U	106	%	82-125	

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101913-014		11/17/2003	1244

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K19DSB	102152-002		11/19/2003	1051

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)

Equipment Code....: GCL16
Batch.....: 102199

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	42.015		50.000	5.000 U	84	%	48-132	
Methyl-tert-butyl-ether (MTBE)	ug/L	43.739		50.000	5.000 U	87	%	49-139	
Benzene	ug/L	47.692		50.000	5.000 U	95	%	68-130	
Trichloroethene	ug/L	52.266		50.000	5.000 U	105	%	71-128	
Toluene	ug/L	50.035		50.000	5.000 U	100	%	72-122	
Ethylbenzene	ug/L	52.459		50.000	5.000 U	105	%	78-121	
Xylenes (total)	ug/L	153.542		150.000	5.000 U	102	%	76-129	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102152-001		11/19/2003	1029

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)

Equipment Code....: GCL16
Batch.....: 102199

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	5.000	U							
Methyl-tert-butyl-ether (MTBE)	ug/L	5.000	U							
Benzene	ug/L	5.000	U							
Trichloroethene	ug/L	5.000	U							
Toluene	ug/L	5.000	U							
Ethylbenzene	ug/L	5.000	U							
Xylenes (total)	ug/L	5.000	U							
tert-Butyl alcohol	ug/L	200.000	U							
tert-amyl methyl ether	ug/L	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038 Report Date.: 11/25/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: Method Batch.....: 102103 Analyst...: daj
Method Description.: % Solids Determination Equipment Code....: Test Code.: %SOLID
Parameter.....: % Solids

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102103-001		%	0.1000 U								11/19/2003	0000

Test Method.....: 7.3.3.2/9014 Batch.....: 101903 Analyst...: rnm
Method Description.: Reactivity, Cyanide Equipment Code....: SPEC4 Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	101903-004		mg/L	-0.00010								11/17/2003	1616
LCS	101903-005	I03ISTCN2	mg/L	0.09110		0.10000	-0.00010	91		%	80-120	11/17/2003	1617

Test Method.....: 7.3.3.2/9014 Batch.....: 102104 Analyst...: rnm
Method Description.: Reactivity, Cyanide Equipment Code....: SPEC1 Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102104-004		mg/L	-0.00270								11/19/2003	1001
LCS	102104-005	I03ISTCN2	mg/L	0.09880		0.10000		99		%	85-115	11/19/2003	1001

Test Method.....: 9040B Batch.....: 101130 Analyst...: nrp
Method Description.: pH (Liquid) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	101130-002	I03KPH7B	pH Units	7.08000		7.00000		0.08000		A	0.20000	11/07/2003	1556
LCDP	101130-003	I03KPH7B	pH Units	7.07000		7.00000		0.07000		A	0.20000	11/07/2003	1558
MDPH	Z22038-2		pH Units	5.62000			5.61000	0.01000		A	0.20000	11/07/2003	1606

Test Method.....: 9045C Batch.....: 101529 Analyst...: nrp
Method Description.: pH (Soil) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	101529-002	I03GPH7B	pH Units	6.98000		7.00000		0.02000		A	0.20000	11/13/2003	0826
LCDP	101529-003	I03GPH7B	pH Units	7.00000		7.00000		0.00		A	0.20000	11/13/2003	0828

Test Method.....: 7.3.4.2/9034 Batch.....: 101193 Analyst...: bs
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	101193-014		mg/Kg	91.00 U								11/10/2003	1310
LCS	101193-015	I03HSTSF1	mg/Kg	91.00 U		151.10	91.00 U	42		%	0-200	11/10/2003	1312

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222038

Report Date.: 11/25/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Test Method.....: 7.3.4.2/9034
Method Description.: Reactivity, Sulfide
Parameter.....: Reactivity, Sulfide

Batch.....: 101196
Equipment Code....:

Analyst....: bs
Test Code.: REACS

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	101196-001		mg/L	1.00000 U								11/10/2003	1245
LCS	101196-002	I03HSTSF1	mg/L	3.30000		3.02300	1.00000 U	109		%	80-120	11/10/2003	1247

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 11/25/2003

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Soil, sediment and sludge sample results are reported on a "dry weight" basis except when analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received" basis unless noted differently.
3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
4) The test results for the noted analytical method(s) meet the requirements of NELAC. Lab Cert. ID# 100201
5) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report)

Inorganic Qualifiers (Q-Column)

U Analyte was not detected at or above the stated limit.
< Not detected at or above the reporting limit.
J Result is less than the RL, but greater than or equal to the method detection limit.
B Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.
S Result was determined by the Method of Standard Additions.
F AFCEE: Result is less than the RL, but greater than or equal to the method detection limit.

Inorganic Flags (Flag Column)

^ ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
+ MSA correlation coefficient is less than 0.995.
4 MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
E SD: Serial dilution exceeds the control limits.
H MB, EB1, EB2, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.
N MS, MSD: Spike recovery exceeds the upper or lower control limits.
W AS(GFAA) Post-digestion spike was outside 85-115% control limits.

Organic Qualifiers (Q - Column)

U Analyte was not detected at or above the stated limit.
ND Compound not detected.
J Result is an estimated value below the reporting limit or a tentatively identified compound (TIC).
Q Result was qualitatively confirmed, but not quantified.
C Pesticide identification was confirmed by GC/MS.
Y The chromatographic response resembles a typical fuel pattern.
Z The chromatographic response does not resemble a typical fuel pattern.
E Result exceeded calibration range, secondary dilution required.
F AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)

Organic Flags (Flags Column)

B MB: Batch QC is greater than reporting limit.
* LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits.
- EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
A Concentration exceeds the instrument calibration range
a Concentration is below the method Reporting Limit (RL)
B Compound was found in the blank and sample.
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
H Alternate peak selection upon analytical review
I Indicates the presence of an interfence, recovery is not calculated.
M Manually integrated compound.
P The lower of the two values is reported when the % difference between the results of two GC columns is

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 11/25/2003

greater than 25%.

Abbreviations

AS	Post Digestion Spike (GFAA Samples - See Note 1 below)
Batch	Designation given to identify a specific extraction, digestion, preparation set, or analysis set
CAP	Capillary Column CCB Continuing Calibration Blank
CCV	Continuing Calibration Verification
CF	Confirmation analysis of original
C1	Confirmation analysis of A1 or D1
C2	Confirmation analysis of A2 or D2
C3	Confirmation analysis of A3 or D3
CRA	Low Level Standard Check - GFAA; Mercury
CRI	Low Level Standard Check - ICP
CV	Calilbration Verification Standard
Dil Fac	Dilution Factor - Secondary dilution analysis
D1	Dilution 1
D2	Dilution 2
D3	Dilution 3
DLFac	Detection Limit Factor
DSH	Distilled Standard - High Level
DSL	Distilled Standard - Low Level
DSM	Distilled Standard - Medium Level
EB1	Extraction Blank 1
EB2	Extraction Blank 2
EB3	DI Blank
ELC	Method Extracted LCS
ELD	Method Extracted LCD
ICAL	Initial calibration
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ISA	Interference Check Sample A - ICAP
ISB	Interference Check Sample B - ICAP
Job No.	The first six digits of the sample ID which refers to a specific client, project and sample group
	Lab ID An 8 number unique laboratory identification
LCD	Laboratory Control Standard Duplicate
LCS	Laboratory Control Standard with reagent grade water or a matrix free from the analyte of interest
MB	Method Blank or (PB) Preparation Blank
MD	Method Duplicate
MDL	Method Detection Limit
MLE	Medium Level Extraction Blank
MRL	Method Reporting Limit Standard
MSA	Method of Standard Additions
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not Detected
PREPF	Preparation factor used by the Laboratory's Information Management System (LIMS)
PDS	Post Digestion Spike (ICAP)
RA	Re-analysis of original
A1	Re-analysis of D1
A2	Re-analysis of D2
A3	Re-analysis of D3
RD	Re-extraction of dilution
RE	Re-extraction of original
RC	Re-extraction Confirmation
RL	Reporting Limit
RPD	Relative Percent Difference of duplicate (unrounded) analyses
RRF	Relative Response Factor
RT	Retention Time

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 11/25/2003

RTW	Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number
SCB	Seeded Control Blank
SD	Serial Dilution (Calculated when sample concentration exceeds 50 times the MDL)
UCB	Unseeded Control Blank
SSV	Second Source Verification Standard
SLCS	Solid Laboratory Control Standard(LCS)
PHC	pH Calibration Check LCSP pH Laboratory Control Sample
LCDP	pH Laboratory Control Sample Duplicate
MDPH	pH Sample Duplicate
MDFP	Flashpoint Sample Duplicate
LCFP	Flashpoint LCS
G1	Gelex Check Standard Range 0-1
G2	Gelex Check Standard Range 1-10
G3	Gelex Check Standard Range 10-100
G4	Gelex Check Standard Range 100-1000

Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCS S=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Note 2: The MD calculates an absolute difference (A) when the sample concentration is less than 5 times the reporting limit. The control limit is represented as +/- the RL.

Amendment No. 0010

STL EDISON
777 New Durham Road
Edison, New Jersey 08817 -
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

222038

PAGE ___ OF ___

Name (for report and invoice): Mack Astorga	Samplers Name (Printed): Rich Firely	Site/Project Identification: Dover AFB
Company: ENSR International	P.O. #	State (Location of site): NJ: ☐ NY: ☐ Other: DE
		Regulatory Program:
Address: 2005 Cabot Boulevard West, Suite 100	Analysis Turnaround Time: Standard ☐	
City: Langhorne State: PA Zip: 19047	Rush Charges Authorized For: 2 Week ☐ 1 Week ☑ Other ☐	
Phone: 215-757-4900 Fax: 215-757-3904		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

	Sample Identification	Date	Time	Matrix	No. of Cont.	8260B TCLP*	8260B PPVOA	GRO	DRO	8082 - PCB	Reactivity (Cyanide, Sulfide)	Corrosivity	Ignitability				Sample Numbers
1	B-4(3.5-5.5)	11/5/03	1030	Soil	7	X	X	X	X	X	X	X	X				
2	FB110503	11/5/03	1050	~~Soil~~ AQ	9	X	X	X	X	X	X	X	X				
	Custody seals 67903 + 67904																
	Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH — Soil:					1	1,6	1	1	1	1	1					
	6 = Other Encore, 7 = Other ___ — Water:					1	1,2	1,2	1	1	1	1					

LAB USE ONLY
Project No: ___
Job No: ___

Special Instructions PPVOA-BTEX, tert-amyl methyl ether, TBA, MTBE, TCE, 1,1-DCE * on Hold
Water Metals Filtered (Yes/No)? ___

Relinquished by	Company	Date / Time	Received by	Company
1) Rich Firely	ENSR	11/5/03 1330	1) [illegible]	SR 11/6/03 0950
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL-6003

Amendment No. 0010

SEVERN TRENT STL

STL Chicago
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University Park, IL 60466

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SEVERN TRENT LABORATORIES
ANALYTICAL REPORT

JOB NUMBER: 222174

Prepared For:

ENSR
2005 Cabot Boulevard West
Suite 100
Langhorne, PA 19047

Project: Dover AFB

Attention: Mack Astorga

Date: 11/26/2003

Signature

Name: Eric A. Lang

Title: Project Manager

E-Mail: elang@stl-inc.com

11/26/03
Date

STL Chicago
2417 Bond Street
University Park, IL 60466

PHONE: (708) 534-5200
FAX..: (708) 534-5211

This Report Contains (45) Pages

Severn Trent Laboratories Chicago
GC/MS Case Narrative

ENSR
Dover AFB
Job Number: 222174
VOA DATA

1. The samples were prepared and analyzed within the recommended hold times from the date of collection.

2. The Method Blanks and Extraction Blanks had all target compounds below the reporting limits.

3. The LCS samples had all controlled spike recoveries within the in-house generated QC limits.

4. Matrix Spike and Matrix Spike Duplicate analyses were not performed on this sample set.

5. The volatile samples had all surrogate recoveries within the in-house generated QC limits.

6. The water samples were prepared using Method 5030B. The soil samples were prepared for the low level soil procedure using Method 5035. The samples were analyzed following SW846 Method 8260B and 8000B. All initial and continuing calibration criteria were met per method or SOP (for minimum R values for certain compounds). The low point in the initial calibration verifies the base reporting limits. The target compounds were quantitated using the initial calibration.

7. The volatile samples had all internal standard areas and retention times within the acceptance limits as compared to the corresponding calibration verification standard.

8. The water samples were analyzed using a 5-mL purge volume. The soil samples were analyzed using the 5035 low level soil procedure. The soil results and reporting limits were adjusted to account for the sample weights, the analytical procedure and on a dry weight basis.

Louis Manzano
GC/MS VOA Dept.

11-26-03
Date

Severn Trent Laboratories Chicago
GC Volatile Case Narrative

ENSR-DOVER AFB
Job Number: 222174
Method 8015G

1. All required holding times were met for the analysis.

2. The Method Blanks had all target compounds below the reporting limits.

3. The surrogate compounds used for this analysis were 4-Bromofluorobenzene and a,a,a-Trifluorotoluene. All surrogate recoveries were within the in-house generated QC limits.

4. The LCS (Laboratory Control Sample) had all spike recoveries within the in-house generated QC limits.

5. A Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis was not performed on these samples.

6. The initial and continuing standard calibrations associated with these samples were within control limits.

7. The samples were analyzed as low-level waters and soils for GRO (GRO) based on SW846 methods 5030 and 8015B. A HP 5890 gas chromatograph equipped with a flame-ionization detector (FID) and a Tekmar LSC 2000/2016 ALS was used for the analysis of these samples. The soil results are on a dry weight basis.

Gary Rynkar
GC/VOA Section Manager

11/25/13
Date

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SAMPLE INFORMATION
Date: 11/26/2003

Job Number.: 222174
Customer...: ENSR
Attn.....: Mack Astorga

Project Number.....: 20003849
Customer Project ID....: DOVER AFB
Project Description....: Dover AFB

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
222174-1	B-1(4-6)	Soil	11/10/2003	09:30	11/11/2003	09:25
222174-2	FB111003	Water	11/10/2003	11:35	11/11/2003	09:25
222174-3	B-10(3-5)	Soil	11/10/2003	15:50	11/11/2003	09:25

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222174

Date:11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-1(4-6)
Date Sampled.....: 11/10/2003
Time Sampled.....: 09:30
Sample Matrix.....: Soil

Laboratory Sample ID: 222174-1
Date Received.....: 11/11/2003
Time Received.....: 09:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DI	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.0	18	1.00000	ug/Kg	102727		11/24/03 1840	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1840	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1840	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1840	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1840	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1840	pjg
	Aroclor 1260, 3541 Solid*	18	U		1.5	18	1.00000	ug/Kg	102727		11/24/03 1840	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.5	U		2.8	4.5	1.00000	mg/Kg	102757		11/25/03 0600	mgk
Method	% Solids Determination											
	% Solids, Solid	91.7			0.10	0.10	1	%	101778		11/16/03 1635	pfk
	% Moisture, Solid	8.3			0.10	0.10	1	%	101778		11/16/03 1635	pfk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	10	J	a	10	55	1.00000	ug/Kg	102139		11/19/03 0225	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	1.5	U			1.5	1	mg/Kg	102104		11/19/03 1005	rmm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	102658		11/24/03 1000	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.9				0.2	1	pH Units	101529		11/13/03 0949	nrp
	Temperature at Analysis, Solid	18.0				1.0	1	pH Units	101529		11/13/03 0949	nrp

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222174

Date:11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-1(4-6)
Date Sampled.....: 11/10/2003
Time Sampled.....: 09:30
Sample Matrix.....: Soil

Laboratory Sample ID: 222174-1
Date Received.....: 11/11/2003
Time Received.....: 09:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	240	U		89	240	1	mg/Kg	101723		11/14/03 1219	bs
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	7.0	U		1.4	7.0	1.00000	ug/Kg	102177		11/18/03 1537	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	7.0	U		0.90	7.0	1.00000	ug/Kg	102177		11/18/03 1537	jdn
	Benzene, Solid*	7.0	U		0.93	7.0	1.00000	ug/Kg	102177		11/18/03 1537	jdn
	Trichloroethene, Solid*	7.0	U		0.83	7.0	1.00000	ug/Kg	102177		11/18/03 1537	jdn
	Toluene, Solid*	7.0	U		1.4	7.0	1.00000	ug/Kg	102177		11/18/03 1537	jdn
	Ethylbenzene, Solid*	7.0	U		1.5	7.0	1.00000	ug/Kg	102177		11/18/03 1537	jdn
	Xylenes (total), Solid*	7.0	U		4.1	7.0	1.00000	ug/Kg	102177		11/18/03 1537	jdn
	tert-Butyl alcohol, Solid*	280	U		200	280	1.00000	ug/Kg	102177		11/18/03 1537	jdn
	tert-amyl methyl ether, Solid*	7.0	U		0.87	7.0	1.00000	ug/Kg	102177		11/18/03 1537	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222174

Date:11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB111003
Date Sampled.....: 11/10/2003
Time Sampled.....: 11:35
Sample Matrix.....: Water

Laboratory Sample ID: 222174-2
Date Received.....: 11/11/2003
Time Received.....: 09:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016	0.51	U		0.17	0.51	1.00000	ug/L	102727		11/15/03 0929	pjg
	Aroclor 1221	0.51	U		0.46	0.51	1.00000	ug/L	102727		11/15/03 0929	pjg
	Aroclor 1232	0.51	U		0.22	0.51	1.00000	ug/L	102727		11/15/03 0929	pjg
	Aroclor 1242	0.51	U		0.19	0.51	1.00000	ug/L	102727		11/15/03 0929	pjg
	Aroclor 1248	0.51	U		0.21	0.51	1.00000	ug/L	102727		11/15/03 0929	pjg
	Aroclor 1254	0.51	U		0.13	0.51	1.00000	ug/L	102727		11/15/03 0929	pjg
	Aroclor 1260	0.51	U		0.15	0.51	1.00000	ug/L	102727		11/15/03 0929	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO)	0.12	U		0.029	0.12	1.00000	mg/L	102757		11/19/03 2208	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO)	50	U		7.1	50	1.00000	ug/L	101733		11/12/03 1121	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide	0.01	U		0.01	0.01	1	mg/L	102316		11/21/03 1049	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint)	>200					1	degrees F	101964		11/18/03 0829	jmk
9040B	pH (Liquid)											
	Corrosivity (pH-Liquids)	4.88			0.20	0.20	1	pH Units	101521		11/13/03 0829	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide	1.0	U		1.0	1.0	1	mg/L	101723		11/14/03 1207	bs
8260B	Volatile Organics (5mL Purge)											
	1,1-Dichloroethene	5.0	U		1.7	5.0	1.00000	ug/L	102199		11/19/03 1159	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222174

Date:11/26/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: FB111003
Date Sampled.....: 11/10/2003
Time Sampled.....: 11:35
Sample Matrix.....: Water

Laboratory Sample ID: 222174-2
Date Received.....: 11/11/2003
Time Received.....: 09:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Methyl-tert-butyl-ether (MTBE)	5.0	U		2.0	5.0	1.00000	ug/L	102199		11/19/03 1159	jdn
	Benzene	5.0	U		0.96	5.0	1.00000	ug/L	102199		11/19/03 1159	jdn
	Trichloroethene	5.0	U		1.6	5.0	1.00000	ug/L	102199		11/19/03 1159	jdn
	Toluene	5.0	U		1.1	5.0	1.00000	ug/L	102199		11/19/03 1159	jdn
	Ethylbenzene	5.0	U		0.93	5.0	1.00000	ug/L	102199		11/19/03 1159	jdn
	Xylenes (total)	5.0	U		1.8	5.0	1.00000	ug/L	102199		11/19/03 1159	jdn
	tert-Butyl alcohol	200	U		30	200	1.00000	ug/L	102199		11/19/03 1159	jdn
	tert-amyl methyl ether	5.0	U		0.47	5.0	1.00000	ug/L	102199		11/19/03 1159	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222174

Date:11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-10(3-5)
Date Sampled.....: 11/10/2003
Time Sampled.....: 15:50
Sample Matrix.....: Soil

Laboratory Sample ID: 222174-3
Date Received.....: 11/11/2003
Time Received.....: 09:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.0	18	1.00000	ug/Kg	102727		11/24/03 1951	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1951	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1951	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1951	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1951	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1951	pjg
	Aroclor 1260, 3541 Solid*	18	U		1.5	18	1.00000	ug/Kg	102727		11/24/03 1951	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.4	U		2.7	4.4	1.00000	mg/Kg	102757		11/25/03 0756	mgk
Method	% Solids Determination											
	% Solids, Solid	93.5			0.10	0.10	1	%	101778		11/16/03 1635	pfk
	% Moisture, Solid	6.5			0.10	0.10	1	%	101778		11/16/03 1635	pfk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	53	U		10	53	1.00000	ug/Kg	102139		11/19/03 0301	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	2.0	U			2.0	1	mg/Kg	102104		11/19/03 1007	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	102658		11/24/03 1600	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.2				0.2	1	pH Units	101529		11/13/03 0952	nrp
	Temperature at Analysis, Solid	19.0				1.0	1	pH Units	101529		11/13/03 0952	nrp

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222174

Date:11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-10(3-5)
Date Sampled.....: 11/10/2003
Time Sampled.....: 15:50
Sample Matrix.....: Soil

Laboratory Sample ID: 222174-3
Date Received.....: 11/11/2003
Time Received.....: 09:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	230	U		84	230	1	mg/Kg	101723		11/14/03 1227	bs
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	5.8	U		1.2	5.8	1.00000	ug/Kg	102177		11/18/03 1604	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	5.8	U		0.74	5.8	1.00000	ug/Kg	102177		11/18/03 1604	jdn
	Benzene, Solid*	5.8	U		0.77	5.8	1.00000	ug/Kg	102177		11/18/03 1604	jdn
	Trichloroethene, Solid*	5.8	U		0.69	5.8	1.00000	ug/Kg	102177		11/18/03 1604	jdn
	Toluene, Solid*	5.8	U		1.2	5.8	1.00000	ug/Kg	102177		11/18/03 1604	jdn
	Ethylbenzene, Solid*	5.8	U		1.3	5.8	1.00000	ug/Kg	102177		11/18/03 1604	jdn
	Xylenes (total), Solid*	5.8	U		3.4	5.8	1.00000	ug/Kg	102177		11/18/03 1604	jdn
	tert-Butyl alcohol, Solid*	230	U		170	230	1.00000	ug/Kg	102177		11/18/03 1604	jdn
	tert-amyl methyl ether, Solid*	5.8	U		0.72	5.8	1.00000	ug/Kg	102177		11/18/03 1604	jdn

* In Description = Dry Wgt.

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LABORATORY CHRONICLE

Job Number: 222174 Date: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222174-1 Client ID: B-1(4-6) Date Recvd: 11/11/2003 Sample Date: 11/10/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	101778		11/16/2003	1635	
5030A	5030 Purge & Trap	1	102138		11/18/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	102027		11/18/2003	1537	
5035	5035 Preservation High (Methanol)	1	102182		11/12/2003	0430	
5035	5035 Preservation Low	1	102181		11/12/2003	0430	
5035	5035 Preservation Low	2	102181		11/12/2003	0431	
EDD	Electronic Data Deliverable	1					
3541	Extraction Soxhlet (DRO)	1	102156		11/20/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	102272		11/21/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102658	102658	11/24/2003	1000	
8082	PCB Analysis	1	102727	102272	11/24/2003	1840	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102104	102104	11/19/2003	1005	
7.3.4.2/9034	Reactivity, Sulfide	1	101723	101723	11/14/2003	1219	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	102757	102156	11/25/2003	0600	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102139	102138	11/19/2003	0225	1.00000
8260B	Volatile Organics	1	102177	102181-102027	11/18/2003	1537	1.00000
9045C	pH (Soil)	1	101529	101529	11/13/2003	0949	

Lab ID: 222174-2 Client ID: FB111003 Date Recvd: 11/11/2003 Sample Date: 11/10/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030 5 mL Purge Prep	1	102152		11/19/2003	1159	
5030A	5030 Purge & Trap	1	101399		11/12/2003	0312	
3520C	Extraction Continuous Liq/Liq (PCBs)	1	101333		11/12/2003	0920	
3510C	Extraction Sep. Funnel (Diesel)	1	101269		11/11/2003	1530	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	101964	101964	11/18/2003	0829	
8082	PCB Analysis	1	102727	101333	11/15/2003	0929	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102316	102314	11/21/2003	1049	
7.3.4.2/9034	Reactivity, Sulfide	1	101723	101723	11/14/2003	1207	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	102757	101269	11/19/2003	2208	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	101733	101399	11/12/2003	1121	1.00000
8260B	Volatile Organics (5mL Purge)	1	102199	102152	11/19/2003	1159	1.00000
9040B	pH (Liquid)	1	101521	101521	11/13/2003	0829	

Lab ID: 222174-3 Client ID: B-10(3-5) Date Recvd: 11/11/2003 Sample Date: 11/10/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	101778		11/16/2003	1635	
5030A	5030 Purge & Trap	1	102138		11/18/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	102027		11/18/2003	1604	
5035	5035 Preservation High (Methanol)	1	102182		11/12/2003	0432	
5035	5035 Preservation Low	1	102181		11/12/2003	0432	
5035	5035 Preservation Low	1	102181		11/12/2003	0434	
5035	5035 Preservation Low	2	102181		11/12/2003	0432	
5035	5035 Preservation Low	2	102181		11/12/2003	0434	
3541	Extraction Soxhlet (DRO)	1	102156		11/20/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	102272		11/21/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102658	102658	11/24/2003	1600	
8082	PCB Analysis	1	102727	102272	11/24/2003	1951	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102104	102104	11/19/2003	1007	
7.3.4.2/9034	Reactivity, Sulfide	1	101723	101723	11/14/2003	1227	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	102757	102156	11/25/2003	0756	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102139	102138	11/19/2003	0301	1.00000
8260B	Volatile Organics	1	102177	102181-102027	11/18/2003	1604	1.00000
9045C	pH (Soil)	1	101529	101529	11/13/2003	0952	

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SURROGATE RECOVERIES REPORT

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Diesel Range Organics (DRO)
Method Code...: 8015D

Test Matrix...: Water
Batch(s).....: 102757

Prep Batch..: 101269

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCD			11/19/2003	83	84
LCS			11/19/2003	81	67
MB			11/19/2003	80	86
222174- 2		FB111003	11/19/2003	82	84

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 119
OTERPH	o-Terphenyl (surr)	58 - 119

Method.....: TPH - Diesel Range Organics (DRO)
Method Code...: 8015D

Test Matrix...: 3541 Solid
Batch(s).....: 102757

Prep Batch..: 102156

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCS			11/25/2003	92	97
MB			11/25/2003	81	86
222174- 1		B-1(4-6)	11/25/2003	80	88
222174- 1	MS	B-1(4-6)	11/25/2003	91	102
222174- 1	MSD	B-1(4-6)	11/25/2003	84	95
222174- 3		B-10(3-5)	11/25/2003	79	84

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 103
OTERPH	o-Terphenyl (surr)	44 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222174 Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Water Prep Batch..: 101399
Method Code...: 8015G Batch(s).....: 101733

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/12/2003	97	110
MB			11/12/2003	95	98
222174- 2		FB111003	11/12/2003	96	99

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	79 - 110
BRFLBE	4-Bromofluorobenzene (surr)	67 - 124

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Solid Prep Batch..: 102138
Method Code...: 8015G Batch(s).....: 102139

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/19/2003	104	110
MB			11/18/2003	96	97
222174- 1		B-1(4-6)	11/19/2003	92	93
222174- 3		B-10(3-5)	11/19/2003	91	94

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	68 - 113
BRFLBE	4-Bromofluorobenzene (surr)	41 - 125

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SURROGATE RECOVERIES REPORT

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: Water
Batch(s).....: 102727
Prep Batch..: 101333

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			11/15/2003	69	86
MB			11/15/2003	75	86
222174- 2		FB111003	11/15/2003	52	71

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 116
TCX	Tetrachloro-m-xylene (surr)	33 - 111

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: 3541 Solid
Batch(s).....: 102727
Prep Batch..: 102272

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			11/24/2003	109	107
MB			11/24/2003	98	100
222174- 1		B-1(4-6)	11/24/2003	104	106
222174- 3		B-10(3-5)	11/24/2003	104	100

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	33 - 131
TCX	Tetrachloro-m-xylene (surr)	42 - 122

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SURROGATE RECOVERIES REPORT

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics (5mL Purge)
Method Code...: 8260.5

Test Matrix...: Water
Batch(s).....: 102199

Prep Batch..: 102152

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/19/2003	90	101	96	105
MB			11/19/2003	94	93	97	104
222174- 2		FB111003	11/19/2003	93	92	99	103

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	66 - 132
BRFLBE	4-Bromofluorobenzene (surr)	79 - 122
DBRFLM	Dibromofluoromethane (surr)	66 - 132
TOLD8	Toluene-d8 (surr)	78 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 102177

Prep Batch..: 102027

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/18/2003	96	98	97	100
MB			11/18/2003	102	95	105	99

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 102177

Prep Batch..: 102053

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB3			11/18/2003	115	99	89	107

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 102177

Prep Batch..: 102179

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/18/2003	113	95	100	99

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 102177

Prep Batch..: 102181

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/18/2003	98	101	89	108
222174- 1		B-1(4-6)	11/18/2003	104	93	100	99
222174- 3		B-10(3-5)	11/18/2003	110	93	105	97

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140

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SURROGATE RECOVERIES REPORT

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 102177
Prep Batch..: 102181

Test	Test Description	Limits
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 102177
Prep Batch..: 102184

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/18/2003	93	96	90	107

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102727

Analyst...: pjg

LCS	Laboratory Control Sample	003JWLPCBC	101333-002		11/15/2003	0633

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.108		5.001	0.500 U	82	%	62-104	
Aroclor 1260	ug/L	4.708		5.010	0.500 U	94	%	69-105	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	C03KWLPCBA	102272-002		11/24/2003	1357

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102727

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	161.317		166.700	16.700 U	97	%	60-112	
Aroclor 1260, 3541 Solid	ug/Kg	175.913		167.000	16.700 U	105	%	64-119	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101333-001		11/15/2003	0557

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102727

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	0.500	U							
Aroclor 1221	ug/L	0.500	U							
Aroclor 1232	ug/L	0.500	U							
Aroclor 1242	ug/L	0.500	U							
Aroclor 1248	ug/L	0.500	U							
Aroclor 1254	ug/L	0.500	U							
Aroclor 1260	ug/L	0.500	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102272-001		11/24/2003	1321

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102727

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1221, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1232, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1242, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1248, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1254, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1260, 3541 Solid	ug/Kg	16.700	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	003HWLDIEA	101269-003		11/19/2003	1540

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 102757

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.594850	1.408835	2.000000	0.125000 U	80	%	57-107	
						12	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003HWLDIEA	101269-002		11/19/2003	1501

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 102757

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.408835		2.000000	0.125000 U	70	%	57-107	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003HWLDIEA	102156-002		11/25/2003	0246

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 102757
Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	62.260		66.670	4.199 U	93	%	70-106	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 102757
Analyst...: mgk

MB	Method Blank		101269-001		11/19/2003	1422

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	0.125000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174 Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102156-001		11/25/2003	0207

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 102757
Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	4.199 U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MS	Matrix Spike	003HWLDIEA	222174-1		11/25/2003	0639

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 102757

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	70.951		71.970	4.533 U	99	%	70-106	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MSD	Matrix Spike Duplicate	003HWLDIEA	222174-1		11/25/2003	0717

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 102757

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	66.352	70.951	70.930	4.468 U	94	%	70-106	
						5	R	30	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K120SA	101399-002		11/12/2003	0341

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1112
Batch.....: 101733

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	463.972		400.000	50.000 U	116	%	85-124	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101399-001		11/12/2003	0306

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 101733
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	50.000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K18DSA	102138-002		11/19/2003	0002

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 102139
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	438.152		400.000	6.412 J	110	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 102139
Analyst...: wre

MB	Method Blank		102138-001		11/18/2003	2326

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	6.412 J							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	*221990	102179-003		11/18/2003	1158

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222202	102184-003		11/18/2003	1225

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222174	102181-005		11/18/2003	1253

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethane, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB3	DI Blank	-222328	102053-005		11/18/2003	1320

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U						
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U						
Benzene, Solid	ug/Kg	5.000	U						
Trichloroethene, Solid	ug/Kg	5.000	U						
Toluene, Solid	ug/Kg	5.000	U						
Ethylbenzene, Solid	ug/Kg	5.000	U						
Xylenes (total), Solid	ug/Kg	5.000	U						
tert-amyl methyl ether, Solid	ug/Kg	5.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K18DSG	102027-014		11/18/2003	1122

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	45.629		50.000	5.000	U	91	%	51-132	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	50.080		50.000	5.000	U	100	%	61-132	
Benzene, Solid	ug/Kg	48.144		50.000	5.000	U	96	%	72-128	
Trichloroethene, Solid	ug/Kg	48.719		50.000	5.000	U	97	%	75-129	
Toluene, Solid	ug/Kg	48.995		50.000	5.000	U	98	%	75-125	
Ethylbenzene, Solid	ug/Kg	49.416		50.000	5.000	U	99	%	79-123	
Xylenes (total), Solid	ug/Kg	148.963		150.000	5.000	U	99	%	82-125	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102027-013		11/18/2003	1034

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K190SB	102152-002		11/19/2003	1051

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)

Equipment Code....: GCL16
Batch.....: 102199

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	42.015		50.000	5.000 U	84	%	48-132	
Methyl-tert-butyl-ether (MTBE)	ug/L	43.739		50.000	5.000 U	87	%	49-139	
Benzene	ug/L	47.692		50.000	5.000 U	95	%	68-130	
Trichloroethene	ug/L	52.266		50.000	5.000 U	105	%	71-128	
Toluene	ug/L	50.035		50.000	5.000 U	100	%	72-122	
Ethylbenzene	ug/L	52.459		50.000	5.000 U	105	%	78-121	
Xylenes (total)	ug/L	153.542		150.000	5.000 U	102	%	76-129	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102152-001		11/19/2003	1029

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)

Equipment Code....: GCL16
Batch.....: 102199

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	5.000	U							
Methyl-tert-butyl-ether (MTBE)	ug/L	5.000	U							
Benzene	ug/L	5.000	U							
Trichloroethene	ug/L	5.000	U							
Toluene	ug/L	5.000	U							
Ethylbenzene	ug/L	5.000	U							
Xylenes (total)	ug/L	5.000	U							
tert-Butyl alcohol	ug/L	200.000	U							
tert-amyl methyl ether	ug/L	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174 Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: Method Batch.....: 101778 Analyst...: pfk
Method Description.: % Solids Determination Equipment Code....: Test Code.: %SOLID
Parameter.....: % Solids

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	101778-001		%	0.1000 U								11/16/2003	1635

Test Method.....: 7.3.3.2/9014 Batch.....: 102104 Analyst...: rnm
Method Description.: Reactivity, Cyanide Equipment Code....: SPEC1 Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCS	102104-005	I03ISTCN2	mg/L	0.09880		0.10000		99		%	85-115	11/19/2003	1001
MB	102104-004		mg/L	-0.00270								11/19/2003	1001

Test Method.....: 7.3.3.2/9014 Batch.....: 102316 Analyst...: rnm
Method Description.: Reactivity, Cyanide Equipment Code....: SPEC1001 Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCS	102314-005	I03ISTCN2	mg/L	0.09100		0.10000	0.01000 U	91		%	80-120	11/21/2003	1041
MB	102314-004		mg/L	0.01000 U								11/21/2003	1041

Test Method.....: 1010 Batch.....: 102658 Analyst...: jmk
Method Description.: Ignitability (Pensky-Martens Closed-Cup) Equipment Code....: Test Code.: IGNPMC
Parameter.....: Ignitability (Flashpoint)

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MD	222174-1		degrees F	>200			>200					11/24/2003	1130

Test Method.....: 9045C Batch.....: 101529 Analyst...: nrp
Method Description.: pH (Soil) Equipment Code....: Test Code.: CORSOL
Parameter.....: Corrosivity (pH Solid)

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MDPH	222174-1		pH Units	6.89000			6.87000	0.02000		A	0.20000	11/13/2003	0951

Test Method.....: 9040B Batch.....: 101521 Analyst...: nrp
Method Description.: pH (Liquid) Equipment Code....: Test Code.: CORLIQ
Parameter.....: Corrosivity (pH-Liquids)

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MDPH	222174-2		pH Units	4.90000			4.88000					11/13/2003	0831

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222174 Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: 9040B Batch.....: 101521 Analyst...: nrp
Method Description.: pH (Liquid) Equipment Code....: Test Code.: TEMPA
Parameter.....: Temperature at Analysis

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MDPH	222174-2		deg.C	21.00000			21.00000					11/13/2003	0831

Test Method.....: 9040B Batch.....: 101521 Analyst...: nrp
Method Description.: pH (Liquid) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	101521-002	I03GPH7B	pH Units	6.98000		7.00000		0.02000		A	0.20000	11/13/2003	0826
LCDP	101521-003	I03GPH7B	pH Units	7.00000		7.00000		0.00		A	0.20000	11/13/2003	0828

Test Method.....: 9045C Batch.....: 101529 Analyst...: nrp
Method Description.: pH (Soil) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	101529-002	I03GPH7B	pH Units	6.98000		7.00000		0.02000		A	0.20000	11/13/2003	0826
LCDP	101529-003	I03GPH7B	pH Units	7.00000		7.00000		0.00		A	0.20000	11/13/2003	0828
MDPH	222174-1		pH Units	6.89000			6.87000	0.02000		A	0.20000	11/13/2003	0951

Test Method.....: 7.3.4.2/9034 Batch.....: 101723 Analyst...: bs
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result		QC Result		True Value	Orig. Value		QC Calc.	F	*	Limits	Date	Time
MB	101723-014		mg/Kg	91.00	U										11/14/2003	1214
LCS	101723-015	I03HSTSF1	mg/Kg	115.49	B			151.10			76		%	0-200	11/14/2003	1217
MS	222174-1	I03HSTSF1	mg/Kg	95.66	B			151.10	83.63	U	63		%	0-200	11/14/2003	1222
MSD	222174-1	I03HSTSF1	mg/Kg	105.37	B	95.66	B	151.10	87.54	U	70		%	0-200	11/14/2003	1224
											11		R	200		

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 11/26/2003

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Soil, sediment and sludge sample results are reported on a "dry weight" basis except when analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received" basis unless noted differently.
3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
4) The test results for the noted analytical method(s) meet the requirements of NELAC. Lab Cert. ID# 100201
5) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report)

Inorganic Qualifiers (Q-Column)

U Analyte was not detected at or above the stated limit.
< Not detected at or above the reporting limit.
J Result is less than the RL, but greater than or equal to the method detection limit.
B Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.
S Result was determined by the Method of Standard Additions.
F AFCEE; Result is less than the RL, but greater than or equal to the method detection limit.

Inorganic Flags (Flag Column)

- ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
+ MSA correlation coefficient is less than 0.995.
4 MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
E SD: Serial dilution exceeds the control limits.
H MB, EB1, EB2, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.
N MS, MSD: Spike recovery exceeds the upper or lower control limits.
W AS(GFAA) Post-digestion spike was outside 85-115% control limits.

Organic Qualifiers (Q - Column)

U Analyte was not detected at or above the stated limit.
ND Compound not detected.
J Result is an estimated value below the reporting limit or a tentatively identified compound (TIC).
Q Result was qualitatively confirmed, but not quantified.
C Pesticide identification was confirmed by GC/MS.
Y The chromatographic response resembles a typical fuel pattern.
Z The chromatographic response does not resemble a typical fuel pattern.
E Result exceeded calibration range, secondary dilution required.
F AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)

Organic Flags (Flags Column)

B MB: Batch QC is greater than reporting limit.
* LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits.
- EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
A Concentration exceeds the instrument calibration range
a Concentration is below the method Reporting Limit (RL)
B Compound was found in the blank and sample.
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
H Alternate peak selection upon analytical review
I Indicates the presence of an interfence, recovery is not calculated.
M Manually integrated compound.
P The lower of the two values is reported when the % difference between the results of two GC columns is

greater than 25%.

Abbreviations

AS	Post Digestion Spike (GFAA Samples - See Note 1 below)
Batch	Designation given to identify a specific extraction, digestion, preparation set, or analysis set
CAP	Capillary Column CCB Continuing Calibration Blank
CCV	Continuing Calibration Verification
CF	Confirmation analysis of original
C1	Confirmation analysis of A1 or D1
C2	Confirmation analysis of A2 or D2
C3	Confirmation analysis of A3 or D3
CRA	Low Level Standard Check - GFAA; Mercury
CRI	Low Level Standard Check - ICP
CV	Calilbration Verification Standard
Dil Fac	Dilution Factor - Secondary dilution analysis
D1	Dilution 1
D2	Dilution 2
D3	Dilution 3
DLFac	Detection Limit Factor
DSH	Distilled Standard - High Level
DSL	Distilled Standard - Low Level
DSM	Distilled Standard - Medium Level
EB1	Extraction Blank 1
EB2	Extraction Blank 2
EB3	DI Blank
ELC	Method Extracted LCS
ELD	Method Extracted LCD
ICAL	Initial calibration
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ISA	Interference Check Sample A - ICAP
ISB	Interference Check Sample B - ICAP
Job No.	The first six digits of the sample ID which refers to a specific client, project and sample group Lab ID An 8 number unique laboratory identification
LCD	Laboratory Control Standard Duplicate
LCS	Laboratory Control Standard with reagent grade water or a matrix free from the analyte of interest
MB	Method Blank or (PB) Preparation Blank
MD	Method Duplicate
MDL	Method Detection Limit
MLE	Medium Level Extraction Blank
MRL	Method Reporting Limit Standard
MSA	Method of Standard Additions
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not Detected
PREPF	Preparation factor used by the Laboratory's Information Management System (LIMS)
PDS	Post Digestion Spike (ICAP)
RA	Re-analysis of original
A1	Re-analysis of D1
A2	Re-analysis of D2
A3	Re-analysis of D3
RD	Re-extraction of dilution
RE	Re-extraction of original
RC	Re-extraction Confirmation
RL	Reporting Limit
RPD	Relative Percent Difference of duplicate (unrounded) analyses
RRF	Relative Response Factor
RT	Retention Time

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 11/26/2003

RTW	Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number
SCB	Seeded Control Blank
SD	Serial Dilution (Calculated when sample concentration exceeds 50 times the MDL)
UCB	Unseeded Control Blank
SSV	Second Source Verification Standard
SLCS	Solid Laboratory Control Standard(LCS)
PHC	pH Calibration Check LCSP pH Laboratory Control Sample
LCDP	pH Laboratory Control Sample Duplicate
MDPH	pH Sample Duplicate
MDFP	Flashpoint Sample Duplicate
LCFP	Flashpoint LCS
G1	Gelex Check Standard Range 0-1
G2	Gelex Check Standard Range 1-10
G3	Gelex Check Standard Range 10-100
G4	Gelex Check Standard Range 100-1000

Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCS S=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Note 2: The MD calculates an absolute difference (A) when the sample concentration is less than 5 times the reporting limit. The control limit is represented as +/- the RL.

Amendment No. 0010

STL EDISON
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

222174

PAGE ___ OF ___

Name (for report and invoice) Mack Astorga	Samplers Name (Printed) Rich Firely	Site/Project Identification Dover AFB
Company ENSR International	P.O. #	State (Location of site): NJ: ☐ NY: ☐ Other: DE
		Regulatory Program:
Address 2005 Cabot Boulevard West, Suite 100	Analysis Turnaround Time: Standard ☐	
City Langhorne State PA 19047	Rush Charges Authorized For: 2 Week ☐ 1 Week ☑ Other ☐	
Phone 215-757-4900 Fax 215-757-3904		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No:

	Sample Identification	Date	Time	Matrix	No. of Cont.	8260B TCLP TCLP VOA*	8260B PPVOA	GRO	DRO	8082-PCB	Reactivity (Cyanide, sulfide)	Corrosivity	Ignitability				Sample Numbers
1	B-1(4-6)	11/10/03	930	Soil	6	X	X	X	X	X	X	X	X				
2	FB111003	11/10/03	1135	AQ	7	X	X	X	X	X	X	X	X				
3	B-10(3-5)	11/10/03	1550	Soil	6	X	X	X	X	X	X	X	X				
	Custody Seals - 67927, 67933																
	Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH				Soil:	1	1,6	1	1	1	1	1	1				
	6 = Other encore, 7 = Other _____				Water:	1	1,2	1,2	1	1	1	1	1				

Special Instructions PPVOA-BTEX, tert-amyl methyl ether, TBA, MTBE, TCE, 1,1-DCE *-On Hold

Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	ENSR	11/10/03 1600	1) [signature]	11/11/03 0925
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL-6003

Amendment No. 0010

SEVERN TRENT STL

STL Chicago
2417 Bond Street
University Park, IL 60466

Tel: 708 534 5200 Fax: 708 534 5211
www.stl-inc.com

SEVERN TRENT LABORATORIES ANALYTICAL REPORT

JOB NUMBER: 222202

Prepared For:

ENSR
2005 Cabot Boulevard West
Suite 100
Langhorne, PA 19047

Project: Dover AFB

Attention: Mack Astorga

Date: 11/26/2003

Signature

Date: 11/26/03

Name: Eric A. Lang

Title: Project Manager

E-Mail: elang@stl-inc.com

STL Chicago
2417 Bond Street
University Park, IL 60466

PHONE: (708) 534-5200
FAX..: (708) 534-5211

This Report Contains (47) Pages

Severn Trent Laboratories Chicago
GC/MS Case Narrative

ENSR
Dover AFB
Job Number: 222202
VOA DATA

1. The samples were prepared and analyzed within the recommended hold times from the date of collection.

2. The Method Blanks and Extraction Blanks had all target compounds below the reporting limits.

3. The LCS samples had all controlled spike recoveries within the in-house generated QC limits.

4. Matrix Spike and Matrix Spike Duplicate analyses were not performed on this sample set.

5. The volatile samples had all surrogate recoveries within the in-house generated QC limits.

6. The water and TCLP samples were prepared using Method 5030. The soil samples were prepared for the low level soil procedure using Method 5035. The samples were analyzed following SW846 Method 8260B and 8000B. All initial and continuing calibration criteria were met per method or SOP (for minimum R values for certain compounds). The low point in the initial calibration verifies the base reporting limits. The target compounds were quantitated using the initial calibration.

7. The volatile samples had all internal standard areas and retention times within the acceptance limits as compared to the corresponding calibration verification standard.

8. The water samples were analyzed using a 25-mL purge volume. The TCLP samples were analyzed using a 5.0-mL purge volume. Due to the nature of the TCLP method, a 1/20 (for TCLP) dilution factor was automatically added into the method. The soil samples were analyzed using the 5035 low level soil procedure. The soil results and reporting limits were adjusted to account for the sample weights, the analytical procedure and on a dry weight basis.

John Nagel
GC/MS Dept.

11-20-03
Date

Severn Trent Laboratories Chicago
GC Volatile Case Narrative

ENSR-DOVER AFB
Job Number: 222202
Method 8015G

1. All required holding times were met for the analysis.

2. The Method Blanks had all target compounds below the reporting limits.

3. The surrogate compounds used for this analysis were 4-Bromofluorobenzene and a,a,a-Trifluorotoluene. All surrogate recoveries were within the in-house generated QC limits.

4. The LCS (Laboratory Control Sample) had all spike recoveries within the in-house generated QC limits.

5. The Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis had all spike recoveries and the RPD value within the in-house generated QC limits.

6. The initial and continuing standard calibrations associated with these samples were within control limits.

7. The samples were analyzed as low-level waters and soils for GRO (GRO) based on SW846 methods 5030 and 8015B. A HP 5890 gas chromatograph equipped with a flame-ionization detector (FID) and a Tekmar LSC 2000/2016 ALS was used for the analysis of these samples. The soil results are on a dry weight basis.

Gary Rynkar
GC/VOA Section Manager

11/25/13
Date

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SAMPLE INFORMATION
Date: 11/26/2003

Job Number.: 222202
Customer...: ENSR
Attn.....: Mack Astorga

Project Number.....: 20003849
Customer Project ID....: DOVER AFB
Project Description....: Dover AFB

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
222202-1	B-9(5-7)	Soil	11/07/2003	09:15	11/10/2003	09:30
222202-2	FB110703	Water	11/07/2003	09:30	11/10/2003	09:30

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

Job Number: 222202

LABORATORY TEST RESULTS

Date:11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-9(5-7)
Date Sampled.....: 11/07/2003
Time Sampled.....: 09:15
Sample Matrix.....: Soil

Laboratory Sample ID: 222202-1
Date Received.....: 11/10/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.0	18	1.00000	ug/Kg	102727		11/24/03 1618	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1618	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1618	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1618	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1618	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 1618	pjg
	Aroclor 1260, 3541 Solid*	18	U		1.5	18	1.00000	ug/Kg	102727		11/24/03 1618	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.4	U		2.7	4.4	1.00000	mg/Kg	102753		11/25/03 0521	mgk
Method	% Solids Determination											
	% Solids, Solid	93.5			0.10	0.10	1	%	102103		11/19/03 0000	daj
	% Moisture, Solid	6.5			0.10	0.10	1	%	102103		11/19/03 0000	daj
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	26	J	a	10	53	1.00000	ug/Kg	102139		11/19/03 0038	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	0.9	U			0.94	1	mg/Kg	102104		11/19/03 1007	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	102080		11/19/03 0904	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	5.3				0.2	1	pH Units	102724		11/25/03 1613	jmk
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	102724		11/25/03 1613	jmk

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

Job Number: 222202

LABORATORY TEST RESULTS

Date: 11/26/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: B-9(5-7)
Date Sampled.....: 11/07/2003
Time Sampled.....: 09:15
Sample Matrix.....: Soil

Laboratory Sample ID: 222202-1
Date Received.....: 11/10/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	230	U		85	230	1	mg/Kg	101723		11/14/03 1232	bs
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	9.9	U		2.0	9.9	1.00000	ug/Kg	102177		11/18/03 1510	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	9.9	U		1.3	9.9	1.00000	ug/Kg	102177		11/18/03 1510	jdn
	Benzene, Solid*	9.9	U		1.3	9.9	1.00000	ug/Kg	102177		11/18/03 1510	jdn
	Trichloroethene, Solid*	9.9	U		1.2	9.9	1.00000	ug/Kg	102177		11/18/03 1510	jdn
	Toluene, Solid*	9.9	U		2.0	9.9	1.00000	ug/Kg	102177		11/18/03 1510	jdn
	Ethylbenzene, Solid*	9.9	U		2.2	9.9	1.00000	ug/Kg	102177		11/18/03 1510	jdn
	Xylenes (total), Solid*	9.9	U		5.7	9.9	1.00000	ug/Kg	102177		11/18/03 1510	jdn
	tert-Butyl alcohol, Solid*	390	U		290	390	1.00000	ug/Kg	102177		11/18/03 1510	jdn
	tert-amyl methyl ether, Solid*	9.9	U		1.2	9.9	1.00000	ug/Kg	102177		11/18/03 1510	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222202

Date:11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB110703
Date Sampled.....: 11/07/2003
Time Sampled.....: 09:30
Sample Matrix.....: Water

Laboratory Sample ID: 222202-2
Date Received.....: 11/10/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016	0.51	U		0.17	0.51	1.00000	ug/L	102726		11/15/03 0150	pjg
	Aroclor 1221	0.51	U		0.46	0.51	1.00000	ug/L	102726		11/15/03 0150	pjg
	Aroclor 1232	0.51	U		0.22	0.51	1.00000	ug/L	102726		11/15/03 0150	pjg
	Aroclor 1242	0.51	U		0.19	0.51	1.00000	ug/L	102726		11/15/03 0150	pjg
	Aroclor 1248	0.51	U		0.21	0.51	1.00000	ug/L	102726		11/15/03 0150	pjg
	Aroclor 1254	0.51	U		0.13	0.51	1.00000	ug/L	102726		11/15/03 0150	pjg
	Aroclor 1260	0.51	U		0.15	0.51	1.00000	ug/L	102726		11/15/03 0150	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO)	0.13	U		0.029	0.13	1.00000	mg/L	102753		11/20/03 0122	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO)	50	U		7.1	50	1.00000	ug/L	102141		11/19/03 0442	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide	0.010	U			0.010	1	mg/L	101903		11/17/03 1627	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint)	>200					1	degrees F	101964		11/18/03 1013	jmk
9040B	pH (Liquid)											
	Corrosivity (pH-Liquids)	4.91			0.20	0.20	1	pH Units	101521		11/13/03 0832	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide	1.0	U		1.0	1.0	1	mg/L	101723		11/14/03 1209	bs
8260B	Volatile Organics (5mL Purge)											
	1,1-Dichloroethene	5.0	U		1.7	5.0	1.00000	ug/L	102199		11/19/03 1351	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

Job Number: 222202

LABORATORY TEST RESULTS

Date:11/26/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: FB110703
Date Sampled.....: 11/07/2003
Time Sampled.....: 09:30
Sample Matrix.....: Water

Laboratory Sample ID: 222202-2
Date Received.....: 11/10/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Methyl-tert-butyl-ether (MTBE)	5.0	U		2.0	5.0	1.00000	ug/L	102199		11/19/03 1351	jdn
	Benzene	5.0	U		0.96	5.0	1.00000	ug/L	102199		11/19/03 1351	jdn
	Trichloroethene	5.0	U		1.6	5.0	1.00000	ug/L	102199		11/19/03 1351	jdn
	Toluene	5.0	U		1.1	5.0	1.00000	ug/L	102199		11/19/03 1351	jdn
	Ethylbenzene	5.0	U		0.93	5.0	1.00000	ug/L	102199		11/19/03 1351	jdn
	Xylenes (total)	5.0	U		1.8	5.0	1.00000	ug/L	102199		11/19/03 1351	jdn
	tert-Butyl alcohol	200	U		30	200	1.00000	ug/L	102199		11/19/03 1351	jdn
	tert-amyl methyl ether	5.0	U		0.47	5.0	1.00000	ug/L	102199		11/19/03 1351	jdn

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY CHRONICLE

Job Number: 222202

Date: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222202-1 Client ID: B-9(5-7)

Date Recvd: 11/10/2003 Sample Date: 11/07/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102103		11/19/2003	0000	
5030A	5030 Purge & Trap	1	102138		11/18/2003	2100	
5030B	5030CP TCLP/SPLP Prep	1	102441		11/21/2003	1116	
5035	5035 Archon Closed Purge & Trap	1	102027		11/18/2003	1510	
5035	5035 Preservation High (Methanol)	1	102185		11/14/2003	1420	
5035	5035 Preservation Low	1	102184		11/14/2003	1420	
5035	5035 Preservation Low	2	102184		11/14/2003	1420	
EDD	Electronic Data Deliverable	1					
3541	Extraction Soxhlet (DRO)	1	102156		11/20/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	102272		11/21/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102080	102080	11/19/2003	0904	
8082	PCB Analysis	1	102727	102272	11/24/2003	1618	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102104	102104	11/19/2003	1007	
7.3.4.2/9034	Reactivity, Sulfide	1	101723	101723	11/14/2003	1232	
1311	TCLP Zero Headspace Extraction	1	102119		11/19/2003	1600	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	102753	102156	11/25/2003	0521	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102139	102138	11/19/2003	0038	1.00000
8260B	Volatile Organics	1	102177	102184-102027	11/18/2003	1510	1.00000
9045C	pH (Soil)	1	102724	102724	11/25/2003	1613	

Lab ID: 222202-2 Client ID: FB110703

Date Recvd: 11/10/2003 Sample Date: 11/07/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030 5 mL Purge Prep	1	102152		11/19/2003	1351	
5030A	5030 Purge & Trap	1	102140		11/18/2003	2100	
3520C	Extraction Continuous Liq/Liq (PCBs)	1	101480		11/13/2003	1040	
3510C	Extraction Sep. Funnel (Diesel)	1	101543		11/13/2003	1300	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	101964	101964	11/18/2003	1013	
8082	PCB Analysis	1	102726	101480	11/15/2003	0150	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	101903	101903	11/17/2003	1627	
7.3.4.2/9034	Reactivity, Sulfide	1	101723	101723	11/14/2003	1209	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	102753	101543	11/20/2003	0122	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102141	102140	11/19/2003	0442	1.00000
8260B	Volatile Organics (5mL Purge)	1	102199	102152	11/19/2003	1351	1.00000
9040B	pH (Liquid)	1	101521	101521	11/13/2003	0832	

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SURROGATE RECOVERIES REPORT

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Diesel Range Organics (DRO)
Method Code...: 8015D

Test Matrix...: Water
Batch(s).....: 102753

Prep Batch..: 101543

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCD			11/20/2003	90	86
LCS			11/20/2003	88	88
MB			11/19/2003	78	85
222202-	2	FB110703	11/20/2003	80	84

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 119
OTERPH	o-Terphenyl (surr)	58 - 119

Method.....: TPH - Diesel Range Organics (DRO)
Method Code...: 8015D

Test Matrix...: 3541 Solid
Batch(s).....: 102753

Prep Batch..: 102156

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCS			11/25/2003	92	97
MB			11/25/2003	81	86
222202-	1	B-9(5-7)	11/25/2003	79	88

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 103
OTERPH	o-Terphenyl (surr)	44 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Gasoline Range Organics (GRO)
Method Code...: 8015G

Test Matrix...: Solid
Batch(s).....: 102139

Prep Batch..: 102138

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/19/2003	104	110
MB			11/18/2003	96	97
222202- 1		B-9(5-7)	11/19/2003	94	95
222202- 1	MS	B-9(5-7)	11/19/2003	102	107
222202- 1	MSD	B-9(5-7)	11/19/2003	102	107

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	68 - 113
BRFLBE	4-Bromofluorobenzene (surr)	41 - 125

Method.....: TPH - Gasoline Range Organics (GRO)
Method Code...: 8015G

Test Matrix...: Water
Batch(s).....: 102141

Prep Batch..: 102140

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/19/2003	104	113
MB			11/19/2003	100	102
222202- 2		FB110703	11/19/2003	96	99

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	79 - 110
BRFLBE	4-Bromofluorobenzene (surr)	67 - 124

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SURROGATE RECOVERIES REPORT

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: Water
Batch(s).....: 102727
Prep Batch..: 101333

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			11/15/2003	69	86
MB			11/15/2003	75	86

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 116
TCX	Tetrachloro-m-xylene (surr)	33 - 111

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: Water
Batch(s).....: 102726
Prep Batch..: 101480

Lab ID	DT	Sample ID	Date	DCB	TCX
LCD			11/15/2003	73	104
LCS			11/15/2003	58	102
MB			11/15/2003	65	98
222202- 2		FB110703	11/15/2003	62	96

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 116
TCX	Tetrachloro-m-xylene (surr)	33 - 111

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: 3541 Solid
Batch(s).....: 102727
Prep Batch..: 102272

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			11/24/2003	109	107
MB			11/24/2003	98	100
222202- 1		B-9(5-7)	11/24/2003	100	79

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	33 - 131
TCX	Tetrachloro-m-xylene (surr)	42 - 122

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SURROGATE RECOVERIES REPORT

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics (5mL Purge)
Method Code...: 8260.5

Test Matrix...: Water
Batch(s).....: 102199

Prep Batch..: 102152

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/19/2003	90	101	96	105
MB			11/19/2003	94	93	97	104
222202-	2	FB110703	11/19/2003	97	92	101	103

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	66 - 132
BRFLBE	4-Bromofluorobenzene (surr)	79 - 122
DBRFLM	Dibromofluoromethane (surr)	66 - 132
TOLD8	Toluene-d8 (surr)	78 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 102177

Prep Batch..: 102027

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/18/2003	96	98	97	100
MB			11/18/2003	102	95	105	99

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 102177

Prep Batch..: 102053

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB3			11/18/2003	115	99	89	107

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 102177

Prep Batch..: 102179

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/18/2003	113	95	100	99

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 102177

Prep Batch..: 102181

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/18/2003	98	101	89	108

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

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SURROGATE RECOVERIES REPORT

Job Number.: 222202 Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics Test Matrix...: Solid Prep Batch..: 102184
Method Code...: 8260B Batch(s).....: 102177

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/18/2003	93	96	90	107
222202- 1		B-9(5-7)	11/18/2003	97	93	94	101

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	003JWLPCBC	101480-003		11/15/2003	0115

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102726

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.611	4.506	5.001	0.500	U	92	%	62-104	
							2	R	20	
Aroclor 1260	ug/L	4.944	4.746	5.010	0.500	U	99	%	69-105	
							4	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003JWLPCBC	101480-002		11/15/2003	0040

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102726

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.506		5.001	0.500 U	90	%	62-104	
Aroclor 1260	ug/L	4.746		5.010	0.500 U	95	%	69-105	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101480-001		11/15/2003	0004

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102726

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	0.500	U							
Aroclor 1221	ug/L	0.500	U							
Aroclor 1232	ug/L	0.500	U							
Aroclor 1242	ug/L	0.500	U							
Aroclor 1248	ug/L	0.500	U							
Aroclor 1254	ug/L	0.500	U							
Aroclor 1260	ug/L	0.500	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	D03JWLPCBC	101333-002		11/15/2003	0633

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102727

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.108		5.001	0.500 U	82	%	62-104	
Aroclor 1260	ug/L	4.708		5.010	0.500 U	94	%	69-105	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLPCBA	102272-002		11/24/2003	1357

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102727

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	161.317		166.700	16.700 U	97	%	60-112	
Aroclor 1260, 3541 Solid	ug/Kg	175.913		167.000	16.700 U	105	%	64-119	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101333-001		11/15/2003	0557

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102727

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	0.500	U							
Aroclor 1221	ug/L	0.500	U							
Aroclor 1232	ug/L	0.500	U							
Aroclor 1242	ug/L	0.500	U							
Aroclor 1248	ug/L	0.500	U							
Aroclor 1254	ug/L	0.500	U							
Aroclor 1260	ug/L	0.500	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102272-001		11/24/2003	1321

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102727

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1221, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1232, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1242, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1248, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1254, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1260, 3541 Solid	ug/Kg	16.700	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 102753

Analyst...: mgk

LCD	Laboratory Control Sample Duplicate	003HWLDIEA	101543-003		11/20/2003	0043

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.485400	1.476625	2.000000	0.125000 U	74 1	% R	57-107 20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003HWLDIEA	101543-002		11/20/2003	0005

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 102753
Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.476625		2.000000	0.125000 U	74	%	57-107	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003HWLDIEA	102156-002		11/25/2003	0246

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 102753

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	62.260		66.670	4.199 U	93	%	70-106	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101543-001		11/19/2003	2326

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 102753

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	0.125000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

Job Number.: 222202

QUALITY CONTROL RESULTS

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102156-001		11/25/2003	0207

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 102753
Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	4.199 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K18DSA	102138-002		11/19/2003	0002

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 102139
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	438.152		400.000	6.412 J	110	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

Job Number.: 222202

QUALITY CONTROL RESULTS

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102138-001		11/18/2003	2326

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 102139
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	6.412 J							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

Job Number.: 222202

QUALITY CONTROL RESULTS

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MS	Matrix Spike	G03K18DSA	222202-1		11/19/2003	0113

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1314
Batch.....: 102139

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	468.032		427.800	26.262	J 109	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MSD	Matrix Spike Duplicate	G03K180SA	222202-1		11/19/2003	0149

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1314
Batch.....: 102139

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	464.044	468.032	427.800	26.262	J 108	%	79-130	
						1	R	30	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K180SA	102140-002		11/19/2003	0035

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1112
Batch.....: 102141

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	486.945		400.000	50.000 U	122	%	85-124	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102140-001		11/19/2003	0000

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 102141
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	50.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-221990	102179-003		11/18/2003	1158

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000 U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000 U							
Benzene, Solid	ug/Kg	5.000 U							
Trichloroethene, Solid	ug/Kg	5.000 U							
Toluene, Solid	ug/Kg	5.000 U							
Ethylbenzene, Solid	ug/Kg	5.000 U							
Xylenes (total), Solid	ug/Kg	5.000 U							
tert-Butyl alcohol, Solid	ug/Kg	200.000 U							
tert-amyl methyl ether, Solid	ug/Kg	5.000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222202	102184-003		11/18/2003	1225

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U						
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U						
Benzene, Solid	ug/Kg	5.000	U						
Trichloroethene, Solid	ug/Kg	5.000	U						
Toluene, Solid	ug/Kg	5.000	U						
Ethylbenzene, Solid	ug/Kg	5.000	U						
Xylenes (total), Solid	ug/Kg	5.000	U						
tert-Butyl alcohol, Solid	ug/Kg	200.000	U						
tert-amyl methyl ether, Solid	ug/Kg	5.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-Z22174	102181-005		11/18/2003	1253

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

Job Number.: 222202

QUALITY CONTROL RESULTS

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB3	DI Blank	-222328	102053-005		11/18/2003	1320

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K18DSG	102027-014		11/18/2003	1122

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	45.629		50.000	5.000 U	91	%	51-132	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	50.080		50.000	5.000 U	100	%	61-132	
Benzene, Solid	ug/Kg	48.144		50.000	5.000 U	96	%	72-128	
Trichloroethene, Solid	ug/Kg	48.719		50.000	5.000 U	97	%	75-129	
Toluene, Solid	ug/Kg	48.995		50.000	5.000 U	98	%	75-125	
Ethylbenzene, Solid	ug/Kg	49.416		50.000	5.000 U	99	%	79-123	
Xylenes (total), Solid	ug/Kg	148.963		150.000	5.000 U	99	%	82-125	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102027-013		11/18/2003	1034

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102177

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K19DSB	102152-002		11/19/2003	1051

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)

Equipment Code....: GCL16
Batch.....: 102199

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	42.015		50.000	5.000 U	84	%	48-132	
Methyl-tert-butyl-ether (MTBE)	ug/L	43.739		50.000	5.000 U	87	%	49-139	
Benzene	ug/L	47.692		50.000	5.000 U	95	%	68-130	
Trichloroethene	ug/L	52.266		50.000	5.000 U	105	%	71-128	
Toluene	ug/L	50.035		50.000	5.000 U	100	%	72-122	
Ethylbenzene	ug/L	52.459		50.000	5.000 U	105	%	78-121	
Xylenes (total)	ug/L	153.542		150.000	5.000 U	102	%	76-129	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202

Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102152-001		11/19/2003	1029

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)

Equipment Code....: GCL16
Batch.....: 102199

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	5.000	U							
Methyl-tert-butyl-ether (MTBE)	ug/L	5.000	U							
Benzene	ug/L	5.000	U							
Trichloroethene	ug/L	5.000	U							
Toluene	ug/L	5.000	U							
Ethylbenzene	ug/L	5.000	U							
Xylenes (total)	ug/L	5.000	U							
tert-Butyl alcohol	ug/L	200.000	U							
tert-amyl methyl ether	ug/L	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202 | Report Date.: 11/26/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Test Method.....: Method | Batch.....: 102103 | Analyst...: daj
Method Description.: % Solids Determination | Equipment Code.....: | Test Code.: %SOLID
Parameter.....: % Solids

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102103-001		%	0.1000 U								11/19/2003	0000

Test Method.....: 7.3.3.2/9014 | Batch.....: 101903 | Analyst...: rnm
Method Description.: Reactivity, Cyanide | Equipment Code.....: SPEC4 | Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	101903-004		mg/L	-0.00010								11/17/2003	1616
LCS	101903-005	I03ISTCN2	mg/L	0.09110		0.10000	-0.00010	91		%	80-120	11/17/2003	1617

Test Method.....: 7.3.3.2/9014 | Batch.....: 102104 | Analyst...: rnm
Method Description.: Reactivity, Cyanide | Equipment Code.....: SPEC1 | Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCS	102104-005	I03ISTCN2	mg/L	0.09880		0.10000		99		%	85-115	11/19/2003	1001
MB	102104-004		mg/L	-0.00270								11/19/2003	1001

Test Method.....: 1010 | Batch.....: 101964 | Analyst...: jmk
Method Description.: Ignitability (Pensky-Martens Closed-Cup) | Equipment Code.....: | Test Code.: IGNPMC
Parameter.....: Ignitability (Flashpoint)

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MD	222202-2		degrees F	>200			>200					11/18/2003	1105

Test Method.....: 9045C | Batch.....: 102724 | Analyst...: jmk
Method Description.: pH (Soil) | Equipment Code.....: | Test Code.: CORSOL
Parameter.....: Corrosivity (pH Solid)

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MDPH	222202-1		pH Units	5.36000			5.32000	0.04000		A	0.20000	11/25/2003	1615

Test Method.....: 9040B | Batch.....: 101521 | Analyst...: hrp
Method Description.: pH (Liquid) | Equipment Code.....: | Test Code.: CORLIQ
Parameter.....: Corrosivity (pH-Liquids)

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MDPH	222202-2		pH Units	4.92000			4.91000					11/13/2003	0833

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222202 Report Date.: 11/26/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: 9040B Batch.....: 101521 Analyst...: nrp
Method Description.: pH (Liquid) Equipment Code....: Test Code.: TEMPA
Parameter.....: Temperature at Analysis

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MDPH	222202-2		deg.C	21.00000			21.00000					11/13/2003	0833

Test Method.....: 9040B Batch.....: 101521 Analyst...: nrp
Method Description.: pH (Liquid) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	101521-002	I03GPH7B	pH Units	6.98000		7.00000		0.02000		A	0.20000	11/13/2003	0826
LCDP	101521-003	I03GPH7B	pH Units	7.00000		7.00000		0.00		A	0.20000	11/13/2003	0828

Test Method.....: 9045C Batch.....: 102724 Analyst...: jmk
Method Description.: pH (Soil) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	102724-002	I03KPH7B	pH Units	6.97000		7.00000		0.03000		A	0.20000	11/25/2003	1611
LCDP	102724-003	I03KPH7B	pH Units	6.99000		7.00000		0.01000		A	0.20000	11/25/2003	1612
MDPH	222202-1		pH Units	5.36000			5.32000	0.04000		A	0.20000	11/25/2003	1615

Test Method.....: 7.3.4.2/9034 Batch.....: 101723 Analyst...: bs
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	101723-014		mg/Kg	91.00	U								11/14/2003	1214
LCS	101723-015	I03HSTSF1	mg/Kg	115.49	B		151.10		76		%	0-200	11/14/2003	1217

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 11/26/2003

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Soil, sediment and sludge sample results are reported on a "dry weight" basis except when analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received" basis unless noted differently.
3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
4) The test results for the noted analytical method(s) meet the requirements of NELAC. Lab Cert. ID# 100201
5) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report)

Inorganic Qualifiers (Q-Column)

U Analyte was not detected at or above the stated limit.
< Not detected at or above the reporting limit.
J Result is less than the RL, but greater than or equal to the method detection limit.
B Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.
S Result was determined by the Method of Standard Additions.
F AFCEE: Result is less than the RL, but greater than or equal to the method detection limit.

Inorganic Flags (Flag Column)

` ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
+ MSA correlation coefficient is less than 0.995.
4 MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
E SD: Serial dilution exceeds the control limits.
H MB, EB1, EB2, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.
N MS, MSD: Spike recovery exceeds the upper or lower control limits.
W AS(GFAA) Post-digestion spike was outside 85-115% control limits.

Organic Qualifiers (Q - Column)

U Analyte was not detected at or above the stated limit.
ND Compound not detected.
J Result is an estimated value below the reporting limit or a tentatively identified compound (TIC).
Q Result was qualitatively confirmed, but not quantified.
C Pesticide identification was confirmed by GC/MS.
Y The chromatographic response resembles a typical fuel pattern.
Z The chromatographic response does not resemble a typical fuel pattern.
E Result exceeded calibration range, secondary dilution required.
F AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)

Organic Flags (Flags Column)

B MB: Batch QC is greater than reporting limit.
* LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits.
` EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
A Concentration exceeds the instrument calibration range
a Concentration is below the method Reporting Limit (RL)
B Compound was found in the blank and sample.
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
H Alternate peak selection upon analytical review
I Indicates the presence of an interfence, recovery is not calculated.
M Manually integrated compound.
P The lower of the two values is reported when the % difference between the results of two GC columns is

greater than 25%.

Abbreviations

AS	Post Digestion Spike (GFAA Samples - See Note 1 below)
Batch	Designation given to identify a specific extraction, digestion, preparation set, or analysis set
CAP	Capillary Column CCB Continuing Calibration Blank
CCV	Continuing Calibration Verification
CF	Confirmation analysis of original
C1	Confirmation analysis of A1 or D1
C2	Confirmation analysis of A2 or D2
C3	Confirmation analysis of A3 or D3
CRA	Low Level Standard Check - GFAA; Mercury
CRI	Low Level Standard Check - ICP
CV	Calilbration Verification Standard
Dil Fac	Dilution Factor - Secondary dilution analysis
D1	Dilution 1
D2	Dilution 2
D3	Dilution 3
DLFac	Detection Limit Factor
DSH	Distilled Standard - High Level
DSL	Distilled Standard - Low Level
DSM	Distilled Standard - Medium Level
EB1	Extraction Blank 1
EB2	Extraction Blank 2
EB3	DI Blank
ELC	Method Extracted LCS
ELD	Method Extracted LCD
ICAL	Initial calibration
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ISA	Interference Check Sample A - ICAP
ISB	Interference Check Sample B - ICAP
Job No.	The first six digits of the sample ID which refers to a specific client, project and sample group Lab ID An 8 number unique laboratory identification
LCD	Laboratory Control Standard Duplicate
LCS	Laboratory Control Standard with reagent grade water or a matrix free from the analyte of interest
MB	Method Blank or (PB) Preparation Blank
MD	Method Duplicate
MDL	Method Detection Limit
MLE	Medium Level Extraction Blank
MRL	Method Reporting Limit Standard
MSA	Method of Standard Additions
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not Detected
PREPF	Preparation factor used by the Laboratory's Information Management System (LIMS)
PDS	Post Digestion Spike (ICAP)
RA	Re-analysis of original
A1	Re-analysis of D1
A2	Re-analysis of D2
A3	Re-analysis of D3
RD	Re-extraction of dilution
RE	Re-extraction of original
RC	Re-extraction Confirmation
RL	Reporting Limit
RPD	Relative Percent Difference of duplicate (unrounded) analyses
RRF	Relative Response Factor
RT	Retention Time

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 11/26/2003

RTW	Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number
SCB	Seeded Control Blank
SD	Serial Dilution (Calculated when sample concentration exceeds 50 times the MDL)
UCB	Unseeded Control Blank
SSV	Second Source Verification Standard
SLCS	Solid Laboratory Control Standard(LCS)
PHC	pH Calibration Check LCSP pH Laboratory Control Sample
LCDP	pH Laboratory Control Sample Duplicate
MDPH	pH Sample Duplicate
MDFP	Flashpoint Sample Duplicate
LCFP	Flashpoint LCS
G1	Gelex Check Standard Range 0-1
G2	Gelex Check Standard Range 1-10
G3	Gelex Check Standard Range 10-100
G4	Gelex Check Standard Range 100-1000

Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCS S=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Note 2: The MD calculates an absolute difference (A) when the sample concentration is less than 5 times the reporting limit. The control limit is represented as +/- the RL.

Amendment No. 0010

STL EDISON
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Edison, New Jersey 08817
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CHAIN OF CUSTODY / ANALYSIS REQUEST

222202

PAGE ___ OF ___

Name (for report and invoice): Mack Astorga	Samplers Name (Printed): Rich Firely	Site/Project Identification: Dover AFB
Company: ENSR International	P.O. #	State (Location of site): NJ: ☐ NY: ☐ Other: DE
		Regulatory Program:
Address: 2005 Cabot Boulevard West, Suite 100	Analysis Turnaround Time: Standard ☐	
City: Langhorne State: PA 19047	Rush Charges Authorized For: 2 Week ☐	
Phone: 215-757-4900 Fax: 215-757-3904	1 Week ☑ Other ☐	

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No: ____
Job No: ____

	Sample Identification	Date	Time	Matrix	No. of. Cont.	8260B TCLP * TCLE VOA	8260B PPVOA	GRO	DRO	8082 PCB	Reactivity (cyanide, sulfide)	Corrosivity	Ignitability				Sample Numbers
1	B-9(5-7)	11/7/03	915	Soil	7	X	X	X	X	X	X	X	X				
2	FB110703	11/7/03	930	AQ	9	X	X	X	X	X	X	X	X				
	Custody seal #s - 67931 + 67922																
	Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH				Soil:	1	1,6	1	1	1	1	1					
	6 = Other Encore, 7 = Other ____				Water:	1	1,2	1,2	1	1	1	1					

Special Instructions PPVOA-BTEX, tert-amyl methyl ether, TBA, MTBE, TCE, 1,1-DCE * on Hold

Water Metals Filtered (Yes/No)? ____

Relinquished by	Company	Date / Time	Received by	Company
1) Rich Firely	ENSR	11/7/03 1300	1) JLA	11/10/03 0930
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL-6003

```
Note Number  : 51117                                                    JOB
Date         : 11/12/2003
Author       : jtl
Subject      : SDR

Project Code....:

Location Code...: 57222
Job/Sales Order.: 222202      DOVER AFB

Customer........: ENSR        ENSR
Contact Location: LANGHOR PA  Langhorne, PA
Contact.........: ASTORGA M   Mack Astorga

Invoice.........:

Batch...........:

Note For........:
```

REC'D ENCORE SAMPLE PAST HOLD, LIMITED VOLUME ON WET CHEM PARAMETERS.

Amendment No. 0010

SEVERN TRENT STL

STL Chicago
2417 Bond Street
University Park, IL 60466

Tel: 708 534 5200 Fax: 708 534 5211
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SEVERN TRENT LABORATORIES
ANALYTICAL REPORT

JOB NUMBER: 222211

Prepared For:

ENSR
2005 Cabot Boulevard West
Suite 100
Langhorne, PA 19047

Project: Dover AFB

Attention: Mack Astorga

Date: 12/10/2003

Signature

Date 12-10-03

Name: Eric A. Lang

Title: Project Manager

E-Mail: elang@stl-inc.com

STL Chicago
2417 Bond Street
University Park, IL 60466

PHONE: (708) 534-5200
FAX..: (708) 534-5211

This Report Contains (50) Pages

Severn Trent Laboratories Chicago
GC/MS Case Narrative

ENSR
Dover AFB
Job Number: 222211
VOA DATA

1. The samples were prepared and analyzed within the recommended hold times from the date of collection.

2. The Method Blanks and Extraction Blanks had all target compounds below the reporting limits.

3. The LCS samples had all controlled spike recoveries within the in-house generated QC limits.

4. Matrix Spike and Matrix Spike Duplicate analyses were not performed on this sample set.

5. The volatile samples had all surrogate recoveries within the in-house generated QC limits.

6. The water and TCLP samples were prepared using Method 5030. The soil samples were prepared for the low level soil procedure using Method 5035. The samples were analyzed following SW846 Method 8260B and 8000B. All initial and continuing calibration criteria were met per method or SOP (for minimum R values for certain compounds). The low point in the initial calibration verifies the base reporting limits. The target compounds were quantitated using the initial calibration.

7. The volatile samples had all internal standard areas and retention times within the acceptance limits as compared to the corresponding calibration verification standard.

8. The water samples were analyzed using a 25-mL purge volume. The TCLP samples were analyzed using a 5.0-mL purge volume. Due to the nature of the TCLP method, a 1/20 (for TCLP) dilution factor was automatically added into the method. The soil samples were analyzed using the 5035 low level soil procedure. The soil results and reporting limits were adjusted to account for the sample weights, the analytical procedure and on a dry weight basis.

John Nagel
GC/MS Dept.

11-20-03
Date

STL Chicago
Extractable Hydrocarbon Case Narrative

ENSR
Dover AFB
Job# 222211-1, 2, 3, and 4
Diesel Range Organics (DRO)

1. The water sample associated with this SDG was extracted based on SW846 Method 3510. The soil sample was extracted based on the SW846 method 3541. The extracts were analyzed for DRO based on SW846 method 8015B. A HP5890 gas chromatograph equipped with a flame ionization detector and a Xti-5 column was used for the analysis.

2. All required holding times were met for the extraction and analysis.

3. The method blanks were below the reporting limit for DRO.

4. The surrogate compounds used for this analysis were o-Terphenyl and 2-Fluorobiphenyl. All surrogate recoveries were within statistical control limits.

5. All blank spike and blank spike duplicate recoveries and RPDs were within statistical control limits. A solution of Diesel Fuel was used for spiking.

6. A matrix spike and a matrix spike duplicate were not performed on a sample from this SDG.

7. A Diesel Fuel #2 standard was used for quantitating DRO results, using a hydrocarbon range from C10 through C28. An alkane standard ranging from C8 through C36 was analyzed for qualitative purposes.

8. All initial and continuing standard calibrations associated with these samples were in control.

9. DRO detected in the soil samples and appear to match a typical fuel type pattern that is "later" than Diesel fuel.

Patti Gibson
Organics Section Manager

12/10/03
Date

Severn Trent Laboratories Chicago
GC Volatile Case Narrative

ENSR-DOVER AFB
Job Number: 222211
Method 8015G

1. All required holding times were met for the analysis.

2. The Method Blanks had all target compounds below the reporting limits.

3. The surrogate compounds used for this analysis were 4-Bromofluorobenzene and a,a,a-Trifluorotoluene. All surrogate recoveries were within the in-house generated QC limits.

4. The LCS (Laboratory Control Sample) had all spike recoveries within the in-house generated QC limits.

5. A Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis was not performed on these samples.

6. The initial and continuing standard calibrations associated with these samples were within control limits.

7. The samples were analyzed as low-level waters and soils for GRO (GRO) based on SW846 methods 5030 and 8015B. A HP 5890 gas chromatograph equipped with a flame-ionization detector (FID) and a Tekmar LSC 2000/2016 ALS was used for the analysis of these samples. The soil results are on a dry weight basis.

Gary Rynkar
GC/VOA Section Manager

11/25/13
Date

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SAMPLE INFORMATION
Date: 12/10/2003

Job Number.: 222211
Customer...: ENSR
Attn.....: Mack Astorga

Project Number.....: 20003849
Customer Project ID....: DOVER AFB
Project Description....: Dover AFB

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
222211-1	P-2(2.5-4.5)	Soil	11/11/2003	08:05	11/12/2003	09:45
222211-2	P-3(2.5-4.5)	Soil	11/11/2003	09:55	11/12/2003	09:45
222211-3	FB111103	Water	11/11/2003	10:20	11/12/2003	09:45
222211-4	B-19(5-7)	Soil	11/11/2003	11:30	11/12/2003	09:45

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222211

Date:12/10/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: P-2(2.5-4.5)
Date Sampled.....: 11/11/2003
Time Sampled.....: 08:05
Sample Matrix.....: Soil

Laboratory Sample ID: 222211-1
Date Received.....: 11/12/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	19	U		2.1	19	1.00000	ug/Kg	102727		11/24/03 2026	pjg
	Aroclor 1221, 3541 Solid*	19	U		2.2	19	1.00000	ug/Kg	102727		11/24/03 2026	pjg
	Aroclor 1232, 3541 Solid*	19	U		2.2	19	1.00000	ug/Kg	102727		11/24/03 2026	pjg
	Aroclor 1242, 3541 Solid*	19	U		2.2	19	1.00000	ug/Kg	102727		11/24/03 2026	pjg
	Aroclor 1248, 3541 Solid*	19	U		2.2	19	1.00000	ug/Kg	102727		11/24/03 2026	pjg
	Aroclor 1254, 3541 Solid*	19	U		2.2	19	1.00000	ug/Kg	102727		11/24/03 2026	pjg
	Aroclor 1260, 3541 Solid*	19	U		1.6	19	1.00000	ug/Kg	102727		11/24/03 2026	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.8			2.9	4.7	1.00000	mg/Kg	103004		11/25/03 0914	mgk
Method	% Solids Determination											
	% Solids, Solid	87.2			0.10	0.10	1	%	101468		11/12/03 2210	clb
	% Moisture, Solid	12.8			0.10	0.10	1	%	101468		11/12/03 2210	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	57	U		11	57	1.00000	ug/Kg	102139		11/19/03 0336	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	1.5	U			1.5	1	mg/Kg	102104		11/19/03 1008	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	103852		12/08/03 0630	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	4.9				0.2	1	pH Units	103325		12/03/03 1403	rnm
	Temperature at Analysis, Solid	18.0				1.0	1	pH Units	103325		12/03/03 1403	rnm

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222211

Date:12/10/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: P-2(2.5-4.5)
Date Sampled.....: 11/11/2003
Time Sampled.....: 08:05
Sample Matrix.....: Soil

Laboratory Sample ID: 222211-1
Date Received.....: 11/12/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	250	U		91	250	1	mg/Kg	101723		11/14/03 1234	bs
82608	Volatile Organics											
	1,1-Dichloroethene, Solid*	6.5	U		1.3	6.5	1.00000	ug/Kg	101966		11/17/03 1719	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	6.5	U		0.83	6.5	1.00000	ug/Kg	101966		11/17/03 1719	jdn
	Benzene, Solid*	6.5	U		0.85	6.5	1.00000	ug/Kg	101966		11/17/03 1719	jdn
	Trichloroethene, Solid*	6.5	U		0.76	6.5	1.00000	ug/Kg	101966		11/17/03 1719	jdn
	Toluene, Solid*	6.5	U		1.3	6.5	1.00000	ug/Kg	101966		11/17/03 1719	jdn
	Ethylbenzene, Solid*	6.5	U		1.4	6.5	1.00000	ug/Kg	101966		11/17/03 1719	jdn
	Xylenes (total), Solid*	6.5	U		3.8	6.5	1.00000	ug/Kg	101966		11/17/03 1719	jdn
	tert-Butyl alcohol, Solid*	260	U		190	260	1.00000	ug/Kg	101966		11/17/03 1719	jdn
	tert-amyl methyl ether, Solid*	6.5	U		0.80	6.5	1.00000	ug/Kg	101966		11/17/03 1719	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222211

Date:12/10/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: P-3(2.5-4.5)
Date Sampled.....: 11/11/2003
Time Sampled.....: 09:55
Sample Matrix.....: Soil

Laboratory Sample ID: 222211-2
Date Received.....: 11/12/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	102727		11/24/03 2102	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	102727		11/24/03 2102	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	102727		11/24/03 2102	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	102727		11/24/03 2102	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	102727		11/24/03 2102	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	102727		11/24/03 2102	pjg
	Aroclor 1260, 3541 Solid*	18	U		1.5	18	1.00000	ug/Kg	102727		11/24/03 2102	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	21			2.8	4.5	1.00000	mg/Kg	103004		11/25/03 0953	mgk
Method	% Solids Determination											
	% Solids, Solid	91.9			0.10	0.10	1	%	101468		11/12/03 2210	clb
	% Moisture, Solid	8.1			0.10	0.10	1	%	101468		11/12/03 2210	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	54	U		10	54	1.00000	ug/Kg	102139		11/19/03 0412	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	1.4	U			1.4	1	mg/Kg	102104		11/19/03 1008	rmm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	103852		12/08/03 0742	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	7.8				0.2	1	pH Units	103325		12/03/03 1404	rmm
	Temperature at Analysis, Solid	18.0				1.0	1	pH Units	103325		12/03/03 1404	rmm

* In Description = Dry Wgt.

Amendment No. 0010

LABORATORY TEST RESULTS

Job Number: 222211

Date:12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: P-3(2.5-4.5)
Date Sampled.....: 11/11/2003
Time Sampled.....: 09:55
Sample Matrix.....: Soil

Laboratory Sample ID: 222211-2
Date Received.....: 11/12/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	230	U		84	230	1	mg/Kg	101936		11/17/03 1631	bs
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	7.5	U		1.5	7.5	1.00000	ug/Kg	101966		11/17/03 1746	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	7.5	U		0.96	7.5	1.00000	ug/Kg	101966		11/17/03 1746	jdn
	Benzene, Solid*	7.5	U		0.99	7.5	1.00000	ug/Kg	101966		11/17/03 1746	jdn
	Trichloroethene, Solid*	7.5	U		0.89	7.5	1.00000	ug/Kg	101966		11/17/03 1746	jdn
	Toluene, Solid*	7.5	U		1.5	7.5	1.00000	ug/Kg	101966		11/17/03 1746	jdn
	Ethylbenzene, Solid*	7.5	U		1.7	7.5	1.00000	ug/Kg	101966		11/17/03 1746	jdn
	Xylenes (total), Solid*	7.5	U		4.4	7.5	1.00000	ug/Kg	101966		11/17/03 1746	jdn
	tert-Butyl alcohol, Solid*	300	U		220	300	1.00000	ug/Kg	101966		11/17/03 1746	jdn
	tert-amyl methyl ether, Solid*	7.5	U		0.93	7.5	1.00000	ug/Kg	101966		11/17/03 1746	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222211

Date:12/10/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB111103
Date Sampled.....: 11/11/2003
Time Sampled.....: 10:20
Sample Matrix.....: Water

Laboratory Sample ID: 222211-3
Date Received.....: 11/12/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016	1.0	U		0.34	1.0	1.00000	ug/L	102726		11/15/03 0226	pjg
	Aroclor 1221	1.0	U		0.92	1.0	1.00000	ug/L	102726		11/15/03 0226	pjg
	Aroclor 1232	1.0	U		0.44	1.0	1.00000	ug/L	102726		11/15/03 0226	pjg
	Aroclor 1242	1.0	U		0.38	1.0	1.00000	ug/L	102726		11/15/03 0226	pjg
	Aroclor 1248	1.0	U		0.42	1.0	1.00000	ug/L	102726		11/15/03 0226	pjg
	Aroclor 1254	1.0	U		0.26	1.0	1.00000	ug/L	102726		11/15/03 0226	pjg
	Aroclor 1260	1.0	U		0.30	1.0	1.00000	ug/L	102726		11/15/03 0226	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO)	0.23	U		0.054	0.23	1.00000	mg/L	103004		11/20/03 0201	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO)	50	U		7.1	50	1.00000	ug/L	102141		11/19/03 0407	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide	0.01	U		0.01	0.01	1	mg/L	102761		11/25/03 1619	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint)	>200					1	degrees f	101964		11/18/03 0921	jmk
9040B	pH (Liquid)											
	Corrosivity (pH-Liquids)	5.11			0.20	0.20	1	pH Units	101521		11/13/03 0835	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide	1.0	U		1.0	1.0	1	mg/L	101723		11/14/03 1212	bs
8260B	Volatile Organics (5mL Purge)											
	1,1-Dichloroethene	5.0	U		1.7	5.0	1.00000	ug/L	102199		11/19/03 1222	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222211

Date:12/10/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB111103
Date Sampled.....: 11/11/2003
Time Sampled.....: 10:20
Sample Matrix.....: Water

Laboratory Sample ID: 222211-3
Date Received.....: 11/12/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Methyl-tert-butyl-ether (MTBE)	5.0	U		2.0	5.0	1.00000	ug/L	102199		11/19/03 1222	jdn
	Benzene	5.0	U		0.96	5.0	1.00000	ug/L	102199		11/19/03 1222	jdn
	Trichloroethene	5.0	U		1.6	5.0	1.00000	ug/L	102199		11/19/03 1222	jdn
	Toluene	5.0	U		1.1	5.0	1.00000	ug/L	102199		11/19/03 1222	jdn
	Ethylbenzene	5.0	U		0.93	5.0	1.00000	ug/L	102199		11/19/03 1222	jdn
	Xylenes (total)	5.0	U		1.8	5.0	1.00000	ug/L	102199		11/19/03 1222	jdn
	tert-Butyl alcohol	200	U		30	200	1.00000	ug/L	102199		11/19/03 1222	jdn
	tert-amyl methyl ether	5.0	U		0.47	5.0	1.00000	ug/L	102199		11/19/03 1222	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222211

Date:12/10/2003

CUSTOMER: EWSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-19(5-7)
Date Sampled.....: 11/11/2003
Time Sampled.....: 11:30
Sample Matrix.....: Soil

Laboratory Sample ID: 222211-4
Date Received.....: 11/12/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	20	U		2.3	20	1.00000	ug/Kg	102727		11/24/03 2137	pjg
	Aroclor 1221, 3541 Solid*	20	U		2.4	20	1.00000	ug/Kg	102727		11/24/03 2137	pjg
	Aroclor 1232, 3541 Solid*	20	U		2.4	20	1.00000	ug/Kg	102727		11/24/03 2137	pjg
	Aroclor 1242, 3541 Solid*	20	U		2.4	20	1.00000	ug/Kg	102727		11/24/03 2137	pjg
	Aroclor 1248, 3541 Solid*	20	U		2.4	20	1.00000	ug/Kg	102727		11/24/03 2137	pjg
	Aroclor 1254, 3541 Solid*	20	U		2.4	20	1.00000	ug/Kg	102727		11/24/03 2137	pjg
	Aroclor 1260, 3541 Solid*	20	U		1.7	20	1.00000	ug/Kg	102727		11/24/03 2137	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	7.4			3.0	4.9	1.00000	mg/Kg	103004		11/25/03 1111	mgk
Method	% Solids Determination											
	% Solids, Solid	83.0			0.10	0.10	1	%	101468		11/12/03 2210	clb
	% Moisture, Solid	17.0			0.10	0.10	1	%	101468		11/12/03 2210	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	58	J		11	60	1.00000	ug/Kg	102139		11/19/03 0447	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	1.7	U			1.7	1	mg/Kg	102104		11/19/03 1009	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	103852		12/08/03 0854	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.5				0.2	1	pH Units	103325		12/03/03 1406	rnm
	Temperature at Analysis, Solid	18.0				1.0	1	pH Units	103325		12/03/03 1406	rnm

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222211

Date:12/10/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-19(5-7)
Date Sampled.....: 11/11/2003
Time Sampled.....: 11:30
Sample Matrix.....: Soil

Laboratory Sample ID: 222211-4
Date Received.....: 11/12/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	240	U		87	240	1	mg/Kg	101723		11/14/03 1237	bs
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	6.6	U		1.3	6.6	1.00000	ug/Kg	101966		11/17/03 1814	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	6.6	U		0.84	6.6	1.00000	ug/Kg	101966		11/17/03 1814	jdn
	Benzene, Solid*	6.6	U		0.87	6.6	1.00000	ug/Kg	101966		11/17/03 1814	jdn
	Trichloroethene, Solid*	6.6	U		0.78	6.6	1.00000	ug/Kg	101966		11/17/03 1814	jdn
	Toluene, Solid*	6.6	U		1.3	6.6	1.00000	ug/Kg	101966		11/17/03 1814	jdn
	Ethylbenzene, Solid*	6.6	U		1.5	6.6	1.00000	ug/Kg	101966		11/17/03 1814	jdn
	Xylenes (total), Solid*	6.6	U		3.8	6.6	1.00000	ug/Kg	101966		11/17/03 1814	jdn
	tert-Butyl alcohol, Solid*	260	U		190	260	1.00000	ug/Kg	101966		11/17/03 1814	jdn
	tert-amyl methyl ether, Solid*	6.6	U		0.82	6.6	1.00000	ug/Kg	101966		11/17/03 1814	jdn

* In Description = Dry Wgt.

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LABORATORY CHRONICLE

Job Number: 222211 Date: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222211-1 Client ID: P-2(2.5-4.5) Date Recvd: 11/12/2003 Sample Date: 11/11/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	101468		11/12/2003	2210	
5030A	5030 Purge & Trap	1	102138		11/18/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	101913		11/17/2003	1719	
5035	5035 Preservation High (Methanol)	1	101956		11/13/2003	0440	
5035	5035 Preservation Low	1	101955		11/13/2003	0440	
5035	5035 Preservation Low	1	101955		11/13/2003	0441	
5035	5035 Preservation Low	2	101955		11/13/2003	0440	
5035	5035 Preservation Low	2	101955		11/13/2003	0441	
EDD	Electronic Data Deliverable	1					
3541	Extraction Soxhlet (DRO)	1	102156		11/20/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	102272		11/21/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	103852	103852	12/08/2003	0630	
8082	PCB Analysis	1	102727	102272	11/24/2003	2026	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102104	102104	11/19/2003	1008	
7.3.4.2/9034	Reactivity, Sulfide	1	101723	101723	11/14/2003	1234	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103004	102156	11/25/2003	0914	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102139	102138	11/19/2003	0336	1.00000
8260B	Volatile Organics	1	101966	101955-101913	11/17/2003	1719	1.00000
9045C	pH (Soil)	1	103325	103325	12/03/2003	1403	

Lab ID: 222211-2 Client ID: P-3(2.5-4.5) Date Recvd: 11/12/2003 Sample Date: 11/11/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	101468		11/12/2003	2210	
5030A	5030 Purge & Trap	1	102138		11/18/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	101913		11/17/2003	1746	
5035	5035 Preservation High (Methanol)	1	101956		11/13/2003	0442	
5035	5035 Preservation Low	1	101955		11/13/2003	0442	
5035	5035 Preservation Low	1	101955		11/13/2003	0443	
5035	5035 Preservation Low	2	101955		11/13/2003	0442	
5035	5035 Preservation Low	2	101955		11/13/2003	0443	
3541	Extraction Soxhlet (DRO)	1	102156		11/20/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	102272		11/21/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	103852	103852	12/08/2003	0742	
8082	PCB Analysis	1	102727	102272	11/24/2003	2102	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102104	102104	11/19/2003	1008	
7.3.4.2/9034	Reactivity, Sulfide	1	101936	101936	11/17/2003	1631	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103004	102156	11/25/2003	0953	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102139	102138	11/19/2003	0412	1.00000
8260B	Volatile Organics	1	101966	101955-101913	11/17/2003	1746	1.00000
9045C	pH (Soil)	1	103325	103325	12/03/2003	1404	

Lab ID: 222211-3 Client ID: FB111103 Date Recvd: 11/12/2003 Sample Date: 11/11/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030 5 mL Purge Prep	1	102152		11/19/2003	1222	
5030A	5030 Purge & Trap	1	102140		11/18/2003	2100	
3520C	Extraction Continuous Liq/Liq (PCBs)	1	101480		11/13/2003	1040	
3510C	Extraction Sep. Funnel (Diesel)	1	101543		11/13/2003	1300	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	101964	101964	11/18/2003	0921	
8082	PCB Analysis	1	102726	101480	11/15/2003	0226	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102761	102761	11/25/2003	1619	
7.3.4.2/9034	Reactivity, Sulfide	1	101723	101723	11/14/2003	1212	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103004	101543	11/20/2003	0201	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102141	102140	11/19/2003	0407	1.00000
8260B	Volatile Organics (5mL Purge)	1	102199	102152	11/19/2003	1222	1.00000
9040B	pH (Liquid)	1	101521	101521	11/13/2003	0835	

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LABORATORY CHRONICLE

Job Number: 222211 Date: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222211-4 Client ID: B-19(5-7) Date Recvd: 11/12/2003 Sample Date: 11/11/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	101468		11/12/2003	2210	
5030A	5030 Purge & Trap	1	102138		11/18/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	101913		11/17/2003	1814	
5035	5035 Preservation High (Methanol)	1	101956		11/13/2003	0443	
5035	5035 Preservation Low	1	101955		11/13/2003	0443	
5035	5035 Preservation Low	1	101955		11/13/2003	0444	
5035	5035 Preservation Low	2	101955		11/13/2003	0443	
5035	5035 Preservation Low	2	101955		11/13/2003	0444	
3541	Extraction Soxhlet (DRO)	1	102156		11/20/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	102272		11/21/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	103852	103852	12/08/2003	0854	
8082	PCB Analysis	1	102727	102272	11/24/2003	2137	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102104	102104	11/19/2003	1009	
7.3.4.2/9034	Reactivity, Sulfide	1	101723	101723	11/14/2003	1237	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103004	102156	11/25/2003	1111	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102139	102138	11/19/2003	0447	1.00000
8260B	Volatile Organics	1	101966	101955-101913	11/17/2003	1814	1.00000
9045C	pH (Soil)	1	103325	103325	12/03/2003	1406	

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SURROGATE RECOVERIES REPORT

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Diesel Range Organics (DRO)
Method Code...: 8015D

Test Matrix...: Water
Batch(s).....: 103004

Prep Batch..: 101543

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCD			11/20/2003	90	86
LCS			11/20/2003	88	88
MB			11/19/2003	78	85
222211- 3		FB111103	11/20/2003	80	84

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 119
OTERPH	o-Terphenyl (surr)	58 - 119

Method.....: TPH - Diesel Range Organics (DRO)
Method Code...: 8015D

Test Matrix...: 3541 Solid
Batch(s).....: 103004

Prep Batch..: 102156

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCS			11/25/2003	92	97
MB			11/25/2003	81	86
222211- 1		P-2(2.5-4.5)	11/25/2003	73	79
222211- 2		P-3(2.5-4.5)	11/25/2003	88	102
222211- 4		B-19(5-7)	11/25/2003	81	93

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 103
OTERPH	o-Terphenyl (surr)	44 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222211 Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Solid Prep Batch..: 102138
Method Code...: 8015G Batch(s).....: 102139

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/19/2003	104	110
MB			11/18/2003	96	97
222211- 1		P-2(2.5-4.5)	11/19/2003	83	81
222211- 2		P-3(2.5-4.5)	11/19/2003	92	94
222211- 4		B-19(5-7)	11/19/2003	88	95

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	68 - 113
BRFLBE	4-Bromofluorobenzene (surr)	41 - 125

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Water Prep Batch..: 102140
Method Code...: 8015G Batch(s).....: 102141

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/19/2003	104	113
MB			11/19/2003	100	102
222211- 3		FB111103	11/19/2003	95	99

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	79 - 110
BRFLBE	4-Bromofluorobenzene (surr)	67 - 124

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SURROGATE RECOVERIES REPORT

Job Number.: 222211 Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: Water
Batch(s).....: 102727
Prep Batch..: 101333

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			11/15/2003	69	86
MB			11/15/2003	75	86

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 116
TCX	Tetrachloro-m-xylene (surr)	33 - 111

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: Water
Batch(s).....: 102726
Prep Batch..: 101480

Lab ID	DT	Sample ID	Date	DCB	TCX
LCD			11/15/2003	73	104
LCS			11/15/2003	58	102
MB			11/15/2003	65	98
222211- 3		FB111103	11/15/2003	73	92

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 116
TCX	Tetrachloro-m-xylene (surr)	33 - 111

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: 3541 Solid
Batch(s).....: 102727
Prep Batch..: 102272

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			11/24/2003	109	107
MB			11/24/2003	98	100
222211- 1		P-2(2.5-4.5)	11/24/2003	95	85
222211- 2		P-3(2.5-4.5)	11/24/2003	84	82
222211- 4		B-19(5-7)	11/24/2003	73	61

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	33 - 131
TCX	Tetrachloro-m-xylene (surr)	42 - 122

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SURROGATE RECOVERIES REPORT

Job Number.: 222211 Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics (5mL Purge) Test Matrix...: Water Prep Batch..: 102152
Method Code...: 8260.5 Batch(s).....: 102199

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/19/2003	90	101	96	105
MB			11/19/2003	94	93	97	104
222211- 3		FB111103	11/19/2003	94	92	99	103

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	66 - 132
BRFLBE	4-Bromofluorobenzene (surr)	79 - 122
DBRFLM	Dibromofluoromethane (surr)	66 - 132
TOLD8	Toluene-d8 (surr)	78 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222211 Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics Test Matrix...: Solid Prep Batch..: 101913
Method Code...: 8260B Batch(s).....: 101966

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCD			11/17/2003	97	98	97	100
LCS			11/17/2003	102	101	94	108
MB			11/17/2003	101	96	102	105

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics Test Matrix...: Solid Prep Batch..: 101953
Method Code...: 8260B Batch(s).....: 101966

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/17/2003	113	97	103	102

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics Test Matrix...: Solid Prep Batch..: 101955
Method Code...: 8260B Batch(s).....: 101966

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/17/2003	112	102	100	108
222211- 1		P-2(2.5-4.5)	11/17/2003	117	94	104	97
222211- 2		P-3(2.5-4.5)	11/17/2003	110	93	103	97
222211- 4		B-19(5-7)	11/17/2003	112	96	101	101

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics Test Matrix...: Solid Prep Batch..: 101957
Method Code...: 8260B Batch(s).....: 101966

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/17/2003	114	99	101	103

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SURROGATE RECOVERIES REPORT

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 101966

Prep Batch..: 101957

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	003JWLPCBC	101480-003		11/15/2003	0115

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102726

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.611	4.506	5.001	0.500 U	92	%	62-104	
						2	R	20	
Aroclor 1260	ug/L	4.944	4.746	5.010	0.500 U	99	%	69-105	
						4	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003JWLPCBC	101480-002		11/15/2003	0040

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102726

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.506		5.001	0.500 U	90	%	62-104	
Aroclor 1260	ug/L	4.746		5.010	0.500 U	95	%	69-105	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102726

Analyst...: pjg

MB	Method Blank		101480-001		11/15/2003	0004

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	0.500	U							
Aroclor 1221	ug/L	0.500	U							
Aroclor 1232	ug/L	0.500	U							
Aroclor 1242	ug/L	0.500	U							
Aroclor 1248	ug/L	0.500	U							
Aroclor 1254	ug/L	0.500	U							
Aroclor 1260	ug/L	0.500	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003JWLPCBC	101333-002		11/15/2003	0633

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102727

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.108		5.001	0.500 U	82	%	62-104	
Aroclor 1260	ug/L	4.708		5.010	0.500 U	94	%	69-105	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102727

Analyst...: pjg

LCS	Laboratory Control Sample	D03KWLPCBA	102272-002		11/24/2003	1357

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	161.317		166.700	16.700 U	97	%	60-112	
Aroclor 1260, 3541 Solid	ug/Kg	175.913		167.000	16.700 U	105	%	64-119	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101333-001		11/15/2003	0557

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102727

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	0.500	U							
Aroclor 1221	ug/L	0.500	U							
Aroclor 1232	ug/L	0.500	U							
Aroclor 1242	ug/L	0.500	U							
Aroclor 1248	ug/L	0.500	U							
Aroclor 1254	ug/L	0.500	U							
Aroclor 1260	ug/L	0.500	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102272-001		11/24/2003	1321

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 102727

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1221, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1232, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1242, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1248, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1254, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1260, 3541 Solid	ug/Kg	16.700	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	003HWLDIEA	101543-003		11/20/2003	0043

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103004

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.485400	1.476625	2.000000	0.125000 U	74	%	57-107	
						1	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003HWLDIEA	101543-002		11/20/2003	0005

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 103004
Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.476625		2.000000	0.125000 U	74	%	57-107	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003HWLDIEA	102156-002		11/25/2003	0246

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103004

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	62.260		66.670	4.199 U	93	%	70-106	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 103004
Analyst...: mgk

MB	Method Blank		101543-001		11/19/2003	2326

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	0.125000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102156-001		11/25/2003	0207

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103004

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	4.199 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K18DSA	102138-002		11/19/2003	0002

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 102139
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	438.152		400.000	6.412 J	110	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 102139
Analyst...: wre

MB	Method Blank		102138-001		11/18/2003	2326

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	6.412 J							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K18DSA	102140-002		11/19/2003	0035

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1112
Batch.....: 102141

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	486.945		400.000	50.000 U	122	%	85-124	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 102141
Analyst...: wre

MB	Method Blank		102140-001		11/19/2003	0000

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	50.000 U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222038	101953-003		11/17/2003	1406

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

EB1	Extraction Blank 1	*222211	101955-007		11/17/2003	1434

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222287	101957-013		11/17/2003	1501

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

LCD	Laboratory Control Sample Duplicate	V03K17DSB	101913-016		11/17/2003	2126

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	46.475	51.416	50.000	5.000	U	93	%	51-132	
							10	R	20	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	50.354	45.092	50.000	5.000	U	101	%	61-132	
							11	R	20	
Benzene, Solid	ug/Kg	49.071	50.214	50.000	5.000	U	98	%	72-128	
							2	R	20	
Trichloroethene, Solid	ug/Kg	48.546	52.997	50.000	5.000	U	97	%	75-129	
							9	R	20	
Toluene, Solid	ug/Kg	48.216	54.811	50.000	5.000	U	96	%	75-125	
							13	R	20	
Ethylbenzene, Solid	ug/Kg	49.647	50.938	50.000	5.000	U	99	%	79-123	
							3	R	20	
Xylenes (total), Solid	ug/Kg	148.264	158.294	150.000	5.000	U	99	%	82-125	
							7	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

LCS	Laboratory Control Sample	V03K17DSB	101913-015		11/17/2003	1328

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	51.416		50.000	5.000	U	103	%	51-132	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	45.092		50.000	5.000	U	90	%	61-132	
Benzene, Solid	ug/Kg	50.214		50.000	5.000	U	100	%	72-128	
Trichloroethene, Solid	ug/Kg	52.997		50.000	5.000	U	106	%	75-129	
Toluene, Solid	ug/Kg	54.811		50.000	5.000	U	110	%	75-125	
Ethylbenzene, Solid	ug/Kg	50.938		50.000	5.000	U	102	%	79-123	
Xylenes (total), Solid	ug/Kg	158.294		150.000	5.000	U	106	%	82-125	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101913-014		11/17/2003	1244

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K190SB	102152-002		11/19/2003	1051

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)
Equipment Code....: GCL16
Batch.....: 102199
Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	42.015		50.000	5.000 U	84	%	48-132	
Methyl-tert-butyl-ether (MTBE)	ug/L	43.739		50.000	5.000 U	87	%	49-139	
Benzene	ug/L	47.692		50.000	5.000 U	95	%	68-130	
Trichloroethene	ug/L	52.266		50.000	5.000 U	105	%	71-128	
Toluene	ug/L	50.035		50.000	5.000 U	100	%	72-122	
Ethylbenzene	ug/L	52.459		50.000	5.000 U	105	%	78-121	
Xylenes (total)	ug/L	153.542		150.000	5.000 U	102	%	76-129	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211

Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102152-001		11/19/2003	1029

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)
Equipment Code....: GCL16
Batch.....: 102199
Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	5.000	U							
Methyl-tert-butyl-ether (MTBE)	ug/L	5.000	U							
Benzene	ug/L	5.000	U							
Trichloroethene	ug/L	5.000	U							
Toluene	ug/L	5.000	U							
Ethylbenzene	ug/L	5.000	U							
Xylenes (total)	ug/L	5.000	U							
tert-Butyl alcohol	ug/L	200.000	U							
tert-amyl methyl ether	ug/L	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211 Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: Method Batch.....: 101468 Analyst...: clb
Method Description.: % Solids Determination Equipment Code....: Test Code.: %SOLID
Parameter.....: % Solids

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	101468-001		%	0.1000 U								11/12/2003	2210

Test Method.....: 7.3.3.2/9014 Batch.....: 102104 Analyst...: rnm
Method Description.: Reactivity, Cyanide Equipment Code....: SPEC1 Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCS	102104-005	I03ISTCN2	mg/L	0.09880		0.10000		99		%	85-115	11/19/2003	1001
MB	102104-004		mg/L	-0.00270								11/19/2003	1001

Test Method.....: 7.3.3.2/9014 Batch.....: 102761 Analyst...: rnm
Method Description.: Reactivity, Cyanide Equipment Code....: SPEC4 Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102761-004		mg/L	0.01000 U								11/25/2003	1606
LCS	102761-005	I03ISTCN2	mg/L	0.09330		0.10000	0.01000 U	93		%	80-120	11/25/2003	1607

Test Method.....: 9040B Batch.....: 101521 Analyst...: nrp
Method Description.: pH (Liquid) Equipment Code....: Test Code.: CORLIQ
Parameter.....: Corrosivity (pH-Liquids)

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MDPH	222211-3		pH Units	5.12000			5.11000					11/13/2003	0836

Test Method.....: 9040B Batch.....: 101521 Analyst...: nrp
Method Description.: pH (Liquid) Equipment Code....: Test Code.: TEMPA
Parameter.....: Temperature at Analysis

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MDPH	222211-3		deg.C	21.00000			21.00000					11/13/2003	0836

Test Method.....: 9040B Batch.....: 101521 Analyst...: nrp
Method Description.: pH (Liquid) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	101521-002	I03GPH7B	pH Units	6.98000		7.00000		0.02000		A	0.20000	11/13/2003	0826
LCDP	101521-003	I03GPH7B	pH Units	7.00000		7.00000		0.00		A	0.20000	11/13/2003	0828

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222211 Report Date.: 12/10/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: 9045C Batch.....: 103325 Analyst...: rmm
Method Description.: pH (Soil) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	103325-002	I03KPH7B	pH Units	7.02000		7.00000		0.02000		A	0.20000	12/03/2003	1401
LCDP	103325-003	I03KPH7B	pH Units	7.00000		7.00000		0.00		A	0.20000	12/03/2003	1402

Test Method.....: 7.3.4.2/9034 Batch.....: 101723 Analyst...: bs
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	101723-014		mg/Kg	91.00	U								11/14/2003	1214
LCS	101723-015	I03HSTSF1	mg/Kg	115.49	B		151.10		76		%	0-200	11/14/2003	1217

Test Method.....: 7.3.4.2/9034 Batch.....: 101936 Analyst...: bs
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result		QC Result	True Value	Orig. Value		QC Calc.	F	*	Limits	Date	Time
MB	101936-001		mg/Kg	91.00	U									11/17/2003	1626
LCS	101936-002	I03HSTSF1	mg/Kg	99.19	B		151.10	91.00	U	66		%	0-200	11/17/2003	1629

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/10/2003

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Soil, sediment and sludge sample results are reported on a "dry weight" basis except when analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received" basis unless noted differently.
3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
4) The test results for the noted analytical method(s) meet the requirements of NELAC. Lab Cert. ID# 100201
5) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report)

Inorganic Qualifiers (Q-Column)

U Analyte was not detected at or above the stated limit.
< Not detected at or above the reporting limit.
J Result is less than the RL, but greater than or equal to the method detection limit.
B Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.
S Result was determined by the Method of Standard Additions.
F AFCEE: Result is less than the RL, but greater than or equal to the method detection limit.

Inorganic Flags (Flag Column)

^ ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
+ MSA correlation coefficient is less than 0.995.
4 MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
E SD: Serial dilution exceeds the control limits.
H MB, EB1, EB2, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.
N MS, MSD: Spike recovery exceeds the upper or lower control limits.
W AS(GFAA) Post-digestion spike was outside 85-115% control limits.

Organic Qualifiers (Q - Column)

U Analyte was not detected at or above the stated limit.
ND Compound not detected.
J Result is an estimated value below the reporting limit or a tentatively identified compound (TIC).
Q Result was qualitatively confirmed, but not quantified.
C Pesticide identification was confirmed by GC/MS.
Y The chromatographic response resembles a typical fuel pattern.
Z The chromatographic response does not resemble a typical fuel pattern.
E Result exceeded calibration range, secondary dilution required.
F AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)

Organic Flags (Flags Column)

B MB: Batch QC is greater than reporting limit.
* LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits.
^ EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
A Concentration exceeds the instrument calibration range
a Concentration is below the method Reporting Limit (RL)
B Compound was found in the blank and sample.
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
H Alternate peak selection upon analytical review
I Indicates the presence of an interfence, recovery is not calculated.
M Manually integrated compound.
P The lower of the two values is reported when the % difference between the results of two GC columns is

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/10/2003

greater than 25%.

Abbreviations

AS	Post Digestion Spike (GFAA Samples - See Note 1 below)
Batch	Designation given to identify a specific extraction, digestion, preparation set, or analysis set
CAP	Capillary Column CCB Continuing Calibration Blank
CCV	Continuing Calibration Verification
CF	Confirmation analysis of original
C1	Confirmation analysis of A1 or D1
C2	Confirmation analysis of A2 or D2
C3	Confirmation analysis of A3 or D3
CRA	Low Level Standard Check - GFAA; Mercury
CRI	Low Level Standard Check - ICP
CV	Calilbration Verification Standard
Dil Fac	Dilution Factor - Secondary dilution analysis
D1	Dilution 1
D2	Dilution 2
D3	Dilution 3
DLFac	Detection Limit Factor
DSH	Distilled Standard - High Level
DSL	Distilled Standard - Low Level
DSM	Distilled Standard - Medium Level
EB1	Extraction Blank 1
EB2	Extraction Blank 2
EB3	DI Blank
ELC	Method Extracted LCS
ELD	Method Extracted LCD
ICAL	Initial calibration
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ISA	Interference Check Sample A - ICAP
ISB	Interference Check Sample B - ICAP
Job No.	The first six digits of the sample ID which refers to a specific client, project and sample group Lab ID An 8 number unique laboratory identification
LCD	Laboratory Control Standard Duplicate
LCS	Laboratory Control Standard with reagent grade water or a matrix free from the analyte of interest
MB	Method Blank or (PB) Preparation Blank
MD	Method Duplicate
MDL	Method Detection Limit
MLE	Medium Level Extraction Blank
MRL	Method Reporting Limit Standard
MSA	Method of Standard Additions
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not Detected
PREPF	Preparation factor used by the Laboratory's Information Management System (LIMS)
PDS	Post Digestion Spike (ICAP)
RA	Re-analysis of original
A1	Re-analysis of D1
A2	Re-analysis of D2
A3	Re-analysis of D3
RD	Re-extraction of dilution
RE	Re-extraction of original
RC	Re-extraction Confirmation
RL	Reporting Limit
RPD	Relative Percent Difference of duplicate (unrounded) analyses
RRF	Relative Response Factor
RT	Retention Time

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/10/2003

RTW	Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number
SCB	Seeded Control Blank
SD	Serial Dilution (Calculated when sample concentration exceeds 50 times the MDL)
UCB	Unseeded Control Blank
SSV	Second Source Verification Standard
SLCS	Solid Laboratory Control Standard(LCS)
PHC	pH Calibration Check LCSP pH Laboratory Control Sample
LCDP	pH Laboratory Control Sample Duplicate
MDPH	pH Sample Duplicate
MDFP	Flashpoint Sample Duplicate
LCFP	Flashpoint LCS
G1	Gelex Check Standard Range 0-1
G2	Gelex Check Standard Range 1-10
G3	Gelex Check Standard Range 10-100
G4	Gelex Check Standard Range 100-1000

Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCS S=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Note 2: The MD calculates an absolute difference (A) when the sample concentration is less than 5 times the reporting limit. The control limit is represented as +/- the RL.

Amendment No. 0010

STL EDISON
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

222211

PAGE 1 OF 1

Name (for report and invoice) Mack Astorga	Samplers Name (Printed) Rich Firely	Site/Project Identification Dover-AFB
Company ENSR International	P.O. #	State (Location of site): NJ: ☐ NY: ☐ Other: DE
		Regulatory Program:
Address 2005 Cabot Boulevard West, Suite 100	Analysis Turnaround Time: Standard ☐	LAB USE ONLY Project No:
City Langhorne PA State 19047	Rush Charges Authorized For: 2 Week ☐ 1 Week ☑ Other ☐	Job No:
Phone 215-757-4900 Fax 215-757-3904		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

	Sample Identification	Date	Time	Matrix	No. of. Cont.	8260B TCLP * TCLP VOA	8260B PPVOA	GRO	DRO	8082-ACB	Reactivity (Cyanide, Sulfide)	Corrosivity	Ignitability				Sample Numbers
1	P-2(2.5-4.5)	11/11/03	805	Soil	7	X	X	X	X	X	X	X	X				
2	P-3(2.5-4.5)	11/11/03	955	Soil	7	X	X	X	X	X	X	X	X				
3	FB111103	11/11/03	1020	AQ	7	X	X	X	X	X	X	X	X				
4	B-19(5-7)	11/11/03	1130	Soil	7	X	X	X	X	X	X	X	X				
	Custody Seals - 67929 + 67928																
	Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH				Soil:	1	1,6	1	1	1	1	1	1				
	6 = Other encore, 7 = Other				Water:	1	1,2	1,2	1	1	1	1	1				

Special Instructions PPVOA - BTEX, Tert-amyl methyl ether, TRA, MTBE, TCE, 1,1-DCE *on Hold

Water Metals Filtered (Yes/No)?

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	ENSR	11/11/03 1530	1) [signature]	STL 11/12/03 0945
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL-6003

Amendment No. 0010

SEVERN TRENT STL

STL Chicago
2417 Bond Street
University Park, IL 60466

Tel: 708 534 5200 Fax: 708 534 5211
www.stl-inc.com

SEVERN TRENT LABORATORIES
ANALYTICAL REPORT

JOB NUMBER: 222287

Prepared For:

ENSR
2005 Cabot Boulevard West
Suite 100
Langhorne, PA 19047

Project: Dover AFB

Attention: Mack Astorga

Date: 12/11/2003

Signature

Name: Eric A. Lang

Title: Project Manager

E-Mail: elang@stl-inc.com

12/11/03
Date

STL Chicago
2417 Bond Street
University Park, IL 60466

PHONE: (708) 534-5200
FAX..: (708) 534-5211

This Report Contains (56) Pages

Severn Trent Laboratories Chicago
GC/MS Case Narrative

ENSR
Dover AFB
Job Number: 222287
VOA DATA

1. The samples were prepared and analyzed within the recommended hold times from the date of collection.

2. The Method Blanks and Extraction Blanks had all target compounds below the reporting limits.

3. The LCS samples had all controlled spike recoveries within the in-house generated QC limits.

4. Matrix Spike and Matrix Spike Duplicate analyses were not performed on this sample set.

5. The volatile samples had all surrogate recoveries within the in-house generated QC limits.

6. The water samples were prepared using Method 5030. The soil samples were prepared for the low level soil procedure using Method 5035. The samples were analyzed following SW846 Method 8260B and 8000B. All initial and continuing calibration criteria were met per method or SOP (for minimum R values for certain compounds). The low point in the initial calibration verifies the base reporting limits. The target compounds were quantitated using the initial calibration.

7. The volatile samples had all internal standard areas and retention times within the acceptance limits as compared to the corresponding calibration verification standard.

8. The water samples were analyzed using a 5-mL purge volume. The soil samples were analyzed using the 5035 low level soil procedure. The soil results and reporting limits were adjusted to account for the sample weights, the analytical procedure and on a dry weight basis.

John Nagel
GC/MS VOA Dept.

12-9-03
Date

STL Chicago
PCB Case Narrative

ENSR
Dover AFB
Job # 222287-1 through 7
PCBs

1. STL Chicago used the following Gas Chromatographic systems for the analysis of PCBs:

ID#	INSTRUMENT	COLUMN TYPE	DETECTOR
41	HP 6890	Rtx-5	Electron Capture
42	HP 6890	Rtx-35	Electron Capture

2. The water samples associated with this SDG were extracted based on SW846 method 3520. The soil samples associated with this SDG were extracted based on SW846 method 3541. The extracts were analyzed for PCBs based on SW846 method 8082. All extracts received a sulfuric acid cleanup and a GPC cleanup on soil extracts in order to reduce matrix interference.

3. All required holding times were met for the extraction and analysis.

4. The method blanks were below the reporting limits for all Aroclors.

5. The surrogate compounds used for this analysis were Decachlorobiphenyl (DCB) and Tetrachloro-m-xylene (TCX). All surrogate recoveries were within statistical control limits except TCX and DCB associated with soil blank spike, which had recoveries of 138% and 135%, respectively, sample 222287-5, which had TCX with 37% recovery and sample 222287-7, which had TCX with 37% recovery.

6. A solution containing Aroclor 1016 and Aroclor 1260 was used for spiking.

7. All blank spike and blank spike duplicate recoveries and RPDs associate with the water sample were within statistical control limits. The Aroclor 1016 and Aroclor 1260 associated with the soil samples were biased high with recoveries of 113% and 132%, respectively.

8. A matrix spike and a matrix spike duplicate were not performed on a sample from this SDG.

9. All initial and continuing (grand mean <15% difference) standard calibrations associated with these samples were in control.

10. Target compounds were not detected from the primary analysis. Therefore, a second column confirmation was not required.

Patti Gibson
Organics Section Manager

12/10/03
Date

STL Chicago
Extractable Hydrocarbon Case Narrative

ENSR
Dover AFB
Job# 222287-1 through 7
Diesel Range Organics (DRO)

1. The water sample associated with this SDG was extracted based on SW846 Method 3510. The soil sample was extracted based on the SW846 method 3541. The extracts were analyzed for DRO based on SW846 method 8015B. A HP5890 gas chromatograph equipped with a flame ionization detector and a Xti-5 column was used for the analysis.

2. All required holding times were met for the extraction and analysis.

3. The method blanks were below the reporting limit for DRO.

4. The surrogate compounds used for this analysis were o-Terphenyl and 2-Fluorobiphenyl. All surrogate recoveries were within statistical control limits.

5. All blank spike and blank spike duplicate recoveries and RPDs were within statistical control limits. A solution of Diesel Fuel was used for spiking.

6. A matrix spike and a matrix spike duplicate were not performed on a sample from this SDG.

7. A Diesel Fuel #2 standard was used for quantitating DRO results, using a hydrocarbon range from C10 through C28. An alkane standard ranging from C8 through C36 was analyzed for qualitative purposes.

8. All initial and continuing standard calibrations associated with these samples were in control.

9. Not all samples had DRO detected but those that did appear to match a typical fuel type pattern that is "later" than Diesel fuel.

Patti Gibson
Organics Section Manager

12/10/03
Date

Severn Trent Laboratories Chicago
GC Volatile Case Narrative

ENSR-DOVER AFB
Job Number: 222287
Method 8015G

1. All required holding times were met for the analysis.

2. The Method Blanks had all target compounds below the reporting limits.

3. The surrogate compounds used for this analysis were 4-Bromofluorobenzene and a,a,a-Trifluorotoluene. All surrogate recoveries were within the in-house generated QC limits.

4. The LCS (Laboratory Control Sample) had all spike recoveries within the in-house generated QC limits.

5. A Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis was not performed on these samples.

6. The initial and continuing standard calibrations associated with these samples were within control limits.

7. The samples were analyzed as low-level waters and soils for GRO (GRO) based on SW846 methods 5030 and 8015B. A HP 5890 gas chromatograph equipped with a flame-ionization detector (FID) and a Tekmar LSC 2000/2016 ALS was used for the analysis of these samples. The soil results are on a dry weight basis.

Gary Rynkar
GC/VOA Section Manager

12/11/13
Date

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SAMPLE INFORMATION
Date: 12/11/2003

Job Number.: 222287
Customer...: ENSR
Attn.....: Mack Astorga

Project Number.....: 20003849
Customer Project ID....: DOVER AFB
Project Description....: Dover AFB

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
222287-1	P-4(3-5)	Soil	11/13/2003	08:15	11/14/2003	09:45
222287-2	B-7(4-6)	Soil	11/13/2003	08:55	11/14/2003	09:45
222287-3	B-20(3-5)	Soil	11/13/2003	10:20	11/14/2003	09:45
222287-4	FB111303	Water	11/13/2003	10:50	11/14/2003	09:45
222287-5	B-21(2.5-4.5)	Soil	11/13/2003	14:05	11/14/2003	09:45
222287-6	B-6(2.5-4.5)	Soil	11/13/2003	15:10	11/14/2003	09:45
222287-7	B-22(2-4)	Soil	11/13/2003	16:05	11/14/2003	09:45

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222287

Date:12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: P-4(3-5)
Date Sampled.....: 11/13/2003
Time Sampled.....: 08:15
Sample Matrix.....: Soil

Laboratory Sample ID: 222287-1
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U	*	2.0	18	1.00000	ug/Kg	104020		12/01/03 2335	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104020		12/01/03 2335	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104020		12/01/03 2335	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104020		12/01/03 2335	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104020		12/01/03 2335	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104020		12/01/03 2335	pjg
	Aroclor 1260, 3541 Solid*	18	U	*	1.5	18	1.00000	ug/Kg	104020		12/01/03 2335	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.0	J	a	2.8	4.5	1.00000	mg/Kg	103009		11/27/03 0137	mgk
Method	% Solids Determination											
	% Solids, Solid	93.6			0.10	0.10	1	%	102246		11/20/03 2140	clb
	% Moisture, Solid	6.4			0.10	0.10	1	%	102246		11/20/03 2140	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	18	J	a	10	53	1.00000	ug/Kg	102139		11/19/03 0745	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	3.7	U		3.7	3.7	1	mg/Kg	102318		11/21/03 1055	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	102257		11/20/03 1027	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.1				0.2	1	pH Units	103325		12/03/03 1407	rnm
	Temperature at Analysis, Solid	19.0				1.0	1	pH Units	103325		12/03/03 1407	rnm

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222287

Date:12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: P-4(3-5)
Date Sampled.....: 11/13/2003
Time Sampled.....: 08:15
Sample Matrix.....: Soil

Laboratory Sample ID: 222287-1
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	240	U		88	240	1	mg/Kg	102373		11/21/03 1154	bms
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	5.4	U		1.1	5.4	1.00000	ug/Kg	101966		11/17/03 1841	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	5.4	U		0.69	5.4	1.00000	ug/Kg	101966		11/17/03 1841	jdn
	Benzene, Solid*	5.4	U		0.71	5.4	1.00000	ug/Kg	101966		11/17/03 1841	jdn
	Trichloroethene, Solid*	5.4	U		0.64	5.4	1.00000	ug/Kg	101966		11/17/03 1841	jdn
	Toluene, Solid*	5.4	U		1.1	5.4	1.00000	ug/Kg	101966		11/17/03 1841	jdn
	Ethylbenzene, Solid*	5.4	U		1.2	5.4	1.00000	ug/Kg	101966		11/17/03 1841	jdn
	Xylenes (total), Solid*	5.4	U		3.1	5.4	1.00000	ug/Kg	101966		11/17/03 1841	jdn
	tert-Butyl alcohol, Solid*	220	U		160	220	1.00000	ug/Kg	101966		11/17/03 1841	jdn
	tert-amyl methyl ether, Solid*	5.4	U		0.67	5.4	1.00000	ug/Kg	101966		11/17/03 1841	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222287

Date:12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-7(4-6)
Date Sampled.....: 11/13/2003
Time Sampled.....: 08:55
Sample Matrix.....: Soil

Laboratory Sample ID: 222287-2
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U	*	2.1	18	1.00000	ug/Kg	104020		12/02/03 0010	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0010	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0010	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0010	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0010	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0010	pjg
	Aroclor 1260, 3541 Solid*	18	U	*	1.5	18	1.00000	ug/Kg	104020		12/02/03 0010	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	8.3			2.7	4.4	1.00000	mg/Kg	103009		11/28/03 1451	mgk
Method	% Solids Determination											
	% Solids, Solid	90.3			0.10	0.10	1	%	102246		11/20/03 2140	clb
	% Moisture, Solid	9.7			0.10	0.10	1	%	102246		11/20/03 2140	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	55	U		11	55	1.00000	ug/Kg	102139		11/19/03 0821	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	3.1	U		3.1	3.1	1	mg/Kg	102318		11/21/03 1056	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	102257		11/20/03 1205	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	7.4				0.2	1	pH Units	103325		12/03/03 1408	rnm
	Temperature at Analysis, Solid	19.0				1.0	1	pH Units	103325		12/03/03 1408	rnm

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222287

Date:12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-7(4-6)
Date Sampled.....: 11/13/2003
Time Sampled.....: 08:55
Sample Matrix.....: Soil

Laboratory Sample ID: 222287-2
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	250	U		89	250	1	mg/Kg	102373		11/21/03 1155	bms
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	4.7	U		0.95	4.7	1.00000	ug/Kg	101966		11/17/03 1909	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	4.7	U		0.61	4.7	1.00000	ug/Kg	101966		11/17/03 1909	jdn
	Benzene, Solid*	4.7	U		0.63	4.7	1.00000	ug/Kg	101966		11/17/03 1909	jdn
	Trichloroethene, Solid*	4.7	U		0.56	4.7	1.00000	ug/Kg	101966		11/17/03 1909	jdn
	Toluene, Solid*	4.7	U		0.95	4.7	1.00000	ug/Kg	101966		11/17/03 1909	jdn
	Ethylbenzene, Solid*	4.7	U		1.0	4.7	1.00000	ug/Kg	101966		11/17/03 1909	jdn
	Xylenes (total), Solid*	4.7	U		2.8	4.7	1.00000	ug/Kg	101966		11/17/03 1909	jdn
	tert-Butyl alcohol, Solid*	190	U		140	190	1.00000	ug/Kg	101966		11/17/03 1909	jdn
	tert-amyl methyl ether, Solid*	4.7	U		0.59	4.7	1.00000	ug/Kg	101966		11/17/03 1909	jdn

* In Description = Dry Wgt.

Amendment No. 0010

LABORATORY TEST RESULTS

Job Number: 222287

Date:12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-20(3-5)
Date Sampled.....: 11/13/2003
Time Sampled.....: 10:20
Sample Matrix.....: Soil

Laboratory Sample ID: 222287-3
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	17	U	*	2.0	17	1.00000	ug/Kg	104020		12/02/03 0046	pjg
	Aroclor 1221, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104020		12/02/03 0046	pjg
	Aroclor 1232, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104020		12/02/03 0046	pjg
	Aroclor 1242, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104020		12/02/03 0046	pjg
	Aroclor 1248, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104020		12/02/03 0046	pjg
	Aroclor 1254, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104020		12/02/03 0046	pjg
	Aroclor 1260, 3541 Solid*	17	U	*	1.5	17	1.00000	ug/Kg	104020		12/02/03 0046	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.5	U		2.8	4.5	1.00000	mg/Kg	103009		11/27/03 0254	mgk
Method	% Solids Determination											
	% Solids, Solid	92.9			0.10	0.10	1	%	102246		11/20/03 2140	clb
	% Moisture, Solid	7.1			0.10	0.10	1	%	102246		11/20/03 2140	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	10	J	a	10	54	1.00000	ug/Kg	102139		11/19/03 0857	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	3.1	U		3.1	3.1	1	mg/Kg	102318		11/21/03 1056	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	102257		11/20/03 1343	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.9				0.2	1	pH Units	103325		12/03/03 1409	rnm
	Temperature at Analysis, Solid	19.0				1.0	1	pH Units	103325		12/03/03 1409	rnm

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222287

Date:12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-20(3-5)
Date Sampled.....: 11/13/2003
Time Sampled.....: 10:20
Sample Matrix.....: Soil

Laboratory Sample ID: 222287-3
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	250	U		90	250	1	mg/Kg	102373		11/21/03 1156	bms
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	7.5	U		1.5	7.5	1.00000	ug/Kg	101966		11/17/03 1936	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	7.5	U		0.96	7.5	1.00000	ug/Kg	101966		11/17/03 1936	jdn
	Benzene, Solid*	7.5	U		1.0	7.5	1.00000	ug/Kg	101966		11/17/03 1936	jdn
	Trichloroethene, Solid*	7.5	U		0.89	7.5	1.00000	ug/Kg	101966		11/17/03 1936	jdn
	Toluene, Solid*	7.5	U		1.5	7.5	1.00000	ug/Kg	101966		11/17/03 1936	jdn
	Ethylbenzene, Solid*	7.5	U		1.7	7.5	1.00000	ug/Kg	101966		11/17/03 1936	jdn
	Xylenes (total), Solid*	7.5	U		4.4	7.5	1.00000	ug/Kg	101966		11/17/03 1936	jdn
	tert-Butyl alcohol, Solid*	300	U		220	300	1.00000	ug/Kg	101966		11/17/03 1936	jdn
	tert-amyl methyl ether, Solid*	7.5	U		0.93	7.5	1.00000	ug/Kg	101966		11/17/03 1936	jdn

* In Description = Dry Wgt.

Amendment No. 0010

TL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222287

Date: 12/11/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: FB111303
Date Sampled.....: 11/13/2003
Time Sampled.....: 10:50
Sample Matrix.....: Water

Laboratory Sample ID: 222287-4
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016	0.51	U		0.17	0.51	1.00000	ug/L	104018		11/19/03 1701	pjg
	Aroclor 1221	0.51	U		0.46	0.51	1.00000	ug/L	104018		11/19/03 1701	pjg
	Aroclor 1232	0.51	U		0.22	0.51	1.00000	ug/L	104018		11/19/03 1701	pjg
	Aroclor 1242	0.51	U		0.19	0.51	1.00000	ug/L	104018		11/19/03 1701	pjg
	Aroclor 1248	0.51	U		0.21	0.51	1.00000	ug/L	104018		11/19/03 1701	pjg
	Aroclor 1254	0.51	U		0.13	0.51	1.00000	ug/L	104018		11/19/03 1701	pjg
	Aroclor 1260	0.51	U		0.15	0.51	1.00000	ug/L	104018		11/19/03 1701	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO)	0.13	U		0.029	0.13	1.00000	mg/L	103009		11/25/03 2149	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO)	50	U		7.1	50	1.00000	ug/L	102878		11/21/03 0540	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide	0.01	U		0.01	0.01	1	mg/L	102761		11/25/03 1619	rmm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint)	>200					1	degrees F	101964		11/18/03 0737	jmk
9040B	pH (Liquid)											
	Corrosivity (pH-Liquids)	5.66			0.20	0.20	1	pH Units	101930		11/17/03 1615	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide	2.5	U		2.5	2.5	1	mg/L	102196		11/19/03 1443	bms
8260B	Volatile Organics (5mL Purge)											
	1,1-Dichloroethene	5.0	U		1.7	5.0	1.00000	ug/L	102199		11/19/03 1244	jdn

* In Description = Dry Wgt.

Amendment No. 0010

TL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222287

Date:12/11/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: FB111303
Date Sampled.....: 11/13/2003
Time Sampled.....: 10:50
Sample Matrix.....: Water

Laboratory Sample ID: 222287-4
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Methyl-tert-butyl-ether (MTBE)	5.0	U		2.0	5.0	1.00000	ug/L	102199		11/19/03 1244	jdn
	Benzene	5.0	U		0.96	5.0	1.00000	ug/L	102199		11/19/03 1244	jdn
	Trichloroethene	5.0	U		1.6	5.0	1.00000	ug/L	102199		11/19/03 1244	jdn
	Toluene	5.0	U		1.1	5.0	1.00000	ug/L	102199		11/19/03 1244	jdn
	Ethylbenzene	5.0	U		0.93	5.0	1.00000	ug/L	102199		11/19/03 1244	jdn
	Xylenes (total)	5.0	U		1.8	5.0	1.00000	ug/L	102199		11/19/03 1244	jdn
	tert-Butyl alcohol	200	U		30	200	1.00000	ug/L	102199		11/19/03 1244	jdn
	tert-amyl methyl ether	5.0	U		0.47	5.0	1.00000	ug/L	102199		11/19/03 1244	jdn

* In Description = Dry Wgt.

Amendment No. 0010

TL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222287

Date:12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-21(2.5-4.5)
Date Sampled.....: 11/13/2003
Time Sampled.....: 14:05
Sample Matrix.....: Soil

Laboratory Sample ID: 222287-5
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U	*	2.1	18	1.00000	ug/Kg	104020		12/02/03 0121	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0121	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0121	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0121	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0121	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0121	pjg
	Aroclor 1260, 3541 Solid*	18	U	*	1.5	18	1.00000	ug/Kg	104020		12/02/03 0121	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	16			2.9	4.7	1.00000	mg/Kg	103009		11/27/03 0333	mgk
Method	% Solids Determination											
	% Solids, Solid	87.9			0.10	0.10	1	%	102246		11/20/03 2140	clb
	% Moisture, Solid	12.1			0.10	0.10	1	%	102246		11/20/03 2140	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	36	J		11	57	1.00000	ug/Kg	102139		11/19/03 0932	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	3.8	U		3.8	3.8	1	mg/Kg	102318		11/21/03 1057	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	102257		11/20/03 1522	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	7.0				0.2	1	pH Units	103325		12/03/03 1411	rnm
	Temperature at Analysis, Solid	18.0				1.0	1	pH Units	103325		12/03/03 1411	rnm

* In Description = Dry Wgt.

Amendment No. 0010

LABORATORY TEST RESULTS

Job Number: 222287

Date:12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-21(2.5-4.5)
Date Sampled.....: 11/13/2003
Time Sampled.....: 14:05
Sample Matrix.....: Soil

Laboratory Sample ID: 222287-5
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	250	U		90	250	1	mg/Kg	102373		11/21/03 1157	bms
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	7.5	U		1.5	7.5	1.00000	ug/Kg	101966		11/17/03 2004	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	7.5	U		0.96	7.5	1.00000	ug/Kg	101966		11/17/03 2004	jdn
	Benzene, Solid*	7.5	U		0.99	7.5	1.00000	ug/Kg	101966		11/17/03 2004	jdn
	Trichloroethene, Solid*	7.5	U		0.88	7.5	1.00000	ug/Kg	101966		11/17/03 2004	jdn
	Toluene, Solid*	7.5	U		1.5	7.5	1.00000	ug/Kg	101966		11/17/03 2004	jdn
	Ethylbenzene, Solid*	7.5	U		1.6	7.5	1.00000	ug/Kg	101966		11/17/03 2004	jdn
	Xylenes (total), Solid*	7.5	U		4.3	7.5	1.00000	ug/Kg	101966		11/17/03 2004	jdn
	tert-Butyl alcohol, Solid*	300	U		220	300	1.00000	ug/Kg	101966		11/17/03 2004	jdn
	tert-amyl methyl ether, Solid*	7.5	U		0.93	7.5	1.00000	ug/Kg	101966		11/17/03 2004	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222287

Date:12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-6(2.5-4.5)
Date Sampled.....: 11/13/2003
Time Sampled.....: 15:10
Sample Matrix.....: Soil

Laboratory Sample ID: 222287-6
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	17	U	*	1.9	17	1.00000	ug/Kg	104020		12/02/03 0156	pjg
	Aroclor 1221, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104020		12/02/03 0156	pjg
	Aroclor 1232, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104020		12/02/03 0156	pjg
	Aroclor 1242, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104020		12/02/03 0156	pjg
	Aroclor 1248, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104020		12/02/03 0156	pjg
	Aroclor 1254, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104020		12/02/03 0156	pjg
	Aroclor 1260, 3541 Solid*	17	U	*	1.4	17	1.00000	ug/Kg	104020		12/02/03 0156	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	20			5.6	9.0	2.00000	mg/Kg	103009		11/28/03 1608	mgk
Method	% Solids Determination											
	% Solids, Solid	91.8			0.10	0.10	1	%	102246		11/20/03 2140	clb
	% Moisture, Solid	8.2			0.10	0.10	1	%	102246		11/20/03 2140	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	79			10	54	1.00000	ug/Kg	102139		11/19/03 1008	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	4.3	U		4.3	4.3	1	mg/Kg	102318		11/21/03 1057	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	102437		11/21/03 0615	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	7.6				0.2	1	pH Units	103325		12/03/03 1412	rnm
	Temperature at Analysis, Solid	18.0				1.0	1	pH Units	103325		12/03/03 1412	rnm

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222287

Date:12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-6(2.5-4.5)
Date Sampled.....: 11/13/2003
Time Sampled.....: 15:10
Sample Matrix.....: Soil

Laboratory Sample ID: 222287-6
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	250	U		89	250	1	mg/Kg	102373		11/21/03 1158	bms
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	7.3	U		1.5	7.3	1.00000	ug/Kg	101966		11/17/03 2031	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	7.3	U		0.93	7.3	1.00000	ug/Kg	101966		11/17/03 2031	jdn
	Benzene, Solid*	29			0.96	7.3	1.00000	ug/Kg	101966		11/17/03 2031	jdn
	Trichloroethene, Solid*	7.3	U		0.86	7.3	1.00000	ug/Kg	101966		11/17/03 2031	jdn
	Toluene, Solid*	7.3	U		1.5	7.3	1.00000	ug/Kg	101966		11/17/03 2031	jdn
	Ethylbenzene, Solid*	25			1.6	7.3	1.00000	ug/Kg	101966		11/17/03 2031	jdn
	Xylenes (total), Solid*	37			4.2	7.3	1.00000	ug/Kg	101966		11/17/03 2031	jdn
	tert-Butyl alcohol, Solid*	290	U		210	290	1.00000	ug/Kg	101966		11/17/03 2031	jdn
	tert-amyl methyl ether, Solid*	7.3	U		0.91	7.3	1.00000	ug/Kg	101966		11/17/03 2031	jdn

* In Description = Dry Wgt.

Amendment No. 0010

TL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222287

Date:12/11/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: B-22(2-4)
Date Sampled.....: 11/13/2003
Time Sampled.....: 16:05
Sample Matrix.....: Soil

Laboratory Sample ID: 222287-7
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U	*	2.1	18	1.00000	ug/Kg	104020		12/02/03 0232	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0232	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0232	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0232	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0232	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104020		12/02/03 0232	pjg
	Aroclor 1260, 3541 Solid*	18	U	*	1.5	18	1.00000	ug/Kg	104020		12/02/03 0232	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.5	U	a	2.8	4.5	1.00000	mg/Kg	103009		11/27/03 0530	mgk
Method	% Solids Determination											
	% Solids, Solid	91.0			0.10	0.10	1	%	102246		11/20/03 2140	clb
	% Moisture, Solid	9.0			0.10	0.10	1	%	102246		11/20/03 2140	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	22	J	a	10	55	1.00000	ug/Kg	102139		11/19/03 1043	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	3.2	U		3.2	3.2	1	mg/Kg	102318		11/21/03 1058	rmm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	102437		11/21/03 0710	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	7.5				0.2	1	pH Units	103325		12/03/03 1413	rmm
	Temperature at Analysis, Solid	18.0				1.0	1	pH Units	103325		12/03/03 1413	rmm

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222287

Date:12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-22(2-4)
Date Sampled.....: 11/13/2003
Time Sampled.....: 16:05
Sample Matrix.....: Soil

Laboratory Sample ID: 222287-7
Date Received.....: 11/14/2003
Time Received.....: 09:45

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	250	U		89	250	1	mg/Kg	102373		11/21/03 1159	bms
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	7.2	U		1.4	7.2	1.00000	ug/Kg	101966		11/17/03 2058	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	7.2	U		0.93	7.2	1.00000	ug/Kg	101966		11/17/03 2058	jdn
	Benzene, Solid*	7.2	U		0.95	7.2	1.00000	ug/Kg	101966		11/17/03 2058	jdn
	Trichloroethene, Solid*	7.2	U		0.85	7.2	1.00000	ug/Kg	101966		11/17/03 2058	jdn
	Toluene, Solid*	7.2	U		1.4	7.2	1.00000	ug/Kg	101966		11/17/03 2058	jdn
	Ethylbenzene, Solid*	7.2	U		1.6	7.2	1.00000	ug/Kg	101966		11/17/03 2058	jdn
	Xylenes (total), Solid*	7.2	U		4.2	7.2	1.00000	ug/Kg	101966		11/17/03 2058	jdn
	tert-Butyl alcohol, Solid*	290	U		210	290	1.00000	ug/Kg	101966		11/17/03 2058	jdn
	tert-amyl methyl ether, Solid*	7.2	U		0.90	7.2	1.00000	ug/Kg	101966		11/17/03 2058	jdn

* In Description = Dry Wgt.

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LABORATORY CHRONICLE

Job Number: 222287 Date: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222287-1 Client ID: P-4(3-5) Date Recvd: 11/14/2003 Sample Date: 11/13/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102246		11/20/2003	2140	
5030A	5030 Purge & Trap	1	102138		11/18/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	101913		11/17/2003	1841	
5035	5035 Preservation High (Methanol)	1	101959		11/15/2003	0705	
5035	5035 Preservation Low	1	101957		11/15/2003	0705	
5035	5035 Preservation Low	2	101957		11/15/2003	0705	
EDD	Electronic Data Deliverable	1					
3541	Extraction Soxhlet (DRO)	1	102423		11/23/2003	1250	
3541	Extraction Soxhlet (PCBs)	1	102785		11/26/2003	1100	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102257	102257	11/20/2003	1027	
8082	PCB Analysis	1	104020	102785	12/01/2003	2335	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1055	
7.3.4.2/9034	Reactivity, Sulfide	1	102373	102373	11/21/2003	1154	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103009	102423	11/27/2003	0137	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102139	102138	11/19/2003	0745	1.00000
8260B	Volatile Organics	1	101966	101957-101913	11/17/2003	1841	1.00000
9045C	pH (Soil)	1	103325	103325	12/03/2003	1407	

Lab ID: 222287-2 Client ID: B-7(4-6) Date Recvd: 11/14/2003 Sample Date: 11/13/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102246		11/20/2003	2140	
5030A	5030 Purge & Trap	1	102138		11/18/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	101913		11/17/2003	1909	
5035	5035 Preservation High (Methanol)	1	101959		11/15/2003	0706	
5035	5035 Preservation Low	1	101957		11/15/2003	0706	
5035	5035 Preservation Low	2	101957		11/15/2003	0706	
3541	Extraction Soxhlet (DRO)	1	102423		11/23/2003	1250	
3541	Extraction Soxhlet (PCBs)	1	102785		11/26/2003	1100	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102257	102257	11/20/2003	1205	
8082	PCB Analysis	1	104020	102785	12/02/2003	0010	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1056	
7.3.4.2/9034	Reactivity, Sulfide	1	102373	102373	11/21/2003	1155	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103009	102423	11/28/2003	1451	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102139	102138	11/19/2003	0821	1.00000
8260B	Volatile Organics	1	101966	101957-101913	11/17/2003	1909	1.00000
9045C	pH (Soil)	1	103325	103325	12/03/2003	1408	

Lab ID: 222287-3 Client ID: B-20(3-5) Date Recvd: 11/14/2003 Sample Date: 11/13/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102246		11/20/2003	2140	
5030A	5030 Purge & Trap	1	102138		11/18/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	101913		11/17/2003	1936	
5035	5035 Preservation High (Methanol)	1	101959		11/15/2003	0707	
5035	5035 Preservation Low	1	101957		11/15/2003	0707	
5035	5035 Preservation Low	2	101957		11/15/2003	0707	
3541	Extraction Soxhlet (DRO)	1	102423		11/23/2003	1250	
3541	Extraction Soxhlet (PCBs)	1	102785		11/26/2003	1100	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102257	102257	11/20/2003	1343	
8082	PCB Analysis	1	104020	102785	12/02/2003	0046	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1056	
7.3.4.2/9034	Reactivity, Sulfide	1	102373	102373	11/21/2003	1156	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103009	102423	11/27/2003	0254	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102139	102138	11/19/2003	0857	1.00000
8260B	Volatile Organics	1	101966	101957-101913	11/17/2003	1936	1.00000
9045C	pH (Soil)	1	103325	103325	12/03/2003	1409	

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LABORATORY CHRONICLE

Job Number: 222287

Date: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222287-4 Client ID: FB111303 Date Recvd: 11/14/2003 Sample Date: 11/13/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030 5 mL Purge Prep	1	102152		11/19/2003	1244	
5030A	5030 Purge & Trap	1	102877		11/21/2003	0200	
3520C	Extraction Continuous Liq/Liq (PCBs)	1	101941		11/18/2003	0935	
3510C	Extraction Sep. Funnel (Diesel)	1	101949		11/18/2003	1330	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	101964	101964	11/18/2003	0737	
8082	PCB Analysis	1	104018	101941	11/19/2003	1701	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102761	102761	11/25/2003	1619	
7.3.4.2/9034	Reactivity, Sulfide	1	102196	102196	11/19/2003	1443	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103009	101949	11/25/2003	2149	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102878	102877	11/21/2003	0540	1.00000
8260B	Volatile Organics (5mL Purge)	1	102199	102152	11/19/2003	1244	1.00000
9040B	pH (Liquid)	1	101930	101930	11/17/2003	1615	

Lab ID: 222287-5 Client ID: B-21(2.5-4.5) Date Recvd: 11/14/2003 Sample Date: 11/13/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102246		11/20/2003	2140	
5030A	5030 Purge & Trap	1	102138		11/18/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	101913		11/17/2003	2004	
5035	5035 Preservation High (Methanol)	1	101959		11/15/2003	0708	
5035	5035 Preservation Low	1	101957		11/15/2003	0708	
5035	5035 Preservation Low	2	101957		11/15/2003	0708	
3541	Extraction Soxhlet (DRO)	1	102423		11/23/2003	1250	
3541	Extraction Soxhlet (PCBs)	1	102785		11/26/2003	1100	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102257	102257	11/20/2003	1522	
8082	PCB Analysis	1	104020	102785	12/02/2003	0121	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1057	
7.3.4.2/9034	Reactivity, Sulfide	1	102373	102373	11/21/2003	1157	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103009	102423	11/27/2003	0333	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102139	102138	11/19/2003	0932	1.00000
8260B	Volatile Organics	1	101966	101957-101913	11/17/2003	2004	1.00000
9045C	pH (Soil)	1	103325	103325	12/03/2003	1411	

Lab ID: 222287-6 Client ID: B-6(2.5-4.5) Date Recvd: 11/14/2003 Sample Date: 11/13/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102246		11/20/2003	2140	
5030A	5030 Purge & Trap	1	102138		11/18/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	101913		11/17/2003	2031	
5035	5035 Preservation High (Methanol)	1	101959		11/15/2003	0708	
5035	5035 Preservation Low	1	101957		11/15/2003	0709	
5035	5035 Preservation Low	2	101957		11/15/2003	0708	
3541	Extraction Soxhlet (DRO)	1	102423		11/23/2003	1250	
3541	Extraction Soxhlet (PCBs)	1	102785		11/26/2003	1100	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102437	102437	11/21/2003	0615	
8082	PCB Analysis	1	104020	102785	12/02/2003	0156	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1057	
7.3.4.2/9034	Reactivity, Sulfide	1	102373	102373	11/21/2003	1158	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103009	102423	11/28/2003	1608	2.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102139	102138	11/19/2003	1008	1.00000
8260B	Volatile Organics	1	101966	101957-101913	11/17/2003	2031	1.00000
9045C	pH (Soil)	1	103325	103325	12/03/2003	1412	

Lab ID: 222287-7 Client ID: B-22(2-4) Date Recvd: 11/14/2003 Sample Date: 11/13/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102246		11/20/2003	2140	
5030A	5030 Purge & Trap	1	102138		11/18/2003	2100	

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LABORATORY CHRONICLE

Job Number: 222287 Date: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222287-7 Client ID: B-22(2-4) Date Recvd: 11/14/2003 Sample Date: 11/13/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5035	5035 Archon Closed Purge & Trap	1	101913		11/17/2003	2058	
5035	5035 Preservation High (Methanol)	1	101959		11/15/2003	0709	
5035	5035 Preservation Low	1	101957		11/15/2003	0709	
5035	5035 Preservation Low	1	101957		11/15/2003	0710	
5035	5035 Preservation Low	2	101957		11/15/2003	0709	
5035	5035 Preservation Low	2	101957		11/15/2003	0710	
3541	Extraction Soxhlet (DRO)	1	102423		11/23/2003	1250	
3541	Extraction Soxhlet (PCBs)	1	102785		11/26/2003	1100	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102437	102437	11/21/2003	0710	
8082	PCB Analysis	1	104020	102785	12/02/2003	0232	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1058	
7.3.4.2/9034	Reactivity, Sulfide	1	102373	102373	11/21/2003	1159	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103009	102423	11/27/2003	0530	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102139	102138	11/19/2003	1043	1.00000
8260B	Volatile Organics	1	101966	101957-101913	11/17/2003	2058	1.00000
9045C	pH (Soil)	1	103325	103325	12/03/2003	1413	

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SURROGATE RECOVERIES REPORT

Job Number.: 222287 Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: Water Prep Batch..: 101949
Method Code...: 8015D Batch(s).....: 103009

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCD			11/25/2003	87	88
LCS			11/25/2003	89	81
MB			11/25/2003	80	95
222287- 4		FB111303	11/25/2003	81	92

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 119
OTERPH	o-Terphenyl (surr)	58 - 119

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: 3541 Solid Prep Batch..: 102423
Method Code...: 8015D Batch(s).....: 103009

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCS			11/26/2003	101	104
MB			11/26/2003	88	92
222287- 1		P-4(3-5)	11/27/2003	76	88
222287- 2		B-7(4-6)	11/28/2003	84	99
222287- 3		B-20(3-5)	11/27/2003	84	91
222287- 5		B-21(2.5-4.5)	11/27/2003	85	95
222287- 6		B-6(2.5-4.5)	11/28/2003	83	96
222287- 7		B-22(2-4)	11/27/2003	87	95

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 103
OTERPH	o-Terphenyl (surr)	44 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Gasoline Range Organics (GRO)
Method Code...: 8015G
Test Matrix...: Solid
Batch(s).....: 102139
Prep Batch..: 102138

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/19/2003	104	110
MB			11/18/2003	96	97
222287- 1		P-4(3-5)	11/19/2003	92	88
222287- 2		B-7(4-6)	11/19/2003	92	91
222287- 3		B-20(3-5)	11/19/2003	90	88
222287- 5		B-21(2.5-4.5)	11/19/2003	90	91
222287- 6		B-6(2.5-4.5)	11/19/2003	93	95
222287- 7		B-22(2-4)	11/19/2003	93	94

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	68 - 113
BRFLBE	4-Bromofluorobenzene (surr)	41 - 125

Method.....: TPH - Gasoline Range Organics (GRO)
Method Code...: 8015G
Test Matrix...: Water
Batch(s).....: 102878
Prep Batch..: 102877

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/21/2003	96	109
MB			11/21/2003	94	96
222287- 4		FB111303	11/21/2003	95	97

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	79 - 110
BRFLBE	4-Bromofluorobenzene (surr)	67 - 124

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SURROGATE RECOVERIES REPORT

Job Number.: 222287 Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: Water
Batch(s).....: 104018
Prep Batch..: 101941

Lab ID	DT	Sample ID	Date	DCB	TCX
LCD			11/19/2003	42	79
LCS			11/19/2003	44	88
MB			11/19/2003	72	101
222287- 4		FB111303	11/19/2003	59	53

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 116
TCX	Tetrachloro-m-xylene (surr)	33 - 111

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: 3541 Solid
Batch(s).....: 104020
Prep Batch..: 102785

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			12/01/2003	135*	138*
MB			12/01/2003	108	101
222287- 1		P-4(3-5)	12/01/2003	88	76
222287- 2		B-7(4-6)	12/02/2003	91	80
222287- 3		B-20(3-5)	12/02/2003	88	80
222287- 5		B-21(2.5-4.5)	12/02/2003	46	37*
222287- 6		B-6(2.5-4.5)	12/02/2003	82	71
222287- 7		B-22(2-4)	12/02/2003	53	37*

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	33 - 131
TCX	Tetrachloro-m-xylene (surr)	42 - 122

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SURROGATE RECOVERIES REPORT

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics (5mL Purge)
Method Code...: 8260.5

Test Matrix...: Water
Batch(s).....: 102199

Prep Batch..: 102152

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/19/2003	90	101	96	105
MB			11/19/2003	94	93	97	104
222287- 4		FB111303	11/19/2003	95	93	98	103

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	66 - 132
BRFLBE	4-Bromofluorobenzene (surr)	79 - 122
DBRFLM	Dibromofluoromethane (surr)	66 - 132
TOLD8	Toluene-d8 (surr)	78 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222287 Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 101966
Prep Batch..: 101913

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCD			11/17/2003	97	98	97	100
LCS			11/17/2003	102	101	94	108
MB			11/17/2003	101	96	102	105

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 101966
Prep Batch..: 101953

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/17/2003	113	97	103	102

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 101966
Prep Batch..: 101955

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/17/2003	112	102	100	108

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 101966
Prep Batch..: 101957

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/17/2003	114	99	101	103
222287- 1		P-4(3-5)	11/17/2003	111	93	105	97
222287- 2		B-7(4-6)	11/17/2003	115	88	103	98
222287- 3		B-20(3-5)	11/17/2003	110	98	104	103
222287- 5		B-21(2.5-4.5)	11/17/2003	112	96	104	100
222287- 6		B-6(2.5-4.5)	11/17/2003	108	100	104	103
222287- 7		B-22(2-4)	11/17/2003	113	98	104	102

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SURROGATE RECOVERIES REPORT

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 101966

Prep Batch..: 101957

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	003JWLPCBC	101941-003		11/19/2003	1254

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104018

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.006	4.376	5.001	0.500 U	80	%	62-104	
						9	R	20	
Aroclor 1260	ug/L	4.183	4.439	5.010	0.500 U	83	%	69-105	
						6	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003JWLPCBC	1D1941-002		11/19/2003	1218

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104018

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.376		5.001	0.500 U	88	%	62-104	
Aroclor 1260	ug/L	4.439		5.010	0.500 U	89	%	69-105	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101941-001		11/19/2003	1143

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104018

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	0.500	U							
Aroclor 1221	ug/L	0.500	U							
Aroclor 1232	ug/L	0.500	U							
Aroclor 1242	ug/L	0.500	U							
Aroclor 1248	ug/L	0.500	U							
Aroclor 1254	ug/L	0.500	U							
Aroclor 1260	ug/L	0.500	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLPCBA	102785-002		12/01/2003	2300

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104020

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	188.823		166.700	16.700 U	113	%	60-112	*
Aroclor 1260, 3541 Solid	ug/Kg	220.933		167.000	16.700 U	132	%	64-119	*

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104020

Analyst...: pjg

MB	Method Blank		102785-001		12/01/2003	2224

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1221, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1232, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1242, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1248, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1254, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1260, 3541 Solid	ug/Kg	16.700	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	003HWLD1EA	101949-003		11/25/2003	2110

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103009

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.691205	1.587125	2.000000	0.125000 U	85	%	57-107	
						6	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 103009
Analyst...: mgk

LCS	Laboratory Control Sample	003HWLDIEA	101949-002		11/25/2003	2031

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.587125		2.000000	0.125000 U	79	%	57-107	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLDIEA	102423-002		11/26/2003	2105

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103009

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	66.383		66.670	4.199 U	100	%	70-106	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101949-001		11/25/2003	1953

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 103009
Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	0.125000 u							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102423-001		11/26/2003	2026

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 103009
Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	4.199 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1314
Batch.....: 102139

Analyst...: wre

LCS	Laboratory Control Sample	G03K18DSA	102138-002		11/19/2003	0002

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	438.152		400.000	6.412 J	110	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 102139
Analyst...: wre

MB	Method Blank		102138-001		11/18/2003	2326

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	6.412	J						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K21DSA	102877-002		11/21/2003	0505

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1112
Batch.....: 102878

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	460.391		400.000	50.000 U	115	%	85-124	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 102878
Analyst...: wre

MB	Method Blank		102877-001		11/21/2003	0430

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	50.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

EB1	Extraction Blank 1	-222038	101953-003		11/17/2003	1406

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222211	101955-007		11/17/2003	1434

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222287	101957-013		11/17/2003	1501

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	V03K17DSB	101913-016		11/17/2003	2126

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	46.475	51.416	50.000	5.000	U	93 10	% R	51-132 20	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	50.354	45.092	50.000	5.000	U	101 11	% R	61-132 20	
Benzene, Solid	ug/Kg	49.071	50.214	50.000	5.000	U	98 2	% R	72-128 20	
Trichloroethene, Solid	ug/Kg	48.546	52.997	50.000	5.000	U	97 9	% R	75-129 20	
Toluene, Solid	ug/Kg	48.216	54.811	50.000	5.000	U	96 13	% R	75-125 20	
Ethylbenzene, Solid	ug/Kg	49.647	50.938	50.000	5.000	U	99 3	% R	79-123 20	
Xylenes (total), Solid	ug/Kg	148.264	158.294	150.000	5.000	U	99 7	% R	82-125 20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K17DSB	101913-015		11/17/2003	1328

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	51.416		50.000	5.000 U	103	%	51-132	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	45.092		50.000	5.000 U	90	%	61-132	
Benzene, Solid	ug/Kg	50.214		50.000	5.000 U	100	%	72-128	
Trichloroethene, Solid	ug/Kg	52.997		50.000	5.000 U	106	%	75-129	
Toluene, Solid	ug/Kg	54.811		50.000	5.000 U	110	%	75-125	
Ethylbenzene, Solid	ug/Kg	50.938		50.000	5.000 U	102	%	79-123	
Xylenes (total), Solid	ug/Kg	158.294		150.000	5.000 U	106	%	82-125	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101913-014		11/17/2003	1244

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 101966

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K190SB	102152-002		11/19/2003	1051

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)
Equipment Code....: GCL16
Batch.....: 102199
Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	42.015		50.000	5.000 U	84	%	48-132	
Methyl-tert-butyl-ether (MTBE)	ug/L	43.739		50.000	5.000 U	87	%	49-139	
Benzene	ug/L	47.692		50.000	5.000 U	95	%	68-130	
Trichloroethene	ug/L	52.266		50.000	5.000 U	105	%	71-128	
Toluene	ug/L	50.035		50.000	5.000 U	100	%	72-122	
Ethylbenzene	ug/L	52.459		50.000	5.000 U	105	%	78-121	
Xylenes (total)	ug/L	153.542		150.000	5.000 U	102	%	76-129	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102152-001		11/19/2003	1029

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)
Equipment Code....: GCL16
Batch.....: 102199
Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	5.000	U							
Methyl-tert-butyl-ether (MTBE)	ug/L	5.000	U							
Benzene	ug/L	5.000	U							
Trichloroethene	ug/L	5.000	U							
Toluene	ug/L	5.000	U							
Ethylbenzene	ug/L	5.000	U							
Xylenes (total)	ug/L	5.000	U							
tert-Butyl alcohol	ug/L	200.000	U							
tert-amyl methyl ether	ug/L	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287 Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: Method
Method Description.: % Solids Determination
Parameter.....: % Solids
Batch.....: 102246
Equipment Code.....:
Analyst....: clb
Test Code.: %SOLID

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102246-001		%	0.1000 U								11/20/2003	2140

Test Method.....: 7.3.3.2/9014
Method Description.: Reactivity, Cyanide
Parameter.....: Reactivity, Cyanide
Batch.....: 102318
Equipment Code.....: SPEC1001
Analyst....: rnm
Test Code.: REACCN

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102318-004		mg/L	0.01000 U								11/21/2003	1053
LCS	102318-005	I03ISTCN2	mg/L	0.10210		0.10000	0.01000 U	102		%	80-120	11/21/2003	1054

Test Method.....: 7.3.3.2/9014
Method Description.: Reactivity, Cyanide
Parameter.....: Reactivity, Cyanide
Batch.....: 102761
Equipment Code.....: SPEC4
Analyst....: rnm
Test Code.: REACCN

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102761-004		mg/L	0.01000 U								11/25/2003	1606
LCS	102761-005	I03ISTCN2	mg/L	0.09330		0.10000	0.01000 U	93		%	80-120	11/25/2003	1607

Test Method.....: 1010
Method Description.: Ignitability (Pensky-Martens Closed-Cup)
Parameter.....: Ignitability (Flashpoint)
Batch.....: 102257
Equipment Code.....:
Analyst....: jmk
Test Code.: IGNPMC

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MD	222287-5		degrees F	>200			>200					11/20/2003	1700

Test Method.....: 9045C
Method Description.: pH (Soil)
Parameter.....: Corrosivity (pH Solid)
Batch.....: 103325
Equipment Code.....:
Analyst....: rnm
Test Code.: CORSOL

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MDPH	222287-3		pH Units	7.15000			6.86000	0.29000		A	0.20000	12/03/2003	1410

Test Method.....: 9040B
Method Description.: pH (Liquid)
Parameter.....: Corrosivity (pH Liquids)
Batch.....: 101930
Equipment Code.....:
Analyst....: nrp
Test Code.: CORLIQ

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MDPH	222287-4		pH Units	5.62000			5.66000					11/17/2003	1616

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222287 Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: 9040B
Method Description.: pH (Liquid)
Parameter.....: pH
Batch.....: 101930
Equipment Code....:
Analyst...: nrp
Test Code.: PH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	101930-002	I03KPH7B	pH Units	7.05000		7.00000		0.05000		A	0.20000	11/17/2003	1611
LCDP	101930-003	I03KPH7B	pH Units	7.05000		7.00000		0.05000		A	0.20000	11/17/2003	1612
MDPH	222287-4		pH Units	5.62000			5.66000	0.04000		A	0.20000	11/17/2003	1616

Test Method.....: 9045C
Method Description.: pH (Soil)
Parameter.....: pH
Batch.....: 103325
Equipment Code....:
Analyst...: rnm
Test Code.: PH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	103325-002	I03KPH7B	pH Units	7.02000		7.00000		0.02000		A	0.20000	12/03/2003	1401
LCDP	103325-003	I03KPH7B	pH Units	7.00000		7.00000		0.00		A	0.20000	12/03/2003	1402
MDPH	222287-3		pH Units	7.15000			6.86000	0.29000		A	0.20000	12/03/2003	1410

Test Method.....: 7.3.4.2/9034
Method Description.: Reactivity, Sulfide
Parameter.....: Reactivity, Sulfide
Batch.....: 102196
Equipment Code....:
Analyst...: bms
Test Code.: REACS

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102196-001		mg/L	1.00000 U								11/19/2003	1410
LCS	102196-002	I03HSTSF1	mg/L	3.10000		3.02300		103		%	80-120	11/19/2003	1413

Test Method.....: 7.3.4.2/9034
Method Description.: Reactivity, Sulfide
Parameter.....: Reactivity, Sulfide
Batch.....: 102373
Equipment Code....:
Analyst...: bms
Test Code.: REACS

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102373-001		mg/Kg	91.00 U								11/21/2003	1145
LCS	102373-002	I03HSTSF1	mg/Kg	115.56 B		151.10	91.00 U	76		%	0-200	11/21/2003	1146

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/11/2003

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Soil, sediment and sludge sample results are reported on a "dry weight" basis except when analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received" basis unless noted differently.
3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
4) The test results for the noted analytical method(s) meet the requirements of NELAC. Lab Cert. ID# 100201
5) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report)

Inorganic Qualifiers (Q-Column)

U Analyte was not detected at or above the stated limit.
< Not detected at or above the reporting limit.
J Result is less than the RL, but greater than or equal to the method detection limit.
B Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.
S Result was determined by the Method of Standard Additions.
F AFCEE: Result is less than the RL, but greater than or equal to the method detection limit.

Inorganic Flags (Flag Column)

- ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
+ MSA correlation coefficient is less than 0.995.
4 MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
E SD: Serial dilution exceeds the control limits.
H MB, EB1, EB2, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.
N MS, MSD: Spike recovery exceeds the upper or lower control limits.
W AS(GFAA) Post-digestion spike was outside 85-115% control limits.

Organic Qualifiers (Q - Column)

U Analyte was not detected at or above the stated limit.
ND Compound not detected.
J Result is an estimated value below the reporting limit or a tentatively identified compound (TIC).
Q Result was qualitatively confirmed, but not quantified.
C Pesticide identification was confirmed by GC/MS.
Y The chromatographic response resembles a typical fuel pattern.
Z The chromatographic response does not resemble a typical fuel pattern.
E Result exceeded calibration range, secondary dilution required.
F AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)

Organic Flags (Flags Column)

B MB: Batch QC is greater than reporting limit.
* LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits.
^ EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
A Concentration exceeds the instrument calibration range
a Concentration is below the method Reporting Limit (RL)
B Compound was found in the blank and sample.
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
H Alternate peak selection upon analytical review
I Indicates the presence of an interfence, recovery is not calculated.
M Manually integrated compound.
P The lower of the two values is reported when the % difference between the results of two GC columns is

greater than 25%.

Abbreviations

AS	Post Digestion Spike (GFAA Samples - See Note 1 below)
Batch	Designation given to identify a specific extraction, digestion, preparation set, or analysis set
CAP	Capillary Column CCB Continuing Calibration Blank
CCV	Continuing Calibration Verification
CF	Confirmation analysis of original
C1	Confirmation analysis of A1 or D1
C2	Confirmation analysis of A2 or D2
C3	Confirmation analysis of A3 or D3
CRA	Low Level Standard Check - GFAA; Mercury
CRI	Low Level Standard Check - ICP
CV	Calilbration Verification Standard
Dil Fac	Dilution Factor - Secondary dilution analysis
D1	Dilution 1
D2	Dilution 2
D3	Dilution 3
DLFac	Detection Limit Factor
DSH	Distilled Standard - High Level
DSL	Distilled Standard - Low Level
DSM	Distilled Standard - Medium Level
EB1	Extraction Blank 1
EB2	Extraction Blank 2
EB3	DI Blank
ELC	Method Extracted LCS
ELD	Method Extracted LCD
ICAL	Initial calibration
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ISA	Interference Check Sample A - ICAP
ISB	Interference Check Sample B - ICAP
Job No.	The first six digits of the sample ID which refers to a specific client, project and sample group
	Lab ID An 8 number unique laboratory identification
LCD	Laboratory Control Standard Duplicate
LCS	Laboratory Control Standard with reagent grade water or a matrix free from the analyte of interest
MB	Method Blank or (PB) Preparation Blank
MD	Method Duplicate
MDL	Method Detection Limit
MLE	Medium Level Extraction Blank
MRL	Method Reporting Limit Standard
MSA	Method of Standard Additions
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not Detected
PREPF	Preparation factor used by the Laboratory's Information Management System (LIMS)
PDS	Post Digestion Spike (ICAP)
RA	Re-analysis of original
A1	Re-analysis of D1
A2	Re-analysis of D2
A3	Re-analysis of D3
RD	Re-extraction of dilution
RE	Re-extraction of original
RC	Re-extraction Confirmation
RL	Reporting Limit
RPD	Relative Percent Difference of duplicate (unrounded) analyses
RRF	Relative Response Factor
RT	Retention Time

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/11/2003

RTW	Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number
SCB	Seeded Control Blank
SD	Serial Dilution (Calculated when sample concentration exceeds 50 times the MDL)
UCB	Unseeded Control Blank
SSV	Second Source Verification Standard
SLCS	Solid Laboratory Control Standard(LCS)
PHC	pH Calibration Check LCSP pH Laboratory Control Sample
LCDP	pH Laboratory Control Sample Duplicate
MDPH	pH Sample Duplicate
MDFP	Flashpoint Sample Duplicate
LCFP	Flashpoint LCS
G1	Gelex Check Standard Range 0-1
G2	Gelex Check Standard Range 1-10
G3	Gelex Check Standard Range 10-100
G4	Gelex Check Standard Range 100-1000

Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCS S=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Note 2: The MD calculates an absolute difference (A) when the sample concentration is less than 5 times the reporting limit. The control limit is represented as +/- the RL.

Amendment No. 0010

222287

STL EDISON

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

PAGE ___ OF ___

Name (for report and invoice): Mack Astorga
Company: ENSR International
Address: 2005 Cabot Boulevard West Suite 100
City: Langhorne State: PA 19047
Phone: 215-757-4900 Fax: 215-757-3904

Samplers Name (Printed): Rich Firely
P.O. #:

Site/Project Identification: Dover AFB
State (Location of site): NJ: ☐ NY: ☐ Other: DE
Regulatory Program:

Analysis Turnaround Time
Standard ☐
Rush Charges Authorized For:
2 Week ☐
1 Week ☑
Other ☐ _____

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No: _____
Job No: _____

	Sample Identification	Date	Time	Matrix	No. of. Cont.	8260B TCLP VOA *	8260B PPVOA	GRO	DRO	8082-PCB	Reactivity Cyanide Sulfide	Corrosivity	Ignitability				Sample Numbers
1	P-4(3-5)	11/13/03	815	Soil	7	X	X	X	X	X	X	X	X				
2	B-7(4-6)	11/13/03	855	Soil	7	X	X	X	X	X	X	X	X				
3	B-20(3-5)	11/13/03	1020	Soil	7	X	X	X	X	X	X	X	X				
4	FB111303	11/13/03	1050	AQ	7	X	X	X	X	X	X	X	X				
5	B-21(2.5-4.5)	11/13/03	1405	Soil	7	X	X	X	X	X	X	X	X				
6	B-6(2.5-4.5)	11/13/03	1510	Soil	7	X	X	X	X	X	X	X	X				
7	B-22 (2-4)	11/13/03	1605	S	7	✓	✓	✓	✓	✓	✓	✓	✓				added by SR

Custody Seals #- 67926 + 67925

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other encore, 7 = Other _____

Soil:	1	1,6	1	1	1	1	1	1				
Water:	1	1,2	1,2	1	1	1	1	1				

Special Instructions: PPVOA-BTEX, tert-amyl methyl ether, TBA, MTBE, TCE, 1,1-DCE *on Hold
Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) R Firely	ENSR	11/13/03 1820	1)	SR 11/14/03 0945
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL-6003

Amendment No. 0010

SEVERN TRENT STL

STL Chicago
2417 Bond Street
University Park, IL 60466

Tel: 708 534 5200 Fax: 708 534 5211
www.stl-inc.com

SEVERN TRENT LABORATORIES
ANALYTICAL REPORT

JOB NUMBER: 222337

Prepared For:

ENSR
2005 Cabot Boulevard West
Suite 100
Langhorne, PA 19047

Project: Dover AFB

Attention: Mack Astorga

Date: 12/11/2003

Signature

Date 12-11-03

Name: Eric A. Lang

Title: Project Manager

E-Mail: elang@stl-inc.com

STL Chicago
2417 Bond Street
University Park, IL 60466

PHONE: (708) 534-5200
FAX..: (708) 534-5211

This Report Contains (34) Pages

Severn Trent Laboratories Chicago
GC Volatile Case Narrative

ENSR-DOVER AFB
Job Number: 222337
Method 8015G

1. All required holding times were met for the analysis.

2. The Method Blanks had all target compounds below the reporting limits.

3. The surrogate compounds used for this analysis were 4-Bromofluorobenzene and a,a,a-Trifluorotoluene. All surrogate recoveries were within the in-house generated QC limits.

4. The LCS (Laboratory Control Sample) had all spike recoveries within the in-house generated QC limits.

5. A MS/MSD (Matrix Spike/Matrix Spike Duplicate) was performed on this sample -1. The MS/MSD had the spike recoveries and RPD value within the in-house QC limits.

6. The initial and continuing standard calibrations associated with these samples were within control limits.

7. The samples were analyzed as low-level waters and soils for GRO (GRO) based on SW846 methods 5030 and 8015B. A HP 5890 gas chromatograph equipped with a flame-ionization detector (FID) and a Tekmar LSC 2000/2016 ALS was used for the analysis of these samples. The soil results are on a dry weight basis.

Gary Rynkar
GC/VOA Section Manager

12/11/3
Date

STL Chicago
Extractable Hydrocarbon Case Narrative

ENSR
Dover AFB
Job# 222337-1, 2, and 3
Diesel Range Organics (DRO)

1. The water sample associated with this SDG was extracted based on SW846 Method 3510. The soil sample was extracted based on the SW846 method 3541. The extracts were analyzed for DRO based on SW846 method 8015B. A HP5890 gas chromatograph equipped with a flame ionization detector and a Xti-5 column was used for the analysis.

2. All required holding times were met for the extraction and analysis.

3. The method blanks were below the reporting limit for DRO.

4. The surrogate compounds used for this analysis were o-Terphenyl and 2-Fluorobiphenyl. All surrogate recoveries were within statistical control limits except sample 222337-2, which had o-Terphenyl with 50% recovery and 2-Fluorobiphenyl with 44% recovery. Sample was re-analyzed with similar results and there was insufficient sample volume for re-extraction.

5. All blank spike and blank spike duplicate recoveries and RPDs were within statistical control limits. A solution of Diesel Fuel was used for spiking.

6. A matrix spike and a matrix spike duplicate were not performed on a sample from this SDG.

7. A Diesel Fuel #2 standard was used for quantitating DRO results, using a hydrocarbon range from C10 through C28. An alkane standard ranging from C8 through C36 was analyzed for qualitative purposes.

8. All initial and continuing standard calibrations associated with these samples were in control.

9. Sample 222337-1 had DRO detected and appears to match a typical fuel type pattern that is "later" than Diesel fuel.

Patti Gibson

Patti Gibson
Organics Section Manager

12/11/03
Date

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SAMPLE INFORMATION
Date: 12/11/2003

Job Number.: 222337
Customer...: ENSR
Attn.....: Mack Astorga

Project Number.....: 20003849
Customer Project ID....: DOVER AFB
Project Description....: Dover AFB

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
222337-1	B-16(3-5)	Soil	11/14/2003	09:10	11/17/2003	09:00
222337-2	FB111403	Water	11/14/2003	10:20	11/17/2003	09:00
222337-3	B-11(3-5)	Soil	11/14/2003	13:30	11/17/2003	09:00

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222337

Date:12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-16(3-5)
Date Sampled.....: 11/14/2003
Time Sampled.....: 09:10
Sample Matrix.....: Soil

Laboratory Sample ID: 222337-1
Date Received.....: 11/17/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.0	18	1.00000	ug/Kg	104022		11/26/03 0121	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104022		11/26/03 0121	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104022		11/26/03 0121	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104022		11/26/03 0121	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104022		11/26/03 0121	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104022		11/26/03 0121	pjg
	Aroclor 1260, 3541 Solid*	18	U		1.5	18	1.00000	ug/Kg	104022		11/26/03 0121	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	51			5.3	8.6	2.00000	mg/Kg	103655		11/28/03 1647	mgk
Method	% Solids Determination											
	% Solids, Solid	92.0			0.10	0.10	1	%	103203		12/03/03 1800	pfk
	% Moisture, Solid	8.0			0.10	0.10	1	%	103203		12/03/03 1800	pfk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	12	J	a	10	54	1.00000	ug/Kg	102874		11/21/03 0053	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	4.3	U		4.3	4.3	1	mg/Kg	102318		11/21/03 1059	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>178					1	degrees F	103322		12/03/03 0908	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	7.1				0.2	1	pH Units	103325		12/03/03 1416	rnm
	Temperature at Analysis, Solid	18.0				1.0	1	pH Units	103325		12/03/03 1416	rnm

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222337

Date:12/11/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: B-16(3-5)
Date Sampled.....: 11/14/2003
Time Sampled.....: 09:10
Sample Matrix.....: Soil

Laboratory Sample ID: 222337-1
Date Received.....: 11/17/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide Reactivity, Sulfide, Solid	240	U		88	240	1	mg/Kg	102373		11/21/03 1152	bms

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222337

Date:12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB111403
Date Sampled.....: 11/14/2003
Time Sampled.....: 10:20
Sample Matrix.....: Water

Laboratory Sample ID: 222337-2
Date Received.....: 11/17/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016	0.51	U		0.17	0.51	1.00000	ug/L	104022		11/19/03 1958	pjg
	Aroclor 1221	0.51	U		0.46	0.51	1.00000	ug/L	104022		11/19/03 1958	pjg
	Aroclor 1232	0.51	U		0.22	0.51	1.00000	ug/L	104022		11/19/03 1958	pjg
	Aroclor 1242	0.51	U		0.19	0.51	1.00000	ug/L	104022		11/19/03 1958	pjg
	Aroclor 1248	0.51	U		0.21	0.51	1.00000	ug/L	104022		11/19/03 1958	pjg
	Aroclor 1254	0.51	U		0.13	0.51	1.00000	ug/L	104022		11/19/03 1958	pjg
	Aroclor 1260	0.51	U		0.15	0.51	1.00000	ug/L	104022		11/19/03 1958	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO)	0.12	U		0.029	0.12	1.00000	mg/L	103655		11/26/03 0103	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO)	50	U		7.1	50	1.00000	ug/L	102141		11/19/03 0552	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide	0.01	U		0.01	0.01	1	mg/L	102761		11/25/03 1620	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint)	>200					1	degrees F	102658		11/24/03 1300	jmk
9040B	pH (Liquid)											
	Corrosivity (pH-Liquids)	5.27			0.20	0.20	1	pH Units	102236		11/18/03 1623	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide	2.5	U		2.5	2.5	1	mg/L	102196		11/19/03 1446	bms

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222337

Date:12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-11(3-5)
Date Sampled.....: 11/14/2003
Time Sampled.....: 13:30
Sample Matrix.....: Soil

Laboratory Sample ID: 222337-3
Date Received.....: 11/17/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104022		11/26/03 0156	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104022		11/26/03 0156	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104022		11/26/03 0156	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104022		11/26/03 0156	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104022		11/26/03 0156	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104022		11/26/03 0156	pjg
	Aroclor 1260, 3541 Solid*	18	U		1.5	18	1.00000	ug/Kg	104022		11/26/03 0156	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.6	U		2.8	4.6	1.00000	mg/Kg	103655		11/27/03 0805	mgk
Method	% Solids Determination											
	% Solids, Solid	88.7			0.10	0.10	1	%	103203		12/03/03 1800	pfk
	% Moisture, Solid	11.3			0.10	0.10	1	%	103203		12/03/03 1800	pfk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	56	U		11	56	1.00000	ug/Kg	102874		11/21/03 0241	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	2.9	U		2.9	2.9	1	mg/Kg	102318		11/21/03 1100	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	103322		12/03/03 1032	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.4				0.2	1	pH Units	103325		12/03/03 1417	rnm
	Temperature at Analysis, Solid	18.0				1.0	1	pH Units	103325		12/03/03 1417	rnm

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222337

Date:12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-11(3-5)
Date Sampled.....: 11/14/2003
Time Sampled.....: 13:30
Sample Matrix.....: Soil

Laboratory Sample ID: 222337-3
Date Received.....: 11/17/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide Reactivity, Sulfide, Solid	230	U		85	230	1	mg/Kg	102373		11/21/03 1153	bms

* In Description = Dry Wgt.

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LABORATORY CHRONICLE

Job Number: 222337 Date: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222337-1 Client ID: B-16(3-5) Date Recvd: 11/17/2003 Sample Date: 11/14/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	103203		12/03/2003	1800	
5030A	5030 Purge & Trap	1	102873		11/20/2003	2100	
Data Managemen	Data Management	1					
EDD	Electronic Data Deliverable	1					
3541	Extraction Soxhlet (DRO)	1	102423		11/23/2003	1250	
3541	Extraction Soxhlet (PCBs)	1	102231		11/20/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	103322	103322	12/03/2003	0908	
8082	PCB Analysis	1	104022	102231	11/26/2003	0121	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1059	
7.3.4.2/9034	Reactivity, Sulfide	1	102373	102373	11/21/2003	1152	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103655	102423	11/28/2003	1647	2.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102874	102873	11/21/2003	0053	1.00000
9045C	pH (Soil)	1	103325	103325	12/03/2003	1416	

Lab ID: 222337-2 Client ID: FB111403 Date Recvd: 11/17/2003 Sample Date: 11/14/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030 5 mL Purge Prep	1	102152		11/19/2003	1306	
5030A	5030 Purge & Trap	1	102140		11/18/2003	2100	
3520C	Extraction Continuous Liq/Liq (PCBs)	1	101941		11/18/2003	0935	
3510C	Extraction Sep. Funnel (Diesel)	1	101949		11/18/2003	1330	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102658	102658	11/24/2003	1300	
8082	PCB Analysis	1	104022	101941	11/19/2003	1958	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102761	102761	11/25/2003	1620	
7.3.4.2/9034	Reactivity, Sulfide	1	102196	102196	11/19/2003	1446	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103655	101949	11/26/2003	0103	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102141	102140	11/19/2003	0552	1.00000
9040B	pH (Liquid)	1	102236	102236	11/18/2003	1623	

Lab ID: 222337-3 Client ID: B-11(3-5) Date Recvd: 11/17/2003 Sample Date: 11/14/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	103203		12/03/2003	1800	
5030A	5030 Purge & Trap	1	102873		11/20/2003	2100	
3541	Extraction Soxhlet (DRO)	1	102423		11/23/2003	1250	
3541	Extraction Soxhlet (PCBs)	1	102231		11/20/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	103322	103322	12/03/2003	1032	
8082	PCB Analysis	1	104022	102231	11/26/2003	0156	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1100	
7.3.4.2/9034	Reactivity, Sulfide	1	102373	102373	11/21/2003	1153	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103655	102423	11/27/2003	0805	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102874	102873	11/21/2003	0241	1.00000
9045C	pH (Soil)	1	103325	103325	12/03/2003	1417	

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SURROGATE RECOVERIES REPORT

Job Number.: 222337 Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: Water Prep Batch..: 101949
Method Code...: 8015D Batch(s).....: 103655

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCD			11/25/2003	87	88
LCS			11/25/2003	89	81
MB			11/25/2003	80	95
222337- 2		FB111403	11/26/2003	44*	50*

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 119
OTERPH	o-Terphenyl (surr)	58 - 119

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: 3541 Solid Prep Batch..: 102423
Method Code...: 8015D Batch(s).....: 103655

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCS			11/26/2003	101	104
MB			11/26/2003	88	92
222337- 1		B-16(3-5)	11/28/2003	88	108
222337- 3		B-11(3-5)	11/27/2003	83	90

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 103
OTERPH	o-Terphenyl (surr)	44 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222337 Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Water Prep Batch..: 102140
Method Code...: 8015G Batch(s).....: 102141

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/19/2003	104	113
MB			11/19/2003	100	102
222337- 2		FB111403	11/19/2003	95	98

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	79 - 110
BRFLBE	4-Bromofluorobenzene (surr)	67 - 124

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Solid Prep Batch..: 102873
Method Code...: 8015G Batch(s).....: 102874

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/21/2003	98	102
MB			11/20/2003	92	92
222337- 1		B-16(3-5)	11/21/2003	86	88
222337- 1	MS	B-16(3-5)	11/21/2003	94	99
222337- 1	MSD	B-16(3-5)	11/21/2003	92	97
222337- 3		B-11(3-5)	11/21/2003	85	87

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	68 - 113
BRFLBE	4-Bromofluorobenzene (surr)	41 - 125

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SURROGATE RECOVERIES REPORT

Job Number.: 222337 Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: PCB Analysis Test Matrix...: Water Prep Batch..: 101941
Method Code...: 8082 Batch(s).....: 104022

Lab ID	DT	Sample ID	Date	DCB	TCX
LCD			11/19/2003	42	79
LCS			11/19/2003	44	88
MB			11/19/2003	72	101
222337- 2		FB111403	11/19/2003	65	94

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 116
TCX	Tetrachloro-m-xylene (surr)	33 - 111

Method.....: PCB Analysis Test Matrix...: 3541 Solid Prep Batch..: 102231
Method Code...: 8082 Batch(s).....: 104022

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			11/25/2003	92	95
MB			11/25/2003	85	85
222337- 1		B-16(3-5)	11/26/2003	73	68
222337- 3		B-11(3-5)	11/26/2003	81	69

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	33 - 131
TCX	Tetrachloro-m-xylene (surr)	42 - 122

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	003JWLPCBC	101941-003		11/19/2003	1254

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104022

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.006	4.376	5.001	0.500 U	80 9	% R	62-104 20	
Aroclor 1260	ug/L	4.183	4.439	5.010	0.500 U	83 6	% R	69-105 20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003JWLPCBC	101941-002		11/19/2003	1218

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104022

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.376		5.001	0.500 U	88	%	62-104	
Aroclor 1260	ug/L	4.439		5.010	0.500 U	89	%	69-105	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003JWLPCBC	102231-002		11/25/2003	1222

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104022

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	145.927		166.700	16.700 U	88	%	60-112	
Aroclor 1260, 3541 Solid	ug/Kg	160.243		167.000	16.700 U	96	%	64-119	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101941-001		11/19/2003	1143

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104022

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	0.500	U							
Aroclor 1221	ug/L	0.500	U							
Aroclor 1232	ug/L	0.500	U							
Aroclor 1242	ug/L	0.500	U							
Aroclor 1248	ug/L	0.500	U							
Aroclor 1254	ug/L	0.500	U							
Aroclor 1260	ug/L	0.500	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102231-001		11/25/2003	1146

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104022

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1221, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1232, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1242, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1248, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1254, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1260, 3541 Solid	ug/Kg	16.700	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	C03HWLDIEA	101949-003		11/25/2003	2110

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103655

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.691205	1.587125	2.000000	0.125000 U	85	%	57-107	
						6	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003HWLDIEA	101949-002		11/25/2003	2031

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 103655
Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.587125		2.000000	0.125000 U	79	%	57-107	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLDIEA	102423-002		11/26/2003	2105

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 103655
Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	66.383		66.670	4.199 U	100	%	70-106	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		101949-001		11/25/2003	1953

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 103655
Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	0.125000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102423-001		11/26/2003	2026

Test Method.....: 80158 MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103655

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	4.199 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K18DSA	102140-002		11/19/2003	0035

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 102141
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	486.945		400.000	50.000 U	122	%	85-124	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102140-001		11/19/2003	0000

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 102141
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	50.000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 102874
Analyst...: wre

LCS	Laboratory Control Sample	G03K20DSA	102873-002		11/21/2003	0018

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	405.932		400.000	50.000 U	101	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 102874
Analyst...: wre

MB	Method Blank		102873-001		11/20/2003	2342

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	50.000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MS	Matrix Spike	G03K20DSA	222337-1		11/21/2003	0129

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 102874
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	401.934		434.800	12.179 J	92	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 102874
Analyst...: wre

MSD	Matrix Spike Duplicate	G03K2005A	222337-1		11/21/2003	0205

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	379.753	401.934	434.800	12.179 J	87	%	79-130	
						6	R	30	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337 Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: Method Batch.....: 103203 Analyst...: pfk
Method Description.: % Solids Determination Equipment Code....: Test Code.: %SOLID
Parameter.....: % Solids

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	103203-001		%	0.1000 U								12/03/2003	1800

Test Method.....: 7.3.3.2/9014 Batch.....: 102318 Analyst...: rnm
Method Description.: Reactivity, Cyanide Equipment Code....: SPEC1001 Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102318-004		mg/L	0.01000 U								11/21/2003	1053
LCS	102318-005	I03ISTCN2	mg/L	0.10210		0.10000	0.01000 U	102		%	80-120	11/21/2003	1054

Test Method.....: 7.3.3.2/9014 Batch.....: 102761 Analyst...: rnm
Method Description.: Reactivity, Cyanide Equipment Code....: SPEC4 Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102761-004		mg/L	0.01000 U								11/25/2003	1606
LCS	102761-005	I03ISTCN2	mg/L	0.09330		0.10000	0.01000 U	93		%	80-120	11/25/2003	1607

Test Method.....: 9040B Batch.....: 102236 Analyst...: nrp
Method Description.: pH (Liquid) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	102236-002	I03GPH7B	pH Units	7.05000		7.00000		0.05000		A	0.20000	11/18/2003	1621
LCDP	102236-003	I03GPH7B	pH Units	7.05000		7.00000		0.05000		A	0.20000	11/18/2003	1622
MDPH	222337-2		pH Units	5.28000			5.27000	0.01000		A	0.20000	11/18/2003	1624

Test Method.....: 9045C Batch.....: 103325 Analyst...: rnm
Method Description.: pH (Soil) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	103325-002	I03KPH7B	pH Units	7.02000		7.00000		0.02000		A	0.20000	12/03/2003	1401
LCDP	103325-003	I03KPH7B	pH Units	7.00000		7.00000		0.00		A	0.20000	12/03/2003	1402

Test Method.....: 7.3.4.2/9034 Batch.....: 102196 Analyst...: bms
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102196-001		mg/L	1.00000 U								11/19/2003	1410
LCS	102196-002	I03HSTSF1	mg/L	3.10000		3.02300		103		%	80-120	11/19/2003	1413

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222337

Report Date.: 12/11/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: 7.3.4.2/9034
Method Description.: Reactivity, Sulfide
Parameter.....: Reactivity, Sulfide

Batch.....: 102373
Equipment Code....:

Analyst...: bmg
Test Code.: REACS

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102373-001		mg/Kg	91.00	U							11/21/2003	1145
LCS	102373-002	I03HSTSF1	mg/Kg	115.56	B	151.10	91.00	U 76		%	0-200	11/21/2003	1146

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/11/2003

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Soil, sediment and sludge sample results are reported on a "dry weight" basis except when analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received" basis unless noted differently.
3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
4) The test results for the noted analytical method(s) meet the requirements of NELAC. Lab Cert. ID# 100201
5) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report)

Inorganic Qualifiers (Q-Column)

U Analyte was not detected at or above the stated limit.
< Not detected at or above the reporting limit.
J Result is less than the RL, but greater than or equal to the method detection limit.
B Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.
S Result was determined by the Method of Standard Additions.
F AFCEE: Result is less than the RL, but greater than or equal to the method detection limit.

Inorganic Flags (Flag Column)

^ ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
+ MSA correlation coefficient is less than 0.995.
4 MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
E SD: Serial dilution exceeds the control limits.
H MB, EB1, EB2, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.
N MS, MSD: Spike recovery exceeds the upper or lower control limits.
W AS(GFAA) Post-digestion spike was outside 85-115% control limits.

Organic Qualifiers (Q - Column)

U Analyte was not detected at or above the stated limit.
ND Compound not detected.
J Result is an estimated value below the reporting limit or a tentatively identified compound (TIC).
Q Result was qualitatively confirmed, but not quantified.
C Pesticide identification was confirmed by GC/MS.
Y The chromatographic response resembles a typical fuel pattern.
Z The chromatographic response does not resemble a typical fuel pattern.
E Result exceeded calibration range, secondary dilution required.
F AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)

Organic Flags (Flags Column)

B MB: Batch QC is greater than reporting limit.
* LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits.
^ EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
A Concentration exceeds the instrument calibration range
a Concentration is below the method Reporting Limit (RL)
B Compound was found in the blank and sample.
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
H Alternate peak selection upon analytical review
I Indicates the presence of an interfence, recovery is not calculated.
M Manually integrated compound.
P The lower of the two values is reported when the % difference between the results of two GC columns is

greater than 25%.

Abbreviations

AS	Post Digestion Spike (GFAA Samples - See Note 1 below)
Batch	Designation given to identify a specific extraction, digestion, preparation set, or analysis set
CAP	Capillary Column CCB Continuing Calibration Blank
CCV	Continuing Calibration Verification
CF	Confirmation analysis of original
C1	Confirmation analysis of A1 or D1
C2	Confirmation analysis of A2 or D2
C3	Confirmation analysis of A3 or D3
CRA	Low Level Standard Check - GFAA; Mercury
CRI	Low Level Standard Check - ICP
CV	Calilbration Verification Standard
Dil Fac	Dilution Factor - Secondary dilution analysis
D1	Dilution 1
D2	Dilution 2
D3	Dilution 3
DLFac	Detection Limit Factor
DSH	Distilled Standard - High Level
DSL	Distilled Standard - Low Level
DSM	Distilled Standard - Medium Level
EB1	Extraction Blank 1
EB2	Extraction Blank 2
EB3	DI Blank
ELC	Method Extracted LCS
ELD	Method Extracted LCD
ICAL	Initial calibration
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ISA	Interference Check Sample A - ICAP
ISB	Interference Check Sample B - ICAP
Job No.	The first six digits of the sample ID which refers to a specific client, project and sample group
	Lab ID An 8 number unique laboratory identification
LCD	Laboratory Control Standard Duplicate
LCS	Laboratory Control Standard with reagent grade water or a matrix free from the analyte of interest
MB	Method Blank or (PB) Preparation Blank
MD	Method Duplicate
MDL	Method Detection Limit
MLE	Medium Level Extraction Blank
MRL	Method Reporting Limit Standard
MSA	Method of Standard Additions
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not Detected
PREPF	Preparation factor used by the Laboratory's Information Management System (LIMS)
PDS	Post Digestion Spike (ICAP)
RA	Re-analysis of original
A1	Re-analysis of D1
A2	Re-analysis of D2
A3	Re-analysis of D3
RD	Re-extraction of dilution
RE	Re-extraction of original
RC	Re-extraction Confirmation
RL	Reporting Limit
RPD	Relative Percent Difference of duplicate (unrounded) analyses
RRF	Relative Response Factor
RT	Retention Time

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/11/2003

RTW	Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number
SCB	Seeded Control Blank
SD	Serial Dilution (Calculated when sample concentration exceeds 50 times the MDL)
UCB	Unseeded Control Blank
SSV	Second Source Verification Standard
SLCS	Solid Laboratory Control Standard(LCS)
PHC	pH Calibration Check LCSP pH Laboratory Control Sample
LCDP	pH Laboratory Control Sample Duplicate
MDPH	pH Sample Duplicate
MDFP	Flashpoint Sample Duplicate
LCFP	Flashpoint LCS
G1	Gelex Check Standard Range 0-1
G2	Gelex Check Standard Range 1-10
G3	Gelex Check Standard Range 10-100
G4	Gelex Check Standard Range 100-1000

Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCS S=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Note 2: The MD calculates an absolute difference (A) when the sample concentration is less than 5 times the reporting limit. The control limit is represented as +/- the RL.

Amendment No. 0010

STL EDISON
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

222337

PAGE 1 OF 1

Name (for report and invoice) Mark Astorga	Samplers Name (Printed) Rich Firely	Site/Project Identification Dover AFB
Company ENSR International	P.O. #	State (Location of site): NJ: ☐ NY: ☐ Other: DE
		Regulatory Program:
Address 2005 Cabot Boulevard West, Suite 100	Analysis Turnaround Time: Standard ☐	
City Langhorne PA State 19047	Rush Charges Authorized For: 2 Week ☐ 1 Week ☑ Other ☐	
Phone 215-757-4900 Fax 215-757-3904		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No:

	Sample Identification	Date	Time	Matrix	No. of. Cont.	8260B TCLP TCLP VOA *	8260B PPVOA	GRO	DRO	8082-PCB	Reactivity (cyanide sulfide)	Corrosivity	Ignitability				Sample Numbers
1	B-16 (3-5)	11/14/03	910	Soil	~~[illegible]~~	X	X	X	X	X	X	X	X				
2	FB111403	11/14/03	1020	~~[illegible]~~ AQ	7	X	X	X	X	X	X	X	X				
3	B-11 (3-5)	11/14/03	1330	Soil	7	X	X	X	X	X	X	X	X				
	Custody Seals - 67923 + 67924																
	Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH				Soil:	1	1,6	1	1	1	1	1	1				
	6 = Other encore, 7 = Other _____				Water:	1	1,2	1,2	1	1	1	1	1				

Special Instructions PPVOA-BTEX, tert-amyl methyl ether, TBA, MTBE, TCE, 1,1-DCE *on Hold Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) R. Firely	ENSR	11/14/03 1430	1)	
2)		11/17/03 0900	2) Jeffrey [illegible]	STL - Chi
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL-6003

Amendment No. 0010

SEVERN TRENT STL

STL Chicago
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University Park, IL 60466

Tel: 708 534 5200 Fax: 708 534 5211
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SEVERN TRENT LABORATORIES
ANALYTICAL REPORT

JOB NUMBER: 222353

Prepared For:

ENSR
2005 Cabot Boulevard West
Suite 100
Langhorne, PA 19047

Project: Dover AFB

Attention: Mack Astorga

Date: 12/15/2003

Signature

Date 12/15/03

Name: Eric A. Lang

Title: Project Manager

E-Mail: elang@stl-inc.com

STL Chicago
2417 Bond Street
University Park, IL 60466

PHONE: (708) 534-5200
FAX..: (708) 534-5211

This Report Contains (52) Pages

Severn Trent Laboratories Chicago
GC/MS Case Narrative

ENSR
Dover AFB
Job Number: 222353
VOA DATA

1. The samples were prepared and analyzed within the recommended hold times from the date of collection.

2. The Method Blanks and Extraction Blanks had all target compounds below the reporting limits.

3. The LCS samples had all controlled spike recoveries within the in-house generated QC limits.

4. Matrix Spike and Matrix Spike Duplicate analyses were not performed on this sample set.

5. The volatile samples had all surrogate recoveries within the in-house generated QC limits.

6. The water samples were prepared using Method 5030B. The soil samples were prepared for the low level soil procedure using Method 5035. The samples were analyzed following SW846 Method 8260B and 8000B. All initial and continuing calibration criteria were met per method or SOP (for minimum R values for certain compounds). The low point in the initial calibration verifies the base reporting limits. The target compounds were quantitated using the initial calibration.

7. The volatile samples had all internal standard areas and retention times within the acceptance limits as compared to the corresponding calibration verification standard.

8. The water samples were analyzed using a 5-mL purge volume. The soil samples were analyzed using the 5035 low level soil procedure. The soil results and reporting limits were adjusted to account for the sample weights, the analytical procedure and on a dry weight basis.

Louis Manzano
GC/MS VOA Dept.

11-26-03
Date

Severn Trent Laboratories Chicago
GC Volatile Case Narrative

ENSR-DOVER AFB
Job Number: 222353
Method 8015B

1. All required holding times were met for the analysis.

2. The Method Blanks had all target compounds below the reporting limits.

3. The surrogate compounds used for this analysis were 4-Bromofluorobenzene and a,a,a-Trifluorotoluene. All surrogate recoveries were within the in-house generated QC limits.

4. The LCS (Laboratory Control Sample) had all spike recoveries within the in-house generated QC limits.

5. A MS/MSD (Matrix Spike/Matrix Spike Duplicate) was not performed on this analytical batch.

6. The initial and continuing standard calibrations associated with these samples were within control limits.

7. The samples were analyzed as low-level waters and soils for GRO (GRO) based on SW846 methods 5030 and 8015B. A HP 5890 gas chromatograph equipped with a flame-ionization detector (FID) and a Tekmar LSC 2000/2016 ALS was used for the analysis of these samples. The soil results are on a dry weight basis.

Gary Rynkar
GC/VOA Section Manager

12/15/3
Date

STL Chicago
Extractable Hydrocarbon Case Narrative

ENSR
Dover AFB
Job# 222353-1, 2, 3, and 4
Diesel Range Organics (DRO)

1. The water sample associated with this SDG was extracted based on SW846 Method 3510. The soil sample was extracted based on the SW846 method 3541. The extracts were analyzed for DRO based on SW846 method 8015B. A HP5890 gas chromatograph equipped with a flame ionization detector and a Xti-5 column was used for the analysis.

2. All required holding times were met for the extraction and analysis.

3. The method blanks were below the reporting limit for DRO.

4. The surrogate compounds used for this analysis were o-Terphenyl and 2-Fluorobiphenyl. All surrogate recoveries were within statistical control limits.

5. All blank spike and blank spike duplicate recoveries and RPDs were within statistical control limits. A solution of Diesel Fuel was used for spiking.

6. A matrix spike and a matrix spike duplicate were not performed on a sample from this SDG.

7. A Diesel Fuel #2 standard was used for quantitating DRO results, using a hydrocarbon range from C10 through C28. An alkane standard ranging from C8 through C36 was analyzed for qualitative purposes.

8. All initial and continuing standard calibrations associated with these samples were in control.

9. Sample 222353-2 had DRO detected and appears to match a typical fuel type pattern that is "later" than Diesel fuel.

Patti Gibson
Organics Section Manager

12/15/03
Date

STL Chicago
PCB Case Narrative

ENSR
Dover AFB
Job # 222353-1, 2, 3, and 4
PCBs

1. STL Chicago used the following Gas Chromatographic systems for the analysis of PCBs:

ID#	INSTRUMENT	COLUMN TYPE	DETECTOR
41	HP 6890	Rtx-5	Electron Capture
42	HP 6890	Rtx-35	Electron Capture

2. The water sample associated with this SDG was extracted based on SW846 method 3520. The soil samples associated with this SDG were extracted based on SW846 method 3541. The extracts were analyzed for PCBs based on SW846 method 8082. All extracts received a sulfuric acid cleanup and a GPC cleanup on soil extracts in order to reduce matrix interference.

3. All required holding times were met for the extraction and analysis.

4. The method blanks were below the reporting limits for all Aroclors.

5. The surrogate compounds used for this analysis were Decachlorobiphenyl (DCB) and Tetrachloro-m-xylene (TCX). All surrogate recoveries were within statistical control limits except TCX in sample 222353-2 [B-18(3-5)], which had 31% recovery.

6. A solution containing Aroclor 1016 and Aroclor 1260 was used for spiking.

7. All blank spike and blank spike duplicate recoveries and RPDs were within statistical control limits.

8. A matrix spike and a matrix spike duplicate were not performed on a sample from this SDG.

9. All initial and continuing (grand mean <15% difference) standard calibrations associated with these samples were in control.

10. Target compounds were not detected from the primary analysis. Therefore, a second column confirmation was not required.

Patti Gibson
Organics Section Manager

12/15/03
Date

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SAMPLE INFORMATION
Date: 12/15/2003

Job Number.: 222353
Customer...: ENSR
Attn.....: Mack Astorga

Project Number.....: 20003849
Customer Project ID....: DOVER AFB
Project Description....: Dover AFB

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
222353-1	B-12(3-5)	Soil	11/17/2003	09:20	11/18/2003	09:20
222353-2	B-18(3-5)	Soil	11/17/2003	09:35	11/18/2003	09:20
222353-3	FB111703	Water	11/17/2003	12:00	11/18/2003	09:20
222353-4	B-17(4-6)	Soil	11/17/2003	14:20	11/18/2003	09:20

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222353

Date:12/15/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-12(3-5)
Date Sampled.....: 11/17/2003
Time Sampled.....: 09:20
Sample Matrix.....: Soil

Laboratory Sample ID: 222353-1
Date Received.....: 11/18/2003
Time Received.....: 09:20

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.0	18	1.00000	ug/Kg	104023		12/09/03 0412	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104023		12/09/03 0412	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104023		12/09/03 0412	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104023		12/09/03 0412	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104023		12/09/03 0412	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104023		12/09/03 0412	pjg
	Aroclor 1260, 3541 Solid*	18	U		1.5	18	1.00000	ug/Kg	104023		12/09/03 0412	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.5	U		2.8	4.5	1.00000	mg/Kg	103764		11/27/03 0844	mgk
Method	% Solids Determination											
	% Solids, Solid	91.1			0.10	0.10	1	%	102613		11/24/03 1953	clb
	% Moisture, Solid	8.9			0.10	0.10	1	%	102613		11/24/03 1953	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	55	U		10	55	1.00000	ug/Kg	102874		11/21/03 0316	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	3.1	U		3.1	3.1	1	mg/Kg	102318		11/21/03 1102	rmm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	103978		12/09/03 0630	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.0				0.2	1	pH Units	104003		12/09/03 1315	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1315	nrp

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222353

Date:12/15/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-12(3-5)
Date Sampled.....: 11/17/2003
Time Sampled.....: 09:20
Sample Matrix.....: Soil

Laboratory Sample ID: 222353-1
Date Received.....: 11/18/2003
Time Received.....: 09:20

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	240	U		86	240	1	mg/Kg	103930		12/05/03 1332	rnm
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	6.1	U		1.2	6.1	1.00000	ug/Kg	102570		11/23/03 1928	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	6.1	U		0.78	6.1	1.00000	ug/Kg	102570		11/23/03 1928	jdn
	Benzene, Solid*	6.1	U		0.80	6.1	1.00000	ug/Kg	102570		11/23/03 1928	jdn
	Trichloroethene, Solid*	6.1	U		0.71	6.1	1.00000	ug/Kg	102570		11/23/03 1928	jdn
	Toluene, Solid*	6.1	U		1.2	6.1	1.00000	ug/Kg	102570		11/23/03 1928	jdn
	Ethylbenzene, Solid*	6.1	U		1.3	6.1	1.00000	ug/Kg	102570		11/23/03 1928	jdn
	Xylenes (total), Solid*	6.1	U		3.5	6.1	1.00000	ug/Kg	102570		11/23/03 1928	jdn
	tert-Butyl alcohol, Solid*	240	U		180	240	1.00000	ug/Kg	102570		11/23/03 1928	jdn
	tert-amyl methyl ether, Solid*	6.1	U		0.75	6.1	1.00000	ug/Kg	102570		11/23/03 1928	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222353

Date: 12/15/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-18(3-5)
Date Sampled.....: 11/17/2003
Time Sampled.....: 09:35
Sample Matrix.....: Soil

Laboratory Sample ID: 222353-2
Date Received.....: 11/18/2003
Time Received.....: 09:20

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.0	18	1.00000	ug/Kg	104023		12/09/03 0447	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104023		12/09/03 0447	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104023		12/09/03 0447	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104023		12/09/03 0447	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104023		12/09/03 0447	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104023		12/09/03 0447	pjg
	Aroclor 1260, 3541 Solid*	18	U		1.5	18	1.00000	ug/Kg	104023		12/09/03 0447	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	6.1			2.9	4.7	1.00000	mg/Kg	103764		11/28/03 1726	mgk
Method	% Solids Determination											
	% Solids, Solid	88.9			0.10	0.10	1	%	102613		11/24/03 1953	clb
	% Moisture, Solid	11.1			0.10	0.10	1	%	102613		11/24/03 1953	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	56	U		11	56	1.00000	ug/Kg	102874		11/21/03 0352	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	2.0	U		2.0	2.0	1	mg/Kg	102318		11/21/03 1102	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	103978		12/09/03 0715	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	7.0				0.2	1	pH Units	104003		12/09/03 1316	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1316	nrp

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222353

Date:12/15/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-18(3-5)
Date Sampled.....: 11/17/2003
Time Sampled.....: 09:35
Sample Matrix.....: Soil

Laboratory Sample ID: 222353-2
Date Received.....: 11/18/2003
Time Received.....: 09:20

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	240	U		87	240	1	mg/Kg	103930		12/05/03 1335	rmm
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	10	U		2.1	10	1.00000	ug/Kg	102570		11/23/03 1955	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	10	U		1.3	10	1.00000	ug/Kg	102570		11/23/03 1955	jdn
	Benzene, Solid*	10	U		1.4	10	1.00000	ug/Kg	102570		11/23/03 1955	jdn
	Trichloroethene, Solid*	10	U		1.2	10	1.00000	ug/Kg	102570		11/23/03 1955	jdn
	Toluene, Solid*	10	U		2.1	10	1.00000	ug/Kg	102570		11/23/03 1955	jdn
	Ethylbenzene, Solid*	10	U		2.3	10	1.00000	ug/Kg	102570		11/23/03 1955	jdn
	Xylenes (total), Solid*	10	U		6.0	10	1.00000	ug/Kg	102570		11/23/03 1955	jdn
	tert-Butyl alcohol, Solid*	420	U		300	420	1.00000	ug/Kg	102570		11/23/03 1955	jdn
	tert-amyl methyl ether, Solid*	10	U		1.3	10	1.00000	ug/Kg	102570		11/23/03 1955	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222353

Date:12/15/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB111703
Date Sampled.....: 11/17/2003
Time Sampled.....: 12:00
Sample Matrix.....: Water

Laboratory Sample ID: 222353-3
Date Received.....: 11/18/2003
Time Received.....: 09:20

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016	0.51	U		0.17	0.51	1.00000	ug/L	104023		11/20/03 1742	pjg
	Aroclor 1221	0.51	U		0.46	0.51	1.00000	ug/L	104023		11/20/03 1742	pjg
	Aroclor 1232	0.51	U		0.22	0.51	1.00000	ug/L	104023		11/20/03 1742	pjg
	Aroclor 1242	0.51	U		0.19	0.51	1.00000	ug/L	104023		11/20/03 1742	pjg
	Aroclor 1248	0.51	U		0.21	0.51	1.00000	ug/L	104023		11/20/03 1742	pjg
	Aroclor 1254	0.51	U		0.13	0.51	1.00000	ug/L	104023		11/20/03 1742	pjg
	Aroclor 1260	0.51	U		0.15	0.51	1.00000	ug/L	104023		11/20/03 1742	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO)	0.12	U		0.029	0.12	1.00000	mg/L	103764		11/26/03 1241	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO)	50	U		7.1	50	1.00000	ug/L	102141		11/19/03 0703	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide	0.01	U		0.01	0.01	1	mg/L	103090		12/01/03 1914	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint)	>200					1	degrees F	103850		12/06/03 0900	jmk
9040B	pH (Liquid)											
	Corrosivity (pH-Liquids)	5.09			0.20	0.20	1	pH Units	102236		11/18/03 1625	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide	2.5	U		2.5	2.5	1	mg/L	102641		11/24/03 1623	bs
8260B	Volatile Organics (5mL Purge)											
	1,1-Dichloroethene	5.0	U		1.7	5.0	1.00000	ug/L	102199		11/19/03 1329	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222353

Date: 12/15/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB111703
Date Sampled.....: 11/17/2003
Time Sampled.....: 12:00
Sample Matrix.....: Water

Laboratory Sample ID: 222353-3
Date Received.....: 11/18/2003
Time Received.....: 09:20

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Methyl-tert-butyl-ether (MTBE)	5.0	U		2.0	5.0	1.00000	ug/L	102199		11/19/03 1329	jdn
	Benzene	5.0	U		0.96	5.0	1.00000	ug/L	102199		11/19/03 1329	jdn
	Trichloroethene	5.0	U		1.6	5.0	1.00000	ug/L	102199		11/19/03 1329	jdn
	Toluene	5.0	U		1.1	5.0	1.00000	ug/L	102199		11/19/03 1329	jdn
	Ethylbenzene	5.0	U		0.93	5.0	1.00000	ug/L	102199		11/19/03 1329	jdn
	Xylenes (total)	5.0	U		1.8	5.0	1.00000	ug/L	102199		11/19/03 1329	jdn
	tert-Butyl alcohol	200	U		30	200	1.00000	ug/L	102199		11/19/03 1329	jdn
	tert-amyl methyl ether	5.0	U		0.47	5.0	1.00000	ug/L	102199		11/19/03 1329	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222353

Date:12/15/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-17(4-6)
Date Sampled.....: 11/17/2003
Time Sampled.....: 14:20
Sample Matrix.....: Soil

Laboratory Sample ID: 222353-4
Date Received.....: 11/18/2003
Time Received.....: 09:20

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104023		12/09/03 0522	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104023		12/09/03 0522	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104023		12/09/03 0522	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104023		12/09/03 0522	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104023		12/09/03 0522	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104023		12/09/03 0522	pjg
	Aroclor 1260, 3541 Solid*	18	U		1.5	18	1.00000	ug/Kg	104023		12/09/03 0522	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.5	U		2.8	4.5	1.00000	mg/Kg	103764		11/27/03 1001	mgk
Method	% Solids Determination											
	% Solids, Solid	90.6			0.10	0.10	1	%	102613		11/24/03 1953	clb
	% Moisture, Solid	9.4			0.10	0.10	1	%	102613		11/24/03 1953	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	55	U		10	55	1.00000	ug/Kg	102874		11/21/03 0428	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	4.2	U		4.2	4.2	1	mg/Kg	102318		11/21/03 1103	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	103978		12/09/03 0800	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	5.0				0.2	1	pH Units	104003		12/09/03 1319	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1319	nrp

* In Description = Dry Wgt.

Amendment No. 0010

LABORATORY TEST RESULTS

Job Number: 222353

Date:12/15/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-17(4-6)
Date Sampled.....: 11/17/2003
Time Sampled.....: 14:20
Sample Matrix.....: Soil

Laboratory Sample ID: 222353-4
Date Received.....: 11/18/2003
Time Received.....: 09:20

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	240	U		88	240	1	mg/Kg	103930		12/05/03 1338	rnm
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	5.9	U		1.2	5.9	1.00000	ug/Kg	102819		11/24/03 1959	lm
	Methyl-tert-butyl-ether (MTBE), Solid*	5.9	U		0.75	5.9	1.00000	ug/Kg	102819		11/24/03 1959	lm
	Benzene, Solid*	5.9	U		0.78	5.9	1.00000	ug/Kg	102819		11/24/03 1959	lm
	Trichloroethene, Solid*	5.9	U		0.70	5.9	1.00000	ug/Kg	102819		11/24/03 1959	lm
	Toluene, Solid*	5.9	U		1.2	5.9	1.00000	ug/Kg	102819		11/24/03 1959	lm
	Ethylbenzene, Solid*	5.9	U		1.3	5.9	1.00000	ug/Kg	102819		11/24/03 1959	lm
	Xylenes (total), Solid*	5.9	U		3.4	5.9	1.00000	ug/Kg	102819		11/24/03 1959	lm
	tert-Butyl alcohol, Solid*	240	U		170	240	1.00000	ug/Kg	102819		11/24/03 1959	lm
	tert-amyl methyl ether, Solid*	5.9	U		0.73	5.9	1.00000	ug/Kg	102819		11/24/03 1959	lm

* In Description = Dry Wgt.

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LABORATORY CHRONICLE

Job Number: 222353 Date: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222353-1 Client ID: B-12(3-5) Date Recvd: 11/18/2003 Sample Date: 11/17/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102613		11/24/2003	1953	
5030A	5030 Purge & Trap	1	102873		11/20/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	102506		11/23/2003	1928	
5035	5035 Preservation High (Methanol)	1	102566		11/19/2003	0255	
5035	5035 Preservation Low	1	102565		11/19/2003	0255	
5035	5035 Preservation Low	1	102565		11/19/2003	0256	
5035	5035 Preservation Low	2	102565		11/19/2003	0255	
5035	5035 Preservation Low	2	102565		11/19/2003	0256	
Data Managemen	Data Management	1					
EDD	Electronic Data Deliverable	1					
3541	Extraction Soxhlet (DRO)	1	102423		11/23/2003	1250	
3541	Extraction Soxhlet (PCBs)	1	102916		12/01/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	103978	103978	12/09/2003	0630	
8082	PCB Analysis	1	104023	102916	12/09/2003	0412	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1102	
7.3.4.2/9034	Reactivity, Sulfide	1	103930	103930	12/05/2003	1332	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103764	102423	11/27/2003	0844	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102874	102873	11/21/2003	0316	1.00000
8260B	Volatile Organics	1	102570	102565-102506	11/23/2003	1928	1.00000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1315	

Lab ID: 222353-2 Client ID: B-18(3-5) Date Recvd: 11/18/2003 Sample Date: 11/17/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102613		11/24/2003	1953	
5030A	5030 Purge & Trap	1	102873		11/20/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	102506		11/23/2003	1955	
5035	5035 Preservation High (Methanol)	1	102566		11/19/2003	0257	
5035	5035 Preservation Low	1	102565		11/19/2003	0257	
5035	5035 Preservation Low	2	102565		11/19/2003	0258	
3541	Extraction Soxhlet (DRO)	1	102423		11/23/2003	1250	
3541	Extraction Soxhlet (PCBs)	1	102916		12/01/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	103978	103978	12/09/2003	0715	
8082	PCB Analysis	1	104023	102916	12/09/2003	0447	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1102	
7.3.4.2/9034	Reactivity, Sulfide	1	103930	103930	12/05/2003	1335	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103764	102423	11/28/2003	1726	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102874	102873	11/21/2003	0352	1.00000
8260B	Volatile Organics	1	102570	102565-102506	11/23/2003	1955	1.00000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1316	

Lab ID: 222353-3 Client ID: FB111703 Date Recvd: 11/18/2003 Sample Date: 11/17/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030 5 mL Purge Prep	1	102152		11/19/2003	1329	
5030A	5030 Purge & Trap	1	102140		11/18/2003	2100	
3520C	Extraction Continuous Liq/Liq (PCBs)	1	102075		11/19/2003	1005	
3510C	Extraction Sep. Funnel (Diesel)	1	102207		11/20/2003	1330	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	103850	103850	12/06/2003	0900	
8082	PCB Analysis	1	104023	102075	11/20/2003	1742	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	103090	103090	12/01/2003	1914	
7.3.4.2/9034	Reactivity, Sulfide	1	102641	102641	11/24/2003	1623	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103764	102207	11/26/2003	1241	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102141	102140	11/19/2003	0703	1.00000
8260B	Volatile Organics (5mL Purge)	1	102199	102152	11/19/2003	1329	1.00000
9040B	pH (Liquid)	1	102236	102236	11/18/2003	1625	

Lab ID: 222353-4 Client ID: B-17(4-6) Date Recvd: 11/18/2003 Sample Date: 11/17/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102613		11/24/2003	1953	

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LABORATORY CHRONICLE

Job Number: 222353 Date: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222353-4 Client ID: B-17(4-6) Date Recvd: 11/18/2003 Sample Date: 11/17/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030A	5030 Purge & Trap	1	102873		11/20/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	102506		11/23/2003	2023	
5035	5035 Archon Closed Purge & Trap	2	102662		11/24/2003	1959	
5035	5035 Preservation High (Methanol)	1	102566		11/19/2003	0258	
5035	5035 Preservation Low	1	102565		11/19/2003	0258	
5035	5035 Preservation Low	1	102565		11/19/2003	0259	
5035	5035 Preservation Low	2	102565		11/19/2003	0258	
5035	5035 Preservation Low	2	102565		11/19/2003	0259	
3541	Extraction Soxhlet (DRO)	1	102423		11/23/2003	1250	
3541	Extraction Soxhlet (PCBs)	1	102916		12/01/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	103978	103978	12/09/2003	0800	
8082	PCB Analysis	1	104023	102916	12/09/2003	0522	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1103	
7.3.4.2/9034	Reactivity, Sulfide	1	103930	103930	12/05/2003	1338	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103764	102423	11/27/2003	1001	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102874	102873	11/21/2003	0428	1.00000
8260B	Volatile Organics	1	102819	102565-102662	11/24/2003	1959	1.00000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1319	

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SURROGATE RECOVERIES REPORT

Job Number.: 222353 Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: Water Prep Batch..: 102207
Method Code...: 8015D Batch(s).....: 103764

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCD			11/26/2003	95	94
LCS			11/26/2003	94	89
MB			11/26/2003	80	94
222353- 3		FB111703	11/26/2003	82	93

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 119
OTERPH	o-Terphenyl (surr)	58 - 119

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: 3541 Solid Prep Batch..: 102423
Method Code...: 8015D Batch(s).....: 103764

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCS			11/26/2003	101	104
MB			11/26/2003	88	92
222353- 1		B-12(3-5)	11/27/2003	68	74
222353- 2		B-18(3-5)	11/28/2003	87	97
222353- 4		B-17(4-6)	11/27/2003	88	94

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 103
OTERPH	o-Terphenyl (surr)	44 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222353 Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Water Prep Batch..: 102140
Method Code...: 8015G Batch(s).....: 102141

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/19/2003	104	113
MB			11/19/2003	100	102
222353- 3		FB111703	11/19/2003	95	98

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	79 - 110
BRFLBE	4-Bromofluorobenzene (surr)	67 - 124

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Solid Prep Batch..: 102873
Method Code...: 8015G Batch(s).....: 102874

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/21/2003	98	102
MB			11/20/2003	92	92
222353- 1		B-12(3-5)	11/21/2003	86	86
222353- 2		B-18(3-5)	11/21/2003	86	87
222353- 4		B-17(4-6)	11/21/2003	85	85

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	68 - 113
BRFLBE	4-Bromofluorobenzene (surr)	41 - 125

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SURROGATE RECOVERIES REPORT

Job Number.: 222353 Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: Water
Batch(s).....: 104023
Prep Batch..: 102075

Lab ID	DT	Sample ID	Date	DCB	TCX
LCD			11/20/2003	59	103
LCS			11/20/2003	67	89
MB			11/20/2003	70	91
222353- 3		FB111703	11/20/2003	49	94

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 116
TCX	Tetrachloro-m-xylene (surr)	33 - 111

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: 3541 Solid
Batch(s).....: 104023
Prep Batch..: 102916

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			12/09/2003	96	94
MB			12/08/2003	81	51
222353- 1		B-12(3-5)	12/09/2003	78	60
222353- 2		B-18(3-5)	12/09/2003	38	31*
222353- 4		B-17(4-6)	12/09/2003	71	67

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	33 - 131
TCX	Tetrachloro-m-xylene (surr)	42 - 122

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SURROGATE RECOVERIES REPORT

Job Number.: 222353 Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics (5mL Purge) Test Matrix...: Water Prep Batch..: 102152
Method Code...: 8260.5 Batch(s).....: 102199

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/19/2003	90	101	96	105
MB			11/19/2003	94	93	97	104
222353- 3		FB111703	11/19/2003	96	92	98	103

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	66 - 132
BRFLBE	4-Bromofluorobenzene (surr)	79 - 122
DBRFLM	Dibromofluoromethane (surr)	66 - 132
TOLD8	Toluene-d8 (surr)	78 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222353 Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics Test Matrix...: Solid Prep Batch..: 102506
Method Code...: 8260B Batch(s).....: 102570

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCD			11/23/2003	97	101	101	103
LCS			11/23/2003	96	101	99	108
MB			11/23/2003	95	99	93	108

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics Test Matrix...: Solid Prep Batch..: 102562
Method Code...: 8260B Batch(s).....: 102570

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/23/2003	116	96	104	100
EB3			11/23/2003	95	94	91	100

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics Test Matrix...: Solid Prep Batch..: 102565
Method Code...: 8260B Batch(s).....: 102570 102819

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/23/2003	114	99	106	102
222353- 1		B-12(3-5)	11/23/2003	110	101	101	105
222353- 2		B-18(3-5)	11/23/2003	110	97	105	100
222353- 4		B-17(4-6)	11/24/2003	114	100	109	104

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics Test Matrix...: Solid Prep Batch..: 102573
Method Code...: 8260B Batch(s).....: 102570

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/23/2003	105	99	98	103

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SURROGATE RECOVERIES REPORT

Job Number.: 222353 Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics Test Matrix...: Solid Prep Batch..: 102573
Method Code...: 8260B Batch(s).....: 102570

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics Test Matrix...: Solid Prep Batch..: 102662
Method Code...: 8260B Batch(s).....: 102819

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/24/2003	95	106	90	110
MB			11/24/2003	96	94	93	103

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	003JWLPCBC	102075-003		11/20/2003	1037

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104023

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.817	4.442	5.001	0.500 U	96 8	% R	62-104 20	
Aroclor 1260	ug/L	5.239	5.203	5.010	0.500 U	105 1	% R	69-105 20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003JWLPCBC	102075-002		11/20/2003	1002

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104023

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.442		5.001	0.500 U	89	%	62-104	
Aroclor 1260	ug/L	5.203		5.010	0.500 U	104	%	69-105	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLPCBA	102916-002		12/09/2003	0039

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104023

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	143.380		166.700	33.400 U	86	%	60-112	
Aroclor 1260, 3541 Solid	ug/Kg	160.040		167.000	33.400 U	96	%	64-119	

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102075-001		11/20/2003	0926

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104023

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	0.500	U							
Aroclor 1221	ug/L	0.500	U							
Aroclor 1232	ug/L	0.500	U							
Aroclor 1242	ug/L	0.500	U							
Aroclor 1248	ug/L	0.500	U							
Aroclor 1254	ug/L	0.500	U							
Aroclor 1260	ug/L	0.500	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102916-001		12/08/2003	2331

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104023

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	33.400	U							
Aroclor 1221, 3541 Solid	ug/Kg	33.400	U							
Aroclor 1232, 3541 Solid	ug/Kg	33.400	U							
Aroclor 1242, 3541 Solid	ug/Kg	33.400	U							
Aroclor 1248, 3541 Solid	ug/Kg	33.400	U							
Aroclor 1254, 3541 Solid	ug/Kg	33.400	U							
Aroclor 1260, 3541 Solid	ug/Kg	33.400	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	D03HWLDIEA	102207-003		11/26/2003	1202

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103764

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.794520	1.697810	2.000000	0.125000 U	90	%	57-107	
						6	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003HWLD1EA	102207-002		11/26/2003	1123

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103764

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.697810		2.000000	0.125000 U	85	%	57-107	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLDIEA	102423-002		11/26/2003	2105

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103764

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	66.383		66.670	4.199 U	100	%	70-106	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102207-001		11/26/2003	1044

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 103764
Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	0.125000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103764

Analyst...: mgk

MB	Method Blank		102423-001		11/26/2003	2026

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	4.199 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K180SA	102140-002		11/19/2003	0035

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 102141
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	486.945		400.000	50.000 U	122	%	85-124	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1112
Batch.....: 102141

Analyst...: wre

MB	Method Blank		102140-001		11/19/2003	0000

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	50.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K20DSA	102873-002		11/21/2003	0018

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1314
Batch.....: 102874

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	405.932		400.000	50.000 U	101	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102873-001		11/20/2003	2342

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 102874
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	50.000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222352	102562-007		11/23/2003	1359

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222353	102565-007		11/23/2003	1454

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222386	102573-007		11/23/2003	1521

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U						
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U						
Benzene, Solid	ug/Kg	5.000	U						
Trichloroethene, Solid	ug/Kg	5.000	U						
Toluene, Solid	ug/Kg	5.000	U						
Ethylbenzene, Solid	ug/Kg	5.000	U						
Xylenes (total), Solid	ug/Kg	5.000	U						
tert-Butyl alcohol, Solid	ug/Kg	200.000	U						
tert-amyl methyl ether, Solid	ug/Kg	5.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB3	DI Blank	-222352	102562-008		11/23/2003	1426

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: Jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	V03K23DSG	102506-017		11/23/2003	2212

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	41.570	40.332	50.000	5.000	U	83	%	51-132	
							3	R	20	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	63.837	57.812	50.000	5.000	U	128	%	61-132	
							10	R	20	
Benzene, Solid	ug/Kg	47.823	47.150	50.000	5.000	U	96	%	72-128	
							1	R	20	
Trichloroethene, Solid	ug/Kg	48.473	48.296	50.000	5.000	U	97	%	75-129	
							0	R	20	
Toluene, Solid	ug/Kg	49.035	51.161	50.000	5.000	U	98	%	75-125	
							4	R	20	
Ethylbenzene, Solid	ug/Kg	48.086	48.304	50.000	5.000	U	96	%	79-123	
							0	R	20	
Xylenes (total), Solid	ug/Kg	144.280	148.437	150.000	5.000	U	96	%	82-125	
							3	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K230SG	102506-016		11/23/2003	1322

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	40.332		50.000	5.000 U	81	%	51-132	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	57.812		50.000	5.000 U	116	%	61-132	
Benzene, Solid	ug/Kg	47.150		50.000	5.000 U	94	%	72-128	
Trichloroethene, Solid	ug/Kg	48.296		50.000	5.000 U	97	%	75-129	
Toluene, Solid	ug/Kg	51.161		50.000	5.000 U	102	%	75-125	
Ethylbenzene, Solid	ug/Kg	48.304		50.000	5.000 U	97	%	79-123	
Xylenes (total), Solid	ug/Kg	148.437		150.000	5.000 U	99	%	82-125	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: jdn

MB	Method Blank		102506-015		11/23/2003	1255

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102819

Analyst...: lm

LCS	Laboratory Control Sample	V03K24DSG	102662-020		11/24/2003	1125

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	39.249		50.000	5.000	U 78	%	51-132	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	57.574		50.000	5.000	U 115	%	61-132	
Benzene, Solid	ug/Kg	46.972		50.000	5.000	U 94	%	72-128	
Trichloroethene, Solid	ug/Kg	48.308		50.000	5.000	U 97	%	75-129	
Toluene, Solid	ug/Kg	53.706		50.000	5.000	U 107	%	75-125	
Ethylbenzene, Solid	ug/Kg	49.842		50.000	5.000	U 100	%	79-123	
Xylenes (total), Solid	ug/Kg	153.216		150.000	5.000	U 102	%	82-125	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102662-019		11/24/2003	1058

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102819

Analyst...: lm

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K19DSB	102152-002		11/19/2003	1051

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)
Equipment Code....: GCL16
Batch.....: 102199
Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	42.015		50.000	5.000	U 84	%	48-132	
Methyl-tert-butyl-ether (MTBE)	ug/L	43.739		50.000	5.000	U 87	%	49-139	
Benzene	ug/L	47.692		50.000	5.000	U 95	%	68-130	
Trichloroethene	ug/L	52.266		50.000	5.000	U 105	%	71-128	
Toluene	ug/L	50.035		50.000	5.000	U 100	%	72-122	
Ethylbenzene	ug/L	52.459		50.000	5.000	U 105	%	78-121	
Xylenes (total)	ug/L	153.542		150.000	5.000	U 102	%	76-129	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353

Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102152-001		11/19/2003	1029

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)

Equipment Code....: GCL16
Batch.....: 102199

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	5.000	U							
Methyl-tert-butyl-ether (MTBE)	ug/L	5.000	U							
Benzene	ug/L	5.000	U							
Trichloroethene	ug/L	5.000	U							
Toluene	ug/L	5.000	U							
Ethylbenzene	ug/L	5.000	U							
Xylenes (total)	ug/L	5.000	U							
tert-Butyl alcohol	ug/L	200.000	U							
tert-amyl methyl ether	ug/L	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353 Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: Method Batch.....: 102613 Analyst...: clb
Method Description.: % Solids Determination Equipment Code....: Test Code.: %SOLID
Parameter.....: % Solids

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102613-001		%	0.1000 U								11/24/2003	1953

Test Method.....: 7.3.3.2/9014 Batch.....: 102318 Analyst...: rnm
Method Description.: Reactivity, Cyanide Equipment Code....: SPEC1001 Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102318-004		mg/L	0.01000 U								11/21/2003	1053
LCS	102318-005	I03ISTCN2	mg/L	0.10210		0.10000	0.01000 U	102		%	80-120	11/21/2003	1054

Test Method.....: 7.3.3.2/9014 Batch.....: 103090 Analyst...: rnm
Method Description.: Reactivity, Cyanide Equipment Code....: SPEC4 Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	103090-004		mg/L	0.01000 U								12/01/2003	1901
LCS	103090-005	I03ISTCN2	mg/L	0.08830		0.10000	0.01000 U	88		%	80-120	12/01/2003	1902

Test Method.....: 1010 Batch.....: 103978 Analyst...: jmk
Method Description.: Ignitability (Pensky-Martens Closed-Cup) Equipment Code....: Test Code.: IGNPMC
Parameter.....: Ignitability (Flashpoint)

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MD	222353-4		degrees F	>200			>200					12/09/2003	0845

Test Method.....: 9040B Batch.....: 102236 Analyst...: nrp
Method Description.: pH (Liquid) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	102236-002	I03GPH7B	pH Units	7.05000		7.00000		0.05000		A	0.20000	11/18/2003	1621
LCDP	102236-003	I03GPH7B	pH Units	7.05000		7.00000		0.05000		A	0.20000	11/18/2003	1622
MDPH	222353-3		pH Units	5.09000			5.09000	0.00		A	0.20000	11/18/2003	1625

Test Method.....: 9045C Batch.....: 104003 Analyst...: nrp
Method Description.: pH (Soil) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	104003-002	I03KPH7B	pH Units	6.96000		7.00000		0.04000		A	0.20000	12/09/2003	1301
LCDP	104003-003	I03KPH7B	pH Units	6.96000		7.00000		0.04000		A	0.20000	12/09/2003	1303

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222353 Report Date.: 12/15/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: 7.3.4.2/9034 Batch.....: 102641 Analyst...: bs
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102641-001		mg/L	1.00000 U								11/24/2003	1540
LCS	102641-002	I03HSTSF1	mg/L	2.59700		3.02300	1.00000 U	86		%	0-200	11/24/2003	1542

Test Method.....: 7.3.4.2/9034 Batch.....: 103930 Analyst...: rmm
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	103930-001		mg/Kg	91.00 U								12/05/2003	1325
LCS	103930-002	I03HSTSF1	mg/Kg	116.30 B		151.10	91.00 U	77		%	0-200	12/05/2003	1328

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/15/2003

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Soil, sediment and sludge sample results are reported on a "dry weight" basis except when analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received" basis unless noted differently.
3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
4) The test results for the noted analytical method(s) meet the requirements of NELAC. Lab Cert. ID# 100201
5) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report)

Inorganic Qualifiers (Q-Column)

U Analyte was not detected at or above the stated limit.
< Not detected at or above the reporting limit.
J Result is less than the RL, but greater than or equal to the method detection limit.
B Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.
S Result was determined by the Method of Standard Additions.
F AFCEE: Result is less than the RL, but greater than or equal to the method detection limit.

Inorganic Flags (Flag Column)

- ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
+ MSA correlation coefficient is less than 0.995.
4 MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
E SD: Serial dilution exceeds the control limits.
H MB, EB1, EB2, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.
N MS, MSD: Spike recovery exceeds the upper or lower control limits.
W AS(GFAA) Post-digestion spike was outside 85-115% control limits.

Organic Qualifiers (Q - Column)

U Analyte was not detected at or above the stated limit.
ND Compound not detected.
J Result is an estimated value below the reporting limit or a tentatively identified compound (TIC).
Q Result was qualitatively confirmed, but not quantified.
C Pesticide identification was confirmed by GC/MS.
Y The chromatographic response resembles a typical fuel pattern.
Z The chromatographic response does not resemble a typical fuel pattern.
E Result exceeded calibration range, secondary dilution required.
F AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)

Organic Flags (Flags Column)

B MB: Batch QC is greater than reporting limit.
* LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits.
^ EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
A Concentration exceeds the instrument calibration range
a Concentration is below the method Reporting Limit (RL)
B Compound was found in the blank and sample.
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
H Alternate peak selection upon analytical review
I Indicates the presence of an interfence, recovery is not calculated.
M Manually integrated compound.
P The lower of the two values is reported when the % difference between the results of two GC columns is

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/15/2003

greater than 25%.

Abbreviations

AS	Post Digestion Spike (GFAA Samples - See Note 1 below)
Batch	Designation given to identify a specific extraction, digestion, preparation set, or analysis set
CAP	Capillary Column CCB Continuing Calibration Blank
CCV	Continuing Calibration Verification
CF	Confirmation analysis of original
C1	Confirmation analysis of A1 or D1
C2	Confirmation analysis of A2 or D2
C3	Confirmation analysis of A3 or D3
CRA	Low Level Standard Check - GFAA; Mercury
CRI	Low Level Standard Check - ICP
CV	Calibration Verification Standard
Dil Fac	Dilution Factor - Secondary dilution analysis
D1	Dilution 1
D2	Dilution 2
D3	Dilution 3
DLFac	Detection Limit Factor
DSH	Distilled Standard - High Level
DSL	Distilled Standard - Low Level
DSM	Distilled Standard - Medium Level
EB1	Extraction Blank 1
EB2	Extraction Blank 2
EB3	DI Blank
ELC	Method Extracted LCS
ELD	Method Extracted LCD
ICAL	Initial calibration
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ISA	Interference Check Sample A - ICAP
ISB	Interference Check Sample B - ICAP
Job No.	The first six digits of the sample ID which refers to a specific client, project and sample group Lab ID An 8 number unique laboratory identification
LCD	Laboratory Control Standard Duplicate
LCS	Laboratory Control Standard with reagent grade water or a matrix free from the analyte of interest
MB	Method Blank or (PB) Preparation Blank
MD	Method Duplicate
MDL	Method Detection Limit
MLE	Medium Level Extraction Blank
MRL	Method Reporting Limit Standard
MSA	Method of Standard Additions
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not Detected
PREPF	Preparation factor used by the Laboratory's Information Management System (LIMS)
PDS	Post Digestion Spike (ICAP)
RA	Re-analysis of original
A1	Re-analysis of D1
A2	Re-analysis of D2
A3	Re-analysis of D3
RD	Re-extraction of dilution
RE	Re-extraction of original
RC	Re-extraction Confirmation
RL	Reporting Limit
RPD	Relative Percent Difference of duplicate (unrounded) analyses
RRF	Relative Response Factor
RT	Retention Time

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/15/2003

RTW	Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number
SCB	Seeded Control Blank
SD	Serial Dilution (Calculated when sample concentration exceeds 50 times the MDL)
UCB	Unseeded Control Blank
SSV	Second Source Verification Standard
SLCS	Solid Laboratory Control Standard(LCS)
PHC	pH Calibration Check LCSP pH Laboratory Control Sample
LCDP	pH Laboratory Control Sample Duplicate
MDPH	pH Sample Duplicate
MDFP	Flashpoint Sample Duplicate
LCFP	Flashpoint LCS
G1	Gelex Check Standard Range 0-1
G2	Gelex Check Standard Range 1-10
G3	Gelex Check Standard Range 10-100
G4	Gelex Check Standard Range 100-1000

Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCS S=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Note 2: The MD calculates an absolute difference (A) when the sample concentration is less than 5 times the reporting limit. The control limit is represented as +/- the RL.

Amendment No. 0010

STL EDISON
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

222353

PAGE ___ OF ___

Name (for report and invoice): Mack Astorga	Samplers Name (Printed): Rich Eisely	Site/Project Identification: Dover AFB
Company: ENSR International	P.O. #	State (Location of site): NJ: ☐ NY: ☐ Other: DE
		Regulatory Program:
Address: 2005 Cabot Boulevard West, Suite 100	Analysis Turnaround Time: Standard ☐	
City: Langhorne State: PA 19047	Rush Charges Authorized For: 2 Week ☐ 1 Week ☑ Other ☐	
Phone: 215-757-4900 Fax: 215-757-3904		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No:

	Sample Identification	Date	Time	Matrix	No. of Cont.	8260B TCLP *	8260B TCLP VOA	GRO	DRO	8082-PCB	Reactivity (cyanide/sulfide)	Corrosivity	Ignitability				Sample Numbers
1	B-12 (3-5)	11/17/03	920	Soil	7	X	X	X	X	X	X	X	X				
2	B-18 (3-5)	11/17/03	935	Soil	7	X	X	X	X	X	X	X	X				
3	FB111703	11/17/03	1200	AQ	7	X	X	X	X	X	X	X	X				
4	B-17 (4-6)	11/17/03	1420	Soil	7	X	X	X	X	X	X	X	X				
	Custody Seals #: 67930 + 67905																
	Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH			Soil:		1	1,6	1	1	1	1	1	1				
	6 = Other encore, 7 = Other ____			Water:		1	1,2	1,2	1	1	1	1	1				

Special Instructions: PPVOA - BTEX, tert-amyl methyl ether, TBA, MTBE, TCE, 1,1-DCE * on Hold
Water Metals Filtered (Yes/No)? ____

Relinquished by	Company	Date / Time	Received by	Company
1) R. Eisely	ENSR	11/17/03 1530	1) [signature]	STL 11/18/03 0920
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL-6003

Amendment No. 0010

SEVERN TRENT STL

STL Chicago
2417 Bond Street
University Park, IL 60466

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www.stl-inc.com

SEVERN TRENT LABORATORIES
ANALYTICAL REPORT

JOB NUMBER: 222386

Prepared For:

ENSR
2005 Cabot Boulevard West
Suite 100
Langhorne, PA 19047

Project: Dover AFB

Attention: Mack Astorga

Date: 12/17/2003

Nancy S. McDonald for
Signature

Date 12/17/03

Name: Eric A. Lang

Title: Project Manager

E-Mail: elang@stl-inc.com

STL Chicago
2417 Bond Street
University Park, IL 60466

PHONE: (708) 534-5200
FAX..: (708) 534-5211

This Report Contains (49) Pages

Severn Trent Laboratories Chicago
GC/MS Case Narrative

ENSR
Dover AFB
Job Number: 222386
VOA DATA

1. The samples were prepared and analyzed within the recommended hold times from the date of collection.

2. The Method Blanks and Extraction Blanks had all target compounds below the reporting limits.

3. The LCS samples had all controlled spike recoveries within the in-house generated QC limits.

4. Matrix Spike and Matrix Spike Duplicate analyses were not performed on this sample set.

5. The volatile samples had all surrogate recoveries within the in-house generated QC limits.

6. The water sample was prepared using Method 5030. The soil samples were prepared for the low level soil procedure using Method 5035. The samples were analyzed following SW846 Method 8260B and 8000B. All initial and continuing calibration criteria were met per method or SOP (for minimum R values for certain compounds). The low point in the initial calibration verifies the base reporting limits. The target compounds were quantitated using the initial calibration.

7. The volatile samples had all internal standard areas and retention times within the acceptance limits as compared to the corresponding calibration verification standard.

8. The water sample was analyzed using a 5-mL purge volume. The soil samples were analyzed using the 5035 low level soil procedure. The soil results and reporting limits were adjusted to account for the sample weights, the analytical procedure and on a dry weight basis.

John Nagel
GC/MS VOA Dept.

12-17-03
Date

Severn Trent Laboratories Chicago
GC Volatile Case Narrative

ENSR-DOVER AFB
Job Number: 222386
Method 8015B

1. All required holding times were met for the analysis.

2. The Method Blanks had all target compounds below the reporting limits.

3. The surrogate compounds used for this analysis were 4-Bromofluorobenzene and a,a,a-Trifluorotoluene. All surrogate recoveries were within the in-house generated QC limits.

4. The LCS (Laboratory Control Sample) had all spike recoveries within the in-house generated QC limits.

5. A MS/MSD (Matrix Spike/Matrix Spike Duplicate) was not performed on this analytical batch.

6. The initial and continuing standard calibrations associated with these samples were within control limits.

7. The samples were analyzed as low-level waters and soils for GRO (GRO) based on SW846 methods 5030 and 8015B. A HP 5890 gas chromatograph equipped with a flame-ionization detector (FID) and a Tekmar LSC 2000/2016 ALS was used for the analysis of these samples. The soil results are on a dry weight basis.

Gary Rynkar
GC/VOA Section Manager

12/19/3
Date

STL Chicago
Extractable Hydrocarbon Case Narrative

ENSR
Dover AFB
Job# 222386-1, 2, 3, and 4
Diesel Range Organics (DRO)

1. The water sample associated with this SDG was extracted based on SW846 Method 3510. The soil sample was extracted based on the SW846 method 3541. The extracts were analyzed for DRO based on SW846 method 8015B. A HP5890 gas chromatograph equipped with a flame ionization detector and a Xti-5 column was used for the analysis.

2. All required holding times were met for the extraction and analysis.

3. The method blanks were below the reporting limit for DRO.

4. The surrogate compounds used for this analysis were o-Terphenyl and 2-Fluorobiphenyl. All surrogate recoveries were within statistical control limits except prep batch 103128, which had 2-Fluorobipheneyl with 104% recovery.

5. All blank spike and blank spike duplicate recoveries and RPDs were within statistical control limits. A solution of Diesel Fuel was used for spiking.

6. A matrix spike and a matrix spike duplicate were not performed on a sample from this SDG.

7. A Diesel Fuel #2 standard was used for quantitating DRO results, using a hydrocarbon range from C10 through C28. An alkane standard ranging from C8 through C36 was analyzed for qualitative purposes.

8. All initial and continuing standard calibrations associated with these samples were in control.

9. DRO was not detected in these samples.

Patti Gibson
Organics Section Manager

12/15/07
Date

STL Chicago is part of Severn Trent Laboratories, Inc.

SAMPLE INFORMATION
Date: 12/17/2003

Job Number.: 222386
Customer...: ENSR
Attn.....: Mack Astorga

Project Number.....: 20003849
Customer Project ID....: DOVER AFB
Project Description....: Dover AFB

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
222386-1	B-15(3-5)	Soil	11/18/2003	08:20	11/19/2003	09:50
222386-2	P-1(3.5-5.5)	Soil	11/18/2003	09:05	11/19/2003	09:50
222386-3	B-2(4-6)	Soil	11/18/2003	10:15	11/19/2003	09:50
222386-4	FB111803	Water	11/18/2003	12:00	11/19/2003	09:50

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222386

Date: 12/17/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-15(3-5)
Date Sampled.....: 11/18/2003
Time Sampled.....: 08:20
Sample Matrix.....: Soil

Laboratory Sample ID: 222386-1
Date Received.....: 11/19/2003
Time Received.....: 09:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104024		12/09/03 0558	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104024		12/09/03 0558	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104024		12/09/03 0558	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104024		12/09/03 0558	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104024		12/09/03 0558	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104024		12/09/03 0558	pjg
	Aroclor 1260, 3541 Solid*	18	U		1.5	18	1.00000	ug/Kg	104024		12/09/03 0558	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.5	U		2.8	4.5	1.00000	mg/Kg	103767		12/05/03 2004	mgk
Method	% Solids Determination											
	% Solids, Solid	89.4			0.10	0.10	1	%	102614		11/24/03 1953	clb
	% Moisture, Solid	10.6			0.10	0.10	1	%	102614		11/24/03 1953	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	56	U		11	56	1.00000	ug/Kg	102874		11/21/03 0539	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	3.3	U		3.3	3.3	1	mg/Kg	102318		11/21/03 1103	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	102437		11/21/03 0805	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	7.4				0.2	1	pH Units	104003		12/09/03 1320	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1320	nrp

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222386

Date:12/17/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: B-15(3-5)
Date Sampled.....: 11/18/2003
Time Sampled.....: 08:20
Sample Matrix.....: Soil

Laboratory Sample ID: 222386-1
Date Received.....: 11/19/2003
Time Received.....: 09:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	240	U		89	240	1	mg/Kg	102373		11/21/03 1203	bms
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	9.0	U		1.8	9.0	1.0000	ug/Kg	102570		11/23/03 2050	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	9.0	U		1.1	9.0	1.0000	ug/Kg	102570		11/23/03 2050	jdn
	Benzene, Solid*	9.0	U		1.2	9.0	1.0000	ug/Kg	102570		11/23/03 2050	jdn
	Trichloroethene, Solid*	9.0	U		1.1	9.0	1.0000	ug/Kg	102570		11/23/03 2050	jdn
	Toluene, Solid*	9.0	U		1.8	9.0	1.0000	ug/Kg	102570		11/23/03 2050	jdn
	Ethylbenzene, Solid*	9.0	U		2.0	9.0	1.0000	ug/Kg	102570		11/23/03 2050	jdn
	Xylenes (total), Solid*	9.0	U		5.2	9.0	1.0000	ug/Kg	102570		11/23/03 2050	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222386

Date:12/17/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: P-1(3.5-5.5)
Date Sampled.....: 11/18/2003
Time Sampled.....: 09:05
Sample Matrix.....: Soil

Laboratory Sample ID: 222386-2
Date Received.....: 11/19/2003
Time Received.....: 09:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	17	U		2.0	17	1.00000	ug/Kg	104024		12/09/03 0633	pjg
	Aroclor 1221, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104024		12/09/03 0633	pjg
	Aroclor 1232, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104024		12/09/03 0633	pjg
	Aroclor 1242, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104024		12/09/03 0633	pjg
	Aroclor 1248, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104024		12/09/03 0633	pjg
	Aroclor 1254, 3541 Solid*	17	U		2.1	17	1.00000	ug/Kg	104024		12/09/03 0633	pjg
	Aroclor 1260, 3541 Solid*	17	U		1.5	17	1.00000	ug/Kg	104024		12/09/03 0633	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.4	U		2.7	4.4	1.00000	mg/Kg	103767		12/05/03 2042	mgk
Method	% Solids Determination											
	% Solids, Solid	94.8			0.10	0.10	1	%	102614		11/24/03 1953	clb
	% Moisture, Solid	5.2			0.10	0.10	1	%	102614		11/24/03 1953	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	53	U		10	53	1.00000	ug/Kg	102874		11/21/03 0614	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	3.1	U		3.1	3.1	1	mg/Kg	102318		11/21/03 1104	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	102437		11/21/03 0900	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.9				0.2	1	pH Units	104003		12/09/03 1322	nrp
	Temperature at Analysis, Solid	19.0				1.0	1	pH Units	104003		12/09/03 1322	nrp

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222386

Date:12/17/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: P-1(3.5-5.5)
Date Sampled.....: 11/18/2003
Time Sampled.....: 09:05
Sample Matrix.....: Soil

Laboratory Sample ID: 222386-2
Date Received.....: 11/19/2003
Time Received.....: 09:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	250	U		90	250	1	mg/Kg	102373		11/21/03 1204	bms
82608	Volatile Organics											
	1,1-Dichloroethene, Solid*	13	U		2.5	13	1.0000	ug/Kg	102570		11/23/03 2118	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	13	U		1.6	13	1.0000	ug/Kg	102570		11/23/03 2118	jdn
	Benzene, Solid*	13	U		1.7	13	1.0000	ug/Kg	102570		11/23/03 2118	jdn
	Trichloroethene, Solid*	13	U		1.5	13	1.0000	ug/Kg	102570		11/23/03 2118	jdn
	Toluene, Solid*	13	U		2.5	13	1.0000	ug/Kg	102570		11/23/03 2118	jdn
	Ethylbenzene, Solid*	13	U		2.8	13	1.0000	ug/Kg	102570		11/23/03 2118	jdn
	Xylenes (total), Solid*	13	U		7.3	13	1.0000	ug/Kg	102570		11/23/03 2118	jdn

* In Description = Dry Wgt.

Amendment No. 0010

ST Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222386

Date:12/17/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: B-2(4-6)
Date Sampled.....: 11/18/2003
Time Sampled.....: 10:15
Sample Matrix.....: Soil

Laboratory Sample ID: 222386-3
Date Received.....: 11/19/2003
Time Received.....: 09:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	17	U		1.9	17	1.00000	ug/Kg	104024		12/09/03 0708	pjg
	Aroclor 1221, 3541 Solid*	17	U		2.0	17	1.00000	ug/Kg	104024		12/09/03 0708	pjg
	Aroclor 1232, 3541 Solid*	17	U		2.0	17	1.00000	ug/Kg	104024		12/09/03 0708	pjg
	Aroclor 1242, 3541 Solid*	17	U		2.0	17	1.00000	ug/Kg	104024		12/09/03 0708	pjg
	Aroclor 1248, 3541 Solid*	17	U		2.0	17	1.00000	ug/Kg	104024		12/09/03 0708	pjg
	Aroclor 1254, 3541 Solid*	17	U		2.0	17	1.00000	ug/Kg	104024		12/09/03 0708	pjg
	Aroclor 1260, 3541 Solid*	17	U		1.4	17	1.00000	ug/Kg	104024		12/09/03 0708	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.2	U		2.6	4.2	1.00000	mg/Kg	103767		12/05/03 2121	mgk
Method	% Solids Determination											
	% Solids, Solid	97.1			0.10	0.10	1	%	102614		11/24/03 1953	clb
	% Moisture, Solid	2.9			0.10	0.10	1	%	102614		11/24/03 1953	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	51	U		9.8	51	1.00000	ug/Kg	102874		11/21/03 0650	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	2.2	U		2.2	2.2	1	mg/Kg	102318		11/21/03 1105	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	102437		11/21/03 1050	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.8				0.2	1	pH Units	104003		12/09/03 1323	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1323	nrp

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222386

Date:12/17/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-2(4-6)
Date Sampled.....: 11/18/2003
Time Sampled.....: 10:15
Sample Matrix.....: Soil

Laboratory Sample ID: 222386-3
Date Received.....: 11/19/2003
Time Received.....: 09:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	250	U		89	250	1	mg/Kg	102373		11/21/03 1205	bms
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	7.5	U		1.5	7.5	1.0000	ug/Kg	102570		11/23/03 2145	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	7.5	U		0.96	7.5	1.0000	ug/Kg	102570		11/23/03 2145	jdn
	Benzene, Solid*	7.5	U		0.99	7.5	1.0000	ug/Kg	102570		11/23/03 2145	jdn
	Trichloroethene, Solid*	7.5	U		0.88	7.5	1.0000	ug/Kg	102570		11/23/03 2145	jdn
	Toluene, Solid*	7.5	U		1.5	7.5	1.0000	ug/Kg	102570		11/23/03 2145	jdn
	Ethylbenzene, Solid*	7.5	U		1.6	7.5	1.0000	ug/Kg	102570		11/23/03 2145	jdn
	Xylenes (total), Solid*	7.5	U		4.3	7.5	1.0000	ug/Kg	102570		11/23/03 2145	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222386

Date:12/17/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB111803
Date Sampled.....: 11/18/2003
Time Sampled.....: 12:00
Sample Matrix.....: Water

Laboratory Sample ID: 222386-4
Date Received.....: 11/19/2003
Time Received.....: 09:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016	0.51	U		0.17	0.51	1.00000	ug/L	104024		11/25/03 1000	pjg
	Aroclor 1221	0.51	U		0.46	0.51	1.00000	ug/L	104024		11/25/03 1000	pjg
	Aroclor 1232	0.51	U		0.22	0.51	1.00000	ug/L	104024		11/25/03 1000	pjg
	Aroclor 1242	0.51	U		0.19	0.51	1.00000	ug/L	104024		11/25/03 1000	pjg
	Aroclor 1248	0.51	U		0.21	0.51	1.00000	ug/L	104024		11/25/03 1000	pjg
	Aroclor 1254	0.51	U		0.13	0.51	1.00000	ug/L	104024		11/25/03 1000	pjg
	Aroclor 1260	0.51	U		0.15	0.51	1.00000	ug/L	104024		11/25/03 1000	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO)	0.12	U		0.029	0.12	1.00000	mg/L	103772		11/26/03 1437	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO)	50	U		7.1	50	1.00000	ug/L	102876		11/22/03 0829	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide	0.01	U		0.01	0.01	1	mg/L	103090		12/01/03 1915	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint)	>200					1	degrees F	103850		12/06/03 1000	jmk
9040B	pH (Liquid)											
	Corrosivity (pH-Liquids)	6.21			0.20	0.20	1	pH Units	102622		11/21/03 1530	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide	2.5	U		2.5	2.5	1	mg/L	102641		11/24/03 1625	bs
8260B	Volatile Organics (5mL Purge)											
	1,1-Dichloroethene	5.0	U		1.7	5.0	1.00000	ug/L	102701		11/25/03 1138	jdh

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222386

Date: 12/17/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB111803
Date Sampled.....: 11/18/2003
Time Sampled.....: 12:00
Sample Matrix.....: Water

Laboratory Sample ID: 222386-4
Date Received.....: 11/19/2003
Time Received.....: 09:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Methyl-tert-butyl-ether (MTBE)	5.0	U		2.0	5.0	1.00000	ug/L	102701		11/25/03 1138	jdn
	Benzene	5.0	U		0.96	5.0	1.00000	ug/L	102701		11/25/03 1138	jdn
	Trichloroethene	5.0	U		1.6	5.0	1.00000	ug/L	102701		11/25/03 1138	jdn
	Toluene	5.0	U		1.1	5.0	1.00000	ug/L	102701		11/25/03 1138	jdn
	Ethylbenzene	5.0	U		0.93	5.0	1.00000	ug/L	102701		11/25/03 1138	jdn
	Xylenes (total)	5.0	U		1.8	5.0	1.00000	ug/L	102701		11/25/03 1138	jdn

* In Description = Dry Wgt.

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LABORATORY CHRONICLE

Job Number: 222386 Date: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222386-1 Client ID: B-15(3-5) Date Recvd: 11/19/2003 Sample Date: 11/18/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102614		11/24/2003	1953	
5030A	5030 Purge & Trap	1	102873		11/20/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	102506		11/23/2003	2050	
5035	5035 Preservation High (Methanol)	1	102574		11/20/2003	0420	
5035	5035 Preservation Low	1	102573		11/20/2003	0420	
5035	5035 Preservation Low	1	102573		11/20/2003	0421	
5035	5035 Preservation Low	2	102573		11/20/2003	0420	
5035	5035 Preservation Low	2	102573		11/20/2003	0421	
Data Managemen	Data Management	1					
EDD	Electronic Data Deliverable	1					
3541	Extraction Soxhlet (DRO)	1	103128		12/02/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	102916		12/01/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102437	102437	11/21/2003	0805	
8082	PCB Analysis	1	104024	102916	12/09/2003	0558	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1103	
7.3.4.2/9034	Reactivity, Sulfide	1	102373	102373	11/21/2003	1203	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103767	103128	12/05/2003	2004	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102874	102873	11/21/2003	0539	1.00000
8260B	Volatile Organics	1	102570	102573-102506	11/23/2003	2050	1.0000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1320	

Lab ID: 222386-2 Client ID: P-1(3.5-5.5) Date Recvd: 11/19/2003 Sample Date: 11/18/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102614		11/24/2003	1953	
5030A	5030 Purge & Trap	1	102873		11/20/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	102506		11/23/2003	2118	
5035	5035 Preservation High (Methanol)	1	102574		11/20/2003	0422	
5035	5035 Preservation Low	1	102573		11/20/2003	0422	
5035	5035 Preservation Low	1	102573		11/20/2003	0423	
5035	5035 Preservation Low	2	102573		11/20/2003	0422	
5035	5035 Preservation Low	2	102573		11/20/2003	0423	
3541	Extraction Soxhlet (DRO)	1	103128		12/02/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	102916		12/01/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102437	102437	11/21/2003	0900	
8082	PCB Analysis	1	104024	102916	12/09/2003	0633	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1104	
7.3.4.2/9034	Reactivity, Sulfide	1	102373	102373	11/21/2003	1204	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103767	103128	12/05/2003	2042	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102874	102873	11/21/2003	0614	1.00000
8260B	Volatile Organics	1	102570	102573-102506	11/23/2003	2118	1.0000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1322	

Lab ID: 222386-3 Client ID: B-2(4-6) Date Recvd: 11/19/2003 Sample Date: 11/18/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102614		11/24/2003	1953	
5030A	5030 Purge & Trap	1	102873		11/20/2003	2100	
5035	5035 Archon Closed Purge & Trap	1	102506		11/23/2003	2145	
5035	5035 Preservation High (Methanol)	1	102574		11/20/2003	0423	
5035	5035 Preservation Low	1	102573		11/20/2003	0423	
5035	5035 Preservation Low	2	102573		11/20/2003	0424	
3541	Extraction Soxhlet (DRO)	1	103128		12/02/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	102916		12/01/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	102437	102437	11/21/2003	1050	
8082	PCB Analysis	1	104024	102916	12/09/2003	0708	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	102318	102318	11/21/2003	1105	

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LABORATORY CHRONICLE

Job Number: 222386 Date: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222386-3 Client ID: B-2(4-6) Date Recvd: 11/19/2003 Sample Date: 11/18/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
7.3.4.2/9034	Reactivity, Sulfide	1	102373	102373	11/21/2003	1205	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103767	103128	12/05/2003	2121	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102874	102873	11/21/2003	0650	1.00000
8260B	Volatile Organics	1	102570	102573-102506	11/23/2003	2145	1.0000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1323	

Lab ID: 222386-4 Client ID: FB111803 Date Recvd: 11/19/2003 Sample Date: 11/18/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030 5 mL Purge Prep	1	102698		11/25/2003	1138	
5030A	5030 Purge & Trap	1	102875		11/22/2003	0200	
3510C	Extraction Sep. Funnel (Diesel)	1	102207		11/20/2003	1330	
3510C	Extraction Sep. Funnel (PCBs)	1	102065		11/19/2003	1100	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	103850	103850	12/06/2003	1000	
8082	PCB Analysis	1	104024	102065	11/25/2003	1000	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	103090	103090	12/01/2003	1915	
7.3.4.2/9034	Reactivity, Sulfide	1	102641	102641	11/24/2003	1625	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103772	102207	11/26/2003	1437	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	102876	102875	11/22/2003	0829	1.00000
8260B	Volatile Organics (5mL Purge)	1	102701	102698	11/25/2003	1138	1.00000
9040B	pH (Liquid)	1	102622	102622	11/21/2003	1530	

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SURROGATE RECOVERIES REPORT

Job Number.: 222386 Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: Water Prep Batch..: 102207
Method Code...: 8015D Batch(s).....: 103772

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCD			11/26/2003	95	94
LCS			11/26/2003	94	89
MB			11/26/2003	80	94
222386- 4		FB111803	11/26/2003	87	99

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 119
OTERPH	o-Terphenyl (surr)	58 - 119

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: 3541 Solid Prep Batch..: 103128
Method Code...: 8015D Batch(s).....: 103767

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCS			12/04/2003	104*	106
MB			12/04/2003	92	94
222386- 1		B-15(3-5)	12/05/2003	85	91
222386- 2		P-1(3.5-5.5)	12/05/2003	85	91
222386- 3		B-2(4-6)	12/05/2003	87	97

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 103
OTERPH	o-Terphenyl (surr)	44 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Gasoline Range Organics (GRO)
Method Code...: 8015G

Test Matrix...: Solid
Batch(s).....: 102874

Prep Batch..: 102873

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/21/2003	98	102
MB			11/20/2003	92	92
222386- 1		B-15(3-5)	11/21/2003	87	90
222386- 2		P-1(3.5-5.5)	11/21/2003	86	84
222386- 3		B-2(4-6)	11/21/2003	86	85

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	68 - 113
BRFLBE	4-Bromofluorobenzene (surr)	41 - 125

Method.....: TPH - Gasoline Range Organics (GRO)
Method Code...: 8015G

Test Matrix...: Water
Batch(s).....: 102876

Prep Batch..: 102875

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/22/2003	97	109
MB			11/22/2003	99	101
222386- 4		FB111803	11/22/2003	90	86

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	79 - 110
BRFLBE	4-Bromofluorobenzene (surr)	67 - 124

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SURROGATE RECOVERIES REPORT

Job Number.: 222386 Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: Water
Batch(s).....: 104024
Prep Batch..: 102065

Lab ID	DT	Sample ID	Date	DCB	TCX
LCD			11/25/2003	83	97
LCS			11/25/2003	57	95
MB			11/25/2003	86	87
222386- 4		FB111803	11/25/2003	72	88

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 116
TCX	Tetrachloro-m-xylene (surr)	33 - 111

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: 3541 Solid
Batch(s).....: 104024
Prep Batch..: 102916

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			12/09/2003	96	94
MB			12/08/2003	81	51
222386- 1		B-15(3-5)	12/09/2003	89	82
222386- 2		P-1(3.5-5.5)	12/09/2003	91	84
222386- 3		B-2(4-6)	12/09/2003	84	81

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	33 - 131
TCX	Tetrachloro-m-xylene (surr)	42 - 122

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SURROGATE RECOVERIES REPORT

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics (5mL Purge)
Method Code...: 8260.5

Test Matrix...: Water
Batch(s).....: 102701

Prep Batch..: 102698

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/25/2003	89	110	99	113
MB			11/25/2003	81	93	90	100
222386- 4		FB111803	11/25/2003	82	93	92	101

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	66 - 132
BRFLBE	4-Bromofluorobenzene (surr)	79 - 122
DBRFLM	Dibromofluoromethane (surr)	66 - 132
TOLD8	Toluene-d8 (surr)	78 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222386 Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 102570
Prep Batch..: 102506

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCD			11/23/2003	97	101	101	103
LCS			11/23/2003	96	101	99	108
MB			11/23/2003	95	99	93	108

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 102570
Prep Batch..: 102562

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/23/2003	116	96	104	100
EB3			11/23/2003	95	94	91	100

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 102570
Prep Batch..: 102565

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/23/2003	114	99	106	102

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 102570
Prep Batch..: 102573

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/23/2003	105	99	98	103
222386- 1		B-15(3-5)	11/23/2003	117	96	110	100
222386- 2		P-1(3.5-5.5)	11/23/2003	117	96	113	102
222386- 3		B-2(4-6)	11/23/2003	113	97	105	105

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SURROGATE RECOVERIES REPORT

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B

Test Matrix...: Solid
Batch(s).....: 102570

Prep Batch..: 102573

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	003JWLPCBC	102065-003		11/25/2003	0849

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104024

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.644	4.726	5.001	0.500 U	93	%	62-104	
						2	R	20	
Aroclor 1260	ug/L	4.956	4.949	5.010	0.500 U	99	%	69-105	
						0	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003JWLPCBC	102065-002		11/25/2003	0814

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104024

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	4.726		5.001	0.500 U	94	%	62-104	
Aroclor 1260	ug/L	4.949		5.010	0.500 U	99	%	69-105	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLPCBA	102916-002		12/09/2003	0039

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104024

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	143.380		166.700	33.400 U	86	%	60-112	
Aroclor 1260, 3541 Solid	ug/Kg	160.040		167.000	33.400 U	96	%	64-119	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102065-001		11/25/2003	0739

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104024

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	0.500	U							
Aroclor 1221	ug/L	0.500	U							
Aroclor 1232	ug/L	0.500	U							
Aroclor 1242	ug/L	0.500	U							
Aroclor 1248	ug/L	0.500	U							
Aroclor 1254	ug/L	0.500	U							
Aroclor 1260	ug/L	0.500	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102916-001		12/08/2003	2331

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104024

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	33.400	U							
Aroclor 1221, 3541 Solid	ug/Kg	33.400	U							
Aroclor 1232, 3541 Solid	ug/Kg	33.400	U							
Aroclor 1242, 3541 Solid	ug/Kg	33.400	U							
Aroclor 1248, 3541 Solid	ug/Kg	33.400	U							
Aroclor 1254, 3541 Solid	ug/Kg	33.400	U							
Aroclor 1260, 3541 Solid	ug/Kg	33.400	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLDIEA	103128-002		12/04/2003	1749

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103767

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	67.739		66.670	4.199 U	102	%	70-106	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103767

Analyst...: mgk

MB	Method Blank		103128-001		12/04/2003	1710

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	4.199 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103772

Analyst...: mgk

LCD	Laboratory Control Sample Duplicate	003HWLDIEA	102207-003		11/26/2003	1202

Parameter/Test Description	Units	QC Result	QC Reault	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.794520	1.697810	2.000000	0.125000 U	90	%	57-107	
						6	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003HWLDIEA	102207-002		11/26/2003	1123

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103772

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.697810		2.000000	0.125000 U	85	%	57-107	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103772

Analyst...: mgk

MB	Method Blank		102207-001		11/26/2003	1044

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	0.12500D U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K200SA	102873-002		11/21/2003	0018

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1314
Batch.....: 102874

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	405.932		400.000	50.000 U	101	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102873-001		11/20/2003	2342

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1314
Batch.....: 102874

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	50.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K220SA	102875-002		11/22/2003	0523

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1112
Batch.....: 102876

Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	462.939		400.000	50.000 U	116	%	85-124	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)

Equipment Code....: INST1112
Batch.....: 102876

Analyst...: wre

MB	Method Blank		102875-001		11/22/2003	0448

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	50.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222352	102562-007		11/23/2003	1359

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: jdn

EB1	Extraction Blank 1	222353	102565-007		11/23/2003	1454

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222386	102573-007		11/23/2003	1521

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U						
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U						
Benzene, Solid	ug/Kg	5.000	U						
Trichloroethene, Solid	ug/Kg	5.000	U						
Toluene, Solid	ug/Kg	5.000	U						
Ethylbenzene, Solid	ug/Kg	5.000	U						
Xylenes (total), Solid	ug/Kg	5.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: Z22386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB3	DI Blank	-222352	102562-008		11/23/2003	1426

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	V03K230SG	102506-017		11/23/2003	2212

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	41.570	40.332	50.000	5.000	U	83 3	% R	51-132 20	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	63.837	57.812	50.000	5.000	U	128 10	% R	61-132 20	
Benzene, Solid	ug/Kg	47.823	47.150	50.000	5.000	U	96 1	% R	72-128 20	
Trichloroethene, Solid	ug/Kg	48.473	48.296	50.000	5.000	U	97 0	% R	75-129 20	
Toluene, Solid	ug/Kg	49.035	51.161	50.000	5.000	U	98 4	% R	75-125 20	
Ethylbenzene, Solid	ug/Kg	48.086	48.304	50.000	5.000	U	96 0	% R	79-123 20	
Xylenes (total), Solid	ug/Kg	144.280	148.437	150.000	5.000	U	96 3	% R	82-125 20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K23DSG	102506-016		11/23/2003	1322

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	40.332		50.000	5.000 U	81	%	51-132	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	57.812		50.000	5.000 U	116	%	61-132	
Benzene, Solid	ug/Kg	47.150		50.000	5.000 U	94	%	72-128	
Trichloroethene, Solid	ug/Kg	48.296		50.000	5.000 U	97	%	75-129	
Toluene, Solid	ug/Kg	51.161		50.000	5.000 U	102	%	75-125	
Ethylbenzene, Solid	ug/Kg	48.304		50.000	5.000 U	97	%	79-123	
Xylenes (total), Solid	ug/Kg	148.437		150.000	5.000 U	99	%	82-125	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102506-015		11/23/2003	1255

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102570

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K250SB	102698-002		11/25/2003	1030

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)

Equipment Code....: GCL16
Batch.....: 102701

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	39.995		50.000	5.000 U	80	%	48-132	
Methyl-tert-butyl-ether (MTBE)	ug/L	55.856		50.000	5.000 U	112	%	49-139	
Benzene	ug/L	51.330		50.000	5.000 U	103	%	68-130	
Trichloroethene	ug/L	57.388		50.000	5.000 U	115	%	71-128	
Toluene	ug/L	55.127		50.000	5.000 U	110	%	72-122	
Ethylbenzene	ug/L	58.873		50.000	5.000 U	118	%	78-121	
Xylenes (total)	ug/L	172.005		150.000	5.000 U	115	%	76-129	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102698-001		11/25/2003	1007

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)
Equipment Code....: GCL16
Batch.....: 102701
Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	5.000	U							
Methyl-tert-butyl-ether (MTBE)	ug/L	5.000	U							
Benzene	ug/L	5.000	U							
Trichloroethene	ug/L	5.000	U							
Toluene	ug/L	5.000	U							
Ethylbenzene	ug/L	5.000	U							
Xylenes (total)	ug/L	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386

Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: Method
Method Description.: % Solids Determination
Parameter.....: % Solids
Batch.....: 102614
Equipment Code....:
Analyst...: clb
Test Code.: %SOLID

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102614-001		%	0.1000 U								11/24/2003	1953
MD	222386-1		%	89.80000			89.40000	0.4		R	5.0	11/24/2003	1953

Test Method.....: 7.3.3.2/9014
Method Description.: Reactivity, Cyanide
Parameter.....: Reactivity, Cyanide
Batch.....: 102318
Equipment Code....: SPEC1001
Analyst...: rnm
Test Code.: REACCN

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102318-004		mg/L	0.01000 U								11/21/2003	1053
LCS	102318-005	I03ISTCN2	mg/L	0.10210		0.10000	0.01000 U	102		%	80-120	11/21/2003	1054

Test Method.....: 7.3.3.2/9014
Method Description.: Reactivity, Cyanide
Parameter.....: Reactivity, Cyanide
Batch.....: 103090
Equipment Code....: SPEC4
Analyst...: rnm
Test Code.: REACCN

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	103090-004		mg/L	0.01000 U								12/01/2003	1901
LCS	103090-005	I03ISTCN2	mg/L	0.08830		0.10000	0.01000 U	88		%	80-120	12/01/2003	1902

Test Method.....: 1010
Method Description.: Ignitability (Pensky-Martens Closed-Cup)
Parameter.....: Ignitability (Flashpoint)
Batch.....: 102437
Equipment Code....:
Analyst...: jmk
Test Code.: IGNPMC

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MD	222386-2		degrees F	>200			>200					11/21/2003	0955

Test Method.....: 1010
Method Description.: Ignitability (Pensky-Martens Closed-Cup)
Parameter.....: Ignitability (Flashpoint)
Batch.....: 103850
Equipment Code....:
Analyst...: jmk
Test Code.: IGNPMC

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MD	222386-4		degrees F	>200			>200					12/06/2003	1100

Test Method.....: 9040B
Method Description.: pH (Liquid)
Parameter.....: pH
Batch.....: 102622
Equipment Code....:
Analyst...: nrp
Test Code.: PH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	102622-002	I03KPH7B	pH Units	7.02000		7.00000		0.02000		A	0.20000	11/21/2003	1527
LCDP	102622-003	I03KPH7B	pH Units	7.01000		7.00000		0.01000		A	0.20000	11/21/2003	1528
MDPH	222386-4		pH Units	6.18000			6.21000	0.03000		A	0.20000	11/21/2003	1531

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222386 Report Date.: 12/17/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: 9045C Batch.....: 104003 Analyst...: nrp
Method Description.: pH (Soil) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	104003-002	I03KPH7B	pH Units	6.96000		7.00000		0.04000		A	0.20000	12/09/2003	1301
LCDP	104003-003	I03KPH7B	pH Units	6.96000		7.00000		0.04000		A	0.20000	12/09/2003	1303

Test Method.....: 7.3.4.2/9034 Batch.....: 102373 Analyst...: bms
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102373-001		mg/Kg	91.00 U								11/21/2003	1145
LCS	102373-002	I03HSTSF1	mg/Kg	115.56 B		151.10	91.00 U	76		%	0-200	11/21/2003	1146

Test Method.....: 7.3.6.2/9034 Batch.....: 102641 Analyst...: bs
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102641-001		mg/L	1.00000 U								11/24/2003	1540
LCS	102641-002	I03HSTSF1	mg/L	2.59700		3.02300	1.00000 U	86		%	0-200	11/24/2003	1542

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/17/2003

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Soil, sediment and sludge sample results are reported on a "dry weight" basis except when analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received" basis unless noted differently.
3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
4) The test results for the noted analytical method(s) meet the requirements of NELAC. Lab Cert. ID# 100201
5) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report)

Inorganic Qualifiers (Q-Column)

U Analyte was not detected at or above the stated limit.
< Not detected at or above the reporting limit.
J Result is less than the RL, but greater than or equal to the method detection limit.
B Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.
S Result was determined by the Method of Standard Additions.
F AFCEE: Result is less than the RL, but greater than or equal to the method detection limit.

Inorganic Flags (Flag Column)

^ ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
+ MSA correlation coefficient is less than 0.995.
4 MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
E SD: Serial dilution exceeds the control limits.
H MB, EB1, EB2, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.
N MS, MSD: Spike recovery exceeds the upper or lower control limits.
W AS(GFAA) Post-digestion spike was outside 85-115% control limits.

Organic Qualifiers (Q - Column)

U Analyte was not detected at or above the stated limit.
ND Compound not detected.
J Result is an estimated value below the reporting limit or a tentatively identified compound (TIC).
Q Result was qualitatively confirmed, but not quantified.
C Pesticide identification was confirmed by GC/MS.
Y The chromatographic response resembles a typical fuel pattern.
Z The chromatographic response does not resemble a typical fuel pattern.
E Result exceeded calibration range, secondary dilution required.
F AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)

Organic Flags (Flags Column)

B MB: Batch QC is greater than reporting limit.
* LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits.
^ EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
A Concentration exceeds the instrument calibration range
a Concentration is below the method Reporting Limit (RL)
B Compound was found in the blank and sample.
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
H Alternate peak selection upon analytical review
I Indicates the presence of an interfence, recovery is not calculated.
M Manually integrated compound.
P The lower of the two values is reported when the % difference between the results of two GC columns is

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/17/2003

greater than 25%.

Abbreviations

AS	Post Digestion Spike (GFAA Samples - See Note 1 below)
Batch	Designation given to identify a specific extraction, digestion, preparation set, or analysis set
CAP	Capillary Column CCB Continuing Calibration Blank
CCV	Continuing Calibration Verification
CF	Confirmation analysis of original
C1	Confirmation analysis of A1 or D1
C2	Confirmation analysis of A2 or D2
C3	Confirmation analysis of A3 or D3
CRA	Low Level Standard Check - GFAA; Mercury
CRI	Low Level Standard Check - ICP
CV	Calilbration Verification Standard
Dil Fac	Dilution Factor - Secondary dilution analysis
D1	Dilution 1
D2	Dilution 2
D3	Dilution 3
DLFac	Detection Limit Factor
DSH	Distilled Standard - High Level
DSL	Distilled Standard - Low Level
DSM	Distilled Standard - Medium Level
EB1	Extraction Blank 1
EB2	Extraction Blank 2
EB3	DI Blank
ELC	Method Extracted LCS
ELD	Method Extracted LCD
ICAL	Initial calibration
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ISA	Interference Check Sample A - ICAP
ISB	Interference Check Sample B - ICAP
Job No.	The first six digits of the sample ID which refers to a specific client, project and sample group Lab ID An 8 number unique laboratory identification
LCD	Laboratory Control Standard Duplicate
LCS	Laboratory Control Standard with reagent grade water or a matrix free from the analyte of interest
MB	Method Blank or (PB) Preparation Blank
MD	Method Duplicate
MDL	Method Detection Limit
MLE	Medium Level Extraction Blank
MRL	Method Reporting Limit Standard
MSA	Method of Standard Additions
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not Detected
PREPF	Preparation factor used by the Laboratory's Information Management System (LIMS)
PDS	Post Digestion Spike (ICAP)
RA	Re-analysis of original
A1	Re-analysis of D1
A2	Re-analysis of D2
A3	Re-analysis of D3
RD	Re-extraction of dilution
RE	Re-extraction of original
RC	Re-extraction Confirmation
RL	Reporting Limit
RPD	Relative Percent Difference of duplicate (unrounded) analyses
RRF	Relative Response Factor
RT	Retention Time

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/17/2003

RTW	Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number
SCB	Seeded Control Blank
SD	Serial Dilution (Calculated when sample concentration exceeds 50 times the MDL)
UCB	Unseeded Control Blank
SSV	Second Source Verification Standard
SLCS	Solid Laboratory Control Standard(LCS)
PHC	pH Calibration Check LCSP pH Laboratory Control Sample
LCDP	pH Laboratory Control Sample Duplicate
MDPH	pH Sample Duplicate
MDFP	Flashpoint Sample Duplicate
LCFP	Flashpoint LCS
G1	Gelex Check Standard Range 0-1
G2	Gelex Check Standard Range 1-10
G3	Gelex Check Standard Range 10-100
G4	Gelex Check Standard Range 100-1000

Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCS S=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Note 2: The MD calculates an absolute difference (A) when the sample concentration is less than 5 times the reporting limit. The control limit is represented as +/- the RL.

Amendment No. 0010

222386

STL EDISON
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

PAGE ___ OF ___

Name (for report and invoice): Mark Astorga	Samplers Name (Printed): Rich Firely	Site/Project Identification: Dover AFB
Company: ENSR International	P.O. #	State (Location of site): NJ: ☐ NY: ☐ Other: DE
		Regulatory Program:
Address: 2005 Cabot Boulevard West, Suite 100	Analysis Turnaround Time: Standard ☐	
City: Langhorne State: PA 19047	Rush Charges Authorized For: 2 Week ☐ 1 Week ☑ Other ☐	
Phone: 215-757-4900 Fax: 215-757-3904		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No:

	Sample Identification	Date	Time	Matrix	No. of Cont.	8260B-TCLP TCLP VOA *	8260B PP VOA	GRO	DRO	8082-PCB	Reactivity (Cyanide/Sulfide)	Corrosivity	Ignitability				Sample Numbers
1	B-15(3-5)	11/18/03	820	Soil	7	X	X	X	X	X	X	X	X				
2	P-1(3.5-5.5)	11/18/03	905	Soil	7	X	X	X	X	X	X	X	X				
3	B-2(4-6)	11/18/03	1015	Soil	7	X	X	X	X	X	X	X	X				
4	FB111803	11/18/03	1200	AQ	7	X	X	X	X	X	X	X	X				
	Custody Seals # - 67920 & 7921																
	Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH — Soil:					1	1,6	1	1	1	1	1	1				
	6 = Other encore, 7 = Other ____ — Water:					1	1,2	1,2	1	1	1	1	1				

Special Instructions PP VOA - BTEX, tert-amylmethylether, TBA, MTBE, TCE, 1,1-DCE * - on Hold Water Metals Filtered (Yes/No)? ____

Relinquished by	Company	Date / Time	Received by	Company
1) R. Firely	ENSR	11/18/03 1540	1)	STL 11/19/03 0950
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL-6003

Amendment No. 0010

SEVERN TRENT STL

STL Chicago
2417 Bond Street
University Park, IL 60466

Tel: 708 534 5200 Fax: 708 534 5211
www.stl inc.com

SEVERN TRENT LABORATORIES ANALYTICAL REPORT

JOB NUMBER: 222519

Prepared For:

ENSR
2005 Cabot Boulevard West
Suite 100
Langhorne, PA 19047

Project: Dover AFB

Attention: Mack Astorga

Date: 12/18/2003

Signature

Date 12-18-03

Name: Eric A. Lang

Title: Project Manager

E-Mail: elang@stl-inc.com

STL Chicago
2417 Bond Street
University Park, IL 60466

PHONE: (708) 534-5200
FAX..: (708) 534-5211

This Report Contains (69) Pages

Severn Trent Laboratories Chicago
GC/MS Case Narrative

ENSR
Dover AFB
Job Number: 222519
VOA DATA

1. The samples were prepared and analyzed within the recommended hold times from the date of collection.

2. The Method Blanks and Extraction Blanks had all target compounds below the reporting limits.

3. The LCS samples had all controlled spike recoveries within the in-house generated QC limits.

4. Matrix Spike and Matrix Spike Duplicate analyses were performed on sample -7. All controlled spike recoveries within the in-house generated QC limits.

5. The volatile samples had all surrogate recoveries within the in-house generated QC limits.

6. The water samples were prepared using Method 5030. The soil samples were prepared for the low level soil procedure using Method 5035. The samples were analyzed following SW846 Method 8260B and 8000B. All initial and continuing calibration criteria were met per method or SOP (for minimum R values for certain compounds). The low point in the initial calibration verifies the base reporting limits. The target compounds were quantitated using the initial calibration.

7. The volatile samples had all internal standard areas and retention times within the acceptance limits as compared to the corresponding calibration verification standard.

8. The water samples were analyzed using a 5-mL purge volume. The soil samples were analyzed using the 5035 low level soil procedure. The soil results and reporting limits were adjusted to account for the sample weights, the analytical procedure and on a dry weight basis.

Louis Manzano
GC/MS VOA Dept.

12-18-07
Date

STL Chicago
PCB Case Narrative

ENSR
Dover AFB
Job # 222519-1, 2, 3, 7 and 8
PCBs

1. STL Chicago used the following Gas Chromatographic systems for the analysis of PCBs:

ID#	INSTRUMENT	COLUMN TYPE	DETECTOR
07	Varian 3400	Rtx-5 (Primary)	Electron Capture
41	HP 6890	Rtx-5 (Primary)	Electron Capture
08	Varian 3400	Rtx-Clp2 (Confirmation)	Electron Capture

2. The water sample associated with this SDG was extracted based on SW846 method 3520. The soil samples associated with this SDG were extracted based on SW846 method 3541. The extracts were analyzed for PCBs based on SW846 method 8082. All extracts received a sulfuric acid cleanup and a GPC cleanup on soil extracts in order to reduce matrix interference.

3. All required holding times were met for the extraction and analysis.

4. The method blanks were below the reporting limits for all Aroclors.

5. The surrogate compounds used for this analysis were Decachlorobiphenyl (DCB) and Tetrachloro-m-xylene (TCX). All surrogate recoveries were within statistical control limits.

6. A solution containing Aroclor 1016 and Aroclor 1260 was used for spiking.

7. All blank spike recoveries were within statistical control limits.

8. A matrix spike and a matrix spike duplicate were not performed on sample 222519-7 [B-14(3-5)]. All matrix spike and matrix spike duplicate recoveries and RPDs were within statistical control limits except RPD for Aroclor 1260, which was 31%.

9. All initial and continuing (grand mean <15% difference) standard calibrations associated with these samples were in control on all columns.

10. Target compounds were confirmed using a second column.

Patti Gibson
Organics Section Manager

12/16/03
Date

STL Chicago
Extractable Hydrocarbon Case Narrative

ENSR
Dover AFB
Job# 222519-1, 2, 3, 7, and 8
Diesel Range Organics (DRO)

1. The water sample associated with this SDG was extracted based on SW846 Method 3510. The soil sample was extracted based on the SW846 method 3541. The extracts were analyzed for DRO based on SW846 method 8015B. A HP5890 gas chromatograph equipped with a flame ionization detector and a Xti-5 column was used for the analysis.

2. All required holding times were met for the extraction and analysis.

3. The method blanks were below the reporting limit for DRO.

4. The surrogate compounds used for this analysis were o-Terphenyl and 2-Fluorobiphenyl. All surrogate recoveries were within statistical control limits except 2-Fluorobiphenyl: in sample 222519-7 had 23% recovery, in 103128 blank spike had 104% recovery, and 222519-1 had 319% recovery and flagged "I".

5. All blank spike and blank spike duplicate recoveries and RPDs were within statistical control limits. A solution of Diesel Fuel was used for spiking.

6. A matrix spike and a matrix spike duplicate were not performed on a sample from this SDG.

7. A Diesel Fuel #2 standard was used for quantitating DRO results, using a hydrocarbon range from C10 through C28. An alkane standard ranging from C8 through C36 was analyzed for qualitative purposes.

8. All initial and continuing standard calibrations associated with these samples were in control.

9. DRO was detected in samples 222519-1 and 8, which appear to match a typical fuel pattern, which is in Diesel fuel hydrocarbon range.

Patti Gibson
Organics Section Manager

12/15/03
Date

Severn Trent Laboratories Chicago
GC Volatile Case Narrative

ENSR-DOVER AFB
Job Number: 222519
Method 8015B

1. All required holding times were met for the analysis.

2. The Method Blanks had all target compounds below the reporting limits.

3. The surrogate compounds used for this analysis were 4-Bromofluorobenzene and a,a,a-Trifluorotoluene. All surrogate recoveries were within the in-house generated QC limits.

4. The LCS (Laboratory Control Sample) had all spike recoveries within the in-house generated QC limits.

5. The Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis on samples -2 and -7 had all spike recoveries and the RPD values within the in-house generated QC limits.

6. The initial and continuing standard calibrations associated with these samples were within control limits.

7. The samples were analyzed as low-level waters (-3) and soils (-2, -7 and -8) for GRO (GRO) based on SW846 methods 5030 and 8015B. The sample -1 was analyzed at a 50x dilution using the high level methanol method. A HP 5890 gas chromatograph equipped with a flame-ionization detector (FID) and a Tekmar LSC 2000/2016 ALS was used for the analysis of these samples. The soil results are on a dry weight basis.

Gary Rynkar
GC/VOA Section Manager

12/15/3
Date

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SAMPLE INFORMATION
Date: 12/18/2003

Job Number.: 222519
Customer...: ENSR
Attn.....: Mack Astorga

Project Number.....: 20003849
Customer Project ID....: DOVER AFB
Project Description....: Dover AFB

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
222519-1	B-8(3-5)	Soil	11/20/2003	08:50	11/21/2003	09:30
222519-2	B-5(3-5)	Soil	11/20/2003	09:15	11/21/2003	09:30
222519-3	FB112003	Water	11/20/2003	10:40	11/21/2003	09:30
222519-4	B-8 CUTTINGS	Soil	11/20/2003	11:20	11/21/2003	09:30
222519-5	B-19 CUTTINGS	Soil	11/20/2003	11:30	11/21/2003	09:30
222519-6	B-3 CUTTINGS	Soil	11/20/2003	11:50	11/21/2003	09:30
222519-7	B-14(3-5)	Soil	11/20/2003	15:55	11/21/2003	09:30
222519-8	B-9(5-7)	Soil	11/20/2003	16:20	11/21/2003	09:30

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222519

Date:12/18/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-8(3-5)
Date Sampled.....: 11/20/2003
Time Sampled.....: 08:50
Sample Matrix.....: Soil

Laboratory Sample ID: 222519-1
Date Received.....: 11/21/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.0	18	1.00000	ug/Kg	104684		12/15/03 1557	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104684		12/15/03 1557	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104684		12/15/03 1557	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104684		12/15/03 1557	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104684		12/15/03 1557	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104684		12/15/03 1557	pjg
	Aroclor 1260, 3541 Solid*	5.4	J	a	1.5	18	1.00000	ug/Kg	104684		12/15/03 1557	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	830			29	46	10.0000	mg/Kg	103774		12/07/03 1616	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), High/Med L*vel	560000			49000	240000	50.00	ug/Kg	103539		11/30/03 0910	wre
Method	% Solids Determination											
	% Solids, Solid	89.7			0.10	0.10	1	%	102742		11/25/03 2321	clb
	% Moisture, Solid	10.3			0.10	0.10	1	%	102742		11/25/03 2321	clb
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	1.3	U		1.3	1.3	1	mg/Kg	103573		12/04/03 1649	rmm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	104230		12/11/03 0600	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.4				0.2	1	pH Units	104003		12/09/03 1325	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1325	nrp

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222519

Date:12/18/2003

CUSTOMER: EMSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-8(3-5)
Date Sampled.....: 11/20/2003
Time Sampled.....: 08:50
Sample Matrix.....: Soil

Laboratory Sample ID: 222519-1
Date Received.....: 11/21/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	240	U		89	240	1	mg/Kg	103930		12/05/03 1342	rnm
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	10	U		2.0	10	1.00000	ug/Kg	102991		11/26/03 2113	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	10	U		1.3	10	1.00000	ug/Kg	102991		11/26/03 2113	jdn
	Benzene, Solid*	10	U		1.3	10	1.00000	ug/Kg	102991		11/26/03 2113	jdn
	Trichloroethene, Solid*	10	U		1.2	10	1.00000	ug/Kg	102991		11/26/03 2113	jdn
	Toluene, Solid*	10	U		2.0	10	1.00000	ug/Kg	102991		11/26/03 2113	jdn
	Ethylbenzene, Solid*	12			2.2	10	1.00000	ug/Kg	102991		11/26/03 2113	jdn
	Xylenes (total), Solid*	10	U		5.9	10	1.00000	ug/Kg	102991		11/26/03 2113	jdn
	tert-Butyl alcohol, Solid*	400	U		290	400	1.00000	ug/Kg	102991		11/26/03 2113	jdn
	tert-amyl methyl ether, Solid*	10	U		1.3	10	1.00000	ug/Kg	102991		11/26/03 2113	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222519

Date:12/18/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: B-5(3-5)
Date Sampled.....: 11/20/2003
Time Sampled.....: 09:15
Sample Matrix.....: Soil

Laboratory Sample ID: 222519-2
Date Received.....: 11/21/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	19	U		2.2	19	1.00000	ug/Kg	104684		12/15/03 1630	pjg
	Aroclor 1221, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 1630	pjg
	Aroclor 1232, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 1630	pjg
	Aroclor 1242, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 1630	pjg
	Aroclor 1248, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 1630	pjg
	Aroclor 1254, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 1630	pjg
	Aroclor 1260, 3541 Solid*	19	U		1.6	19	1.00000	ug/Kg	104684		12/15/03 1630	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.7	U		2.9	4.7	1.00000	mg/Kg	103774		12/05/03 2239	mgk
Method	% Solids Determination											
	% Solids, Solid	87.2			0.10	0.10	1	%	102742		11/25/03 2321	clb
	% Moisture, Solid	12.8			0.10	0.10	1	%	102742		11/25/03 2321	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	27	J	a	11	57	1.00000	ug/Kg	103531		12/04/03 0159	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	1.9	U		1.9	1.9	1	mg/Kg	103573		12/04/03 1649	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	104230		12/11/03 0651	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	7.8				0.2	1	pH Units	104003		12/09/03 1326	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1326	nrp

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222519

Date:12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-5(3-5)
Date Sampled.....: 11/20/2003
Time Sampled.....: 09:15
Sample Matrix.....: Soil

Laboratory Sample ID: 222519-2
Date Received.....: 11/21/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	250	U		90	250	1	mg/Kg	103930		12/05/03 1345	rnm
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	8.0	U		1.6	8.0	1.00000	ug/Kg	102991		11/26/03 1707	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	8.0	U		1.0	8.0	1.00000	ug/Kg	102991		11/26/03 1707	jdn
	Benzene, Solid*	8.0	U		1.1	8.0	1.00000	ug/Kg	102991		11/26/03 1707	jdn
	Trichloroethene, Solid*	8.0	U		0.94	8.0	1.00000	ug/Kg	102991		11/26/03 1707	jdn
	Toluene, Solid*	8.0	U		1.6	8.0	1.00000	ug/Kg	102991		11/26/03 1707	jdn
	Ethylbenzene, Solid*	8.0	U		1.8	8.0	1.00000	ug/Kg	102991		11/26/03 1707	jdn
	Xylenes (total), Solid*	8.0	U		4.6	8.0	1.00000	ug/Kg	102991		11/26/03 1707	jdn
	tert-Butyl alcohol, Solid*	320	U		230	320	1.00000	ug/Kg	102991		11/26/03 1707	jdn
	tert-amyl methyl ether, Solid*	8.0	U		0.99	8.0	1.00000	ug/Kg	102991		11/26/03 1707	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222519

Date:12/18/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB112003
Date Sampled.....: 11/20/2003
Time Sampled.....: 10:40
Sample Matrix.....: Water

Laboratory Sample ID: 222519-3
Date Received.....: 11/21/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016	0.50	U		0.17	0.50	1.00000	ug/L	104392		11/28/03 0715	pjg
	Aroclor 1221	0.50	U		0.46	0.50	1.00000	ug/L	104392		11/28/03 0715	pjg
	Aroclor 1232	0.50	U		0.22	0.50	1.00000	ug/L	104392		11/28/03 0715	pjg
	Aroclor 1242	0.50	U		0.19	0.50	1.00000	ug/L	104392		11/28/03 0715	pjg
	Aroclor 1248	0.50	U		0.21	0.50	1.00000	ug/L	104392		11/28/03 0715	pjg
	Aroclor 1254	0.50	U		0.13	0.50	1.00000	ug/L	104392		11/28/03 0715	pjg
	Aroclor 1260	0.50	U		0.15	0.50	1.00000	ug/L	104392		11/28/03 0715	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO)	0.12	U		0.029	0.12	1.00000	mg/L	103778		12/02/03 1512	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO)	50	U		7.1	50	1.00000	ug/L	103536		11/30/03 1352	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide	0.01	U		0.01	0.01	1	mg/L	103380		12/03/03 1737	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint)	>200					1	degrees F	103850		12/06/03 0800	jmk
9040B	pH (Liquid)											
	Corrosivity (pH-Liquids)	5.23			0.20	0.20	1	pH Units	102622		11/21/03 1542	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide	1.0	U		1.0	1.0	1	mg/L	103054		11/26/03 1623	bms
8260B	Volatile Organics (5mL Purge)											
	1,1-Dichloroethene	5.0	U		1.7	5.0	1.00000	ug/L	102701		11/25/03 1200	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222519

Date:12/18/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB112003
Date Sampled.....: 11/20/2003
Time Sampled.....: 10:40
Sample Matrix.....: Water

Laboratory Sample ID: 222519-3
Date Received.....: 11/21/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Methyl-tert-butyl-ether (MTBE)	5.0	U		2.0	5.0	1.00000	ug/L	102701		11/25/03 1200	jdn
	Benzene	5.0	U		0.96	5.0	1.00000	ug/L	102701		11/25/03 1200	jdn
	Trichloroethene	5.0	U		1.6	5.0	1.00000	ug/L	102701		11/25/03 1200	jdn
	Toluene	5.0	U		1.1	5.0	1.00000	ug/L	102701		11/25/03 1200	jdn
	Ethylbenzene	5.0	U		0.93	5.0	1.00000	ug/L	102701		11/25/03 1200	jdn
	Xylenes (total)	5.0	U		1.8	5.0	1.00000	ug/L	102701		11/25/03 1200	jdn
	tert-Butyl alcohol	200	U		30	200	1.00000	ug/L	102701		11/25/03 1200	jdn
	tert-amyl methyl ether	5.0	U		0.47	5.0	1.00000	ug/L	102701		11/25/03 1200	jdn

* In Description = Dry Wgt.

Amendment No. 0010

LABORATORY TEST RESULTS

Job Number: 222519

Date:12/18/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-8 CUTTINGS
Date Sampled.....: 11/20/2003
Time Sampled.....: 11:20
Sample Matrix.....: Soil

Laboratory Sample ID: 222519-4
Date Received.....: 11/21/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
Method	% Solids Determination											
	% Solids, Solid	82.3			0.10	0.10	1	%	103206		12/03/03 1840	pfk
	% Moisture, Solid	17.7			0.10	0.10	1	%	103206		12/03/03 1840	pfk
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	1.0	U		1.0	1.0	1	mg/Kg	103573		12/04/03 1650	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	110					1	degrees F	104230		12/11/03 1017	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.9				0.2	1	pH Units	104003		12/09/03 1327	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1327	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	240	U		87	240	1	mg/Kg	104015		12/09/03 1446	bms
8260B	Volatile Organics											
	Vinyl chloride, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1730	jdn
	1,1-Dichloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1730	jdn
	2-Butanone (MEK), TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1730	jdn
	Chloroform, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1730	jdn
	Carbon tetrachloride, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1730	jdn
	Benzene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1730	jdn
	1,2-Dichloroethane, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1730	jdn
	Trichloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1730	jdn
	Tetrachloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1730	jdn
	Chlorobenzene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1730	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222519

Date:12/18/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-19 CUTTINGS
Date Sampled.....: 11/20/2003
Time Sampled.....: 11:30
Sample Matrix.....: Soil

Laboratory Sample ID: 222519-5
Date Received.....: 11/21/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
Method	% Solids Determination											
	% Solids, Solid	81.3			0.10	0.10	1	%	103206		12/03/03 1840	pfk
	% Moisture, Solid	18.7			0.10	0.10	1	%	103206		12/03/03 1840	pfk
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	1.0	U		1.0	1.0	1	mg/Kg	103573		12/04/03 1650	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	104230		12/11/03 1109	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.5				0.2	1	pH Units	104003		12/09/03 1329	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1329	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	230	U		85	230	1	mg/Kg	104015		12/09/03 1449	bms
8260B	Volatile Organics											
	Vinyl chloride, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1752	jdn
	1,1-Dichloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1752	jdn
	2-Butanone (MEK), TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1752	jdn
	Chloroform, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1752	jdn
	Carbon tetrachloride, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1752	jdn
	Benzene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1752	jdn
	1,2-Dichloroethane, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1752	jdn
	Trichloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1752	jdn
	Tetrachloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1752	jdn
	Chlorobenzene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1752	jdn

* In Description = Dry Wgt.

Amendment No. 0010

LABORATORY TEST RESULTS

Job Number: 222519

Date:12/18/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-3 CUTTINGS
Date Sampled.....: 11/20/2003
Time Sampled.....: 11:50
Sample Matrix.....: Soil

Laboratory Sample ID: 222519-6
Date Received.....: 11/21/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
Method	% Solids Determination											
	% Solids, Solid	82.8			0.10	0.10	1	%	103206		12/03/03 1840	pfk
	% Moisture, Solid	17.2			0.10	0.10	1	%	103206		12/03/03 1840	pfk
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	2.4	U		2.4	2.4	1	mg/Kg	103573		12/04/03 1651	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	104230		12/11/03 1200	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	7.6				0.2	1	pH Units	104003		12/09/03 1330	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1330	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	170	U		63	170	1	mg/Kg	104015		12/09/03 1452	bms
8260B	Volatile Organics											
	Vinyl chloride, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1814	jdn
	1,1-Dichloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1814	jdn
	2-Butanone (MEK), TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1814	jdn
	Chloroform, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1814	jdn
	Carbon tetrachloride, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1814	jdn
	Benzene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1814	jdn
	1,2-Dichloroethane, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1814	jdn
	Trichloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1814	jdn
	Tetrachloroethene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1814	jdn
	Chlorobenzene, TCLP Leach	100	U		25	100	1.0000	ug/L	103181		12/02/03 1814	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222519

Date:12/18/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: B-14(3-5)
Date Sampled.....: 11/20/2003
Time Sampled.....: 15:55
Sample Matrix.....: Soil

Laboratory Sample ID: 222519-7
Date Received.....: 11/21/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104684		12/15/03 1702	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104684		12/15/03 1702	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104684		12/15/03 1702	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104684		12/15/03 1702	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104684		12/15/03 1702	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.2	18	1.00000	ug/Kg	104684		12/15/03 1702	pjg
	Aroclor 1260, 3541 Solid*	18	U		1.6	18	1.00000	ug/Kg	104684		12/15/03 1702	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.7	U		2.9	4.7	1.00000	mg/Kg	103774		12/05/03 2317	mgk
Method	% Solids Determination											
	% Solids, Solid	89.4			0.10	0.10	1	%	102742		11/25/03 2321	clb
	% Moisture, Solid	10.6			0.10	0.10	1	%	102742		11/25/03 2321	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	56	U		11	56	1.00000	ug/Kg	103541		11/30/03 0919	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	2.5	U		2.5	2.5	1	mg/Kg	103573		12/04/03 1652	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	104230		12/11/03 0743	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.9				0.2	1	pH Units	104003		12/09/03 1331	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1331	nrp

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222519

Date:12/18/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: B-14(3-5)
Date Sampled.....: 11/20/2003
Time Sampled.....: 15:55
Sample Matrix.....: Soil

Laboratory Sample ID: 222519-7
Date Received.....: 11/21/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	250	U		90	250	1	mg/Kg	103930		12/05/03 1348	rnm
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	11	U		2.2	11	1.00000	ug/Kg	102991		11/26/03 1450	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	11	U		1.4	11	1.00000	ug/Kg	102991		11/26/03 1450	jdn
	Benzene, Solid*	11	U		1.4	11	1.00000	ug/Kg	102991		11/26/03 1450	jdn
	Trichloroethene, Solid*	11	U		1.3	11	1.00000	ug/Kg	102991		11/26/03 1450	jdn
	Toluene, Solid*	11	U		2.2	11	1.00000	ug/Kg	102991		11/26/03 1450	jdn
	Ethylbenzene, Solid*	11	U		2.4	11	1.00000	ug/Kg	102991		11/26/03 1450	jdn
	Xylenes (total), Solid*	11	U		6.3	11	1.00000	ug/Kg	102991		11/26/03 1450	jdn
	tert-Butyl alcohol, Solid*	430	U		310	430	1.00000	ug/Kg	102991		11/26/03 1450	jdn
	tert-amyl methyl ether, Solid*	11	U		1.3	11	1.00000	ug/Kg	102991		11/26/03 1450	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222519

Date:12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-9(5-7)
Date Sampled.....: 11/20/2003
Time Sampled.....: 16:20
Sample Matrix.....: Soil

Laboratory Sample ID: 222519-8
Date Received.....: 11/21/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		2.0	18	1.00000	ug/Kg	104684		12/15/03 1840	pjg
	Aroclor 1221, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104684		12/15/03 1840	pjg
	Aroclor 1232, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104684		12/15/03 1840	pjg
	Aroclor 1242, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104684		12/15/03 1840	pjg
	Aroclor 1248, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104684		12/15/03 1840	pjg
	Aroclor 1254, 3541 Solid*	18	U		2.1	18	1.00000	ug/Kg	104684		12/15/03 1840	pjg
	Aroclor 1260, 3541 Solid*	2.7	J	a	1.5	18	1.00000	ug/Kg	104684		12/15/03 1840	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	11			2.7	4.4	1.00000	mg/Kg	103774		12/06/03 0113	mgk
Method	% Solids Determination											
	% Solids, Solid	93.4			0.10	0.10	1	%	102742		11/25/03 2321	clb
	% Moisture, Solid	6.6			0.10	0.10	1	%	102742		11/25/03 2321	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	54	U		10	54	1.00000	ug/Kg	103541		11/30/03 1106	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	1.8	U		1.8	1.8	1	mg/Kg	103573		12/04/03 1655	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	104230		12/11/03 0834	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	6.8				0.2	1	pH Units	104003		12/09/03 1335	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1335	nrp

* In Description = Dry Wgt.

Amendment No. 0010

LABORATORY TEST RESULTS

Job Number: 222519

Date:12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-9(5-7)
Date Sampled.....: 11/20/2003
Time Sampled.....: 16:20
Sample Matrix.....: Soil

Laboratory Sample ID: 222519-8
Date Received.....: 11/21/2003
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	230	U		83	230	1	mg/Kg	104015		12/09/03 1455	bms
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	8.3	U		1.7	8.3	1.00000	ug/Kg	102991		11/26/03 1612	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	8.3	U		1.1	8.3	1.00000	ug/Kg	102991		11/26/03 1612	jdn
	Benzene, Solid*	8.3	U		1.1	8.3	1.00000	ug/Kg	102991		11/26/03 1612	jdn
	Trichloroethene, Solid*	8.3	U		0.98	8.3	1.00000	ug/Kg	102991		11/26/03 1612	jdn
	Toluene, Solid*	8.3	U		1.7	8.3	1.00000	ug/Kg	102991		11/26/03 1612	jdn
	Ethylbenzene, Solid*	8.3	U		1.8	8.3	1.00000	ug/Kg	102991		11/26/03 1612	jdn
	Xylenes (total), Solid*	8.3	U		4.8	8.3	1.00000	ug/Kg	102991		11/26/03 1612	jdn
	tert-Butyl alcohol, Solid*	330	U		240	330	1.00000	ug/Kg	102991		11/26/03 1612	jdn
	tert-amyl methyl ether, Solid*	8.3	U		1.0	8.3	1.00000	ug/Kg	102991		11/26/03 1612	jdn

* In Description = Dry Wgt.

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LABORATORY CHRONICLE

Job Number: 222519 Date: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222519-1 Client ID: B-8(3-5) Date Recvd: 11/21/2003 Sample Date: 11/20/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102742		11/25/2003	2321	
5030A	5030 GC VOA (High Level Methanol)	1	103538		11/30/2003	0100	
5035	5035 Archon Closed Purge & Trap	1	102897		11/26/2003	2113	
5035	5035 Preservation High (Methanol)	1	102989		11/22/2003	0605	
5035	5035 Preservation High (Methanol)	1	103537		11/22/2003	0605	
5035	5035 Preservation Low	1	102988		11/22/2003	0605	
5035	5035 Preservation Low	2	102988		11/22/2003	0605	
EDD	Electronic Data Deliverable	1					
3541	Extraction Soxhlet (DRO)	1	103128		12/02/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	103369		12/04/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	104230	104230	12/11/2003	0600	
8082	PCB Analysis	1	104684	103369	12/15/2003	1557	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	103573	103573	12/04/2003	1649	
7.3.4.2/9034	Reactivity, Sulfide	1	103930	103930	12/05/2003	1342	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103774	103128	12/07/2003	1616	10.0000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	103539	103537-103538	11/30/2003	0910	50.00
8260B	Volatile Organics	1	102991	102988-102897	11/26/2003	2113	1.00000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1325	

Lab ID: 222519-2 Client ID: B-5(3-5) Date Recvd: 11/21/2003 Sample Date: 11/20/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102742		11/25/2003	2321	
5030A	5030 Purge & Trap	1	103530		12/03/2003	2200	
5035	5035 Archon Closed Purge & Trap	1	102897		11/26/2003	1707	
5035	5035 Preservation High (Methanol)	1	102989		11/22/2003	0605	
5035	5035 Preservation Low	1	102988		11/22/2003	0606	
5035	5035 Preservation Low	2	102988		11/22/2003	0606	
3541	Extraction Soxhlet (DRO)	1	103128		12/02/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	103369		12/04/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	104230	104230	12/11/2003	0651	
8082	PCB Analysis	1	104684	103369	12/15/2003	1630	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	103573	103573	12/04/2003	1649	
7.3.4.2/9034	Reactivity, Sulfide	1	103930	103930	12/05/2003	1345	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103774	103128	12/05/2003	2239	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	103531	103530	12/04/2003	0159	1.00000
8260B	Volatile Organics	1	102991	102988-102897	11/26/2003	1707	1.00000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1326	

Lab ID: 222519-3 Client ID: FB112003 Date Recvd: 11/21/2003 Sample Date: 11/20/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030 5 mL Purge Prep	1	102698		11/25/2003	1200	
5030A	5030 Purge & Trap	1	103535		11/30/2003	0100	
3520C	Extraction Continuous Liq/Liq (PCBs)	1	102625		11/25/2003	1100	
3510C	Extraction Sep. Funnel (Diesel)	1	102768		11/26/2003	1045	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	103850	103850	12/06/2003	0800	
8082	PCB Analysis	1	104392	102625	11/28/2003	0715	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	103380	103380	12/03/2003	1737	
7.3.4.2/9034	Reactivity, Sulfide	1	103054	103054	11/26/2003	1623	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103778	102768	12/02/2003	1512	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	103536	103535	11/30/2003	1352	1.00000
8260B	Volatile Organics (5mL Purge)	1	102701	102698	11/25/2003	1200	1.00000
9040B	pH (Liquid)	1	102622	102622	11/21/2003	1542	

Lab ID: 222519-4 Client ID: B-8 CUTTINGS Date Recvd: 11/21/2003 Sample Date: 11/20/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	103206		12/03/2003	1840	

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LABORATORY CHRONICLE

Job Number: 222519 Date: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222519-4 Client ID: B-8 CUTTINGS Date Recvd: 11/21/2003 Sample Date: 11/20/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030CP TCLP/SPLP Prep	1	103180		12/02/2003	1730	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	104230	104230	12/11/2003	1017	
7.3.3.2/9014	Reactivity, Cyanide	1	103573	103573	12/04/2003	1650	
7.3.4.2/9034	Reactivity, Sulfide	1	104015	104015	12/09/2003	1446	
1311	TCLP Zero Headspace Extraction	1	103025		12/01/2003	1655	
8260B	Volatile Organics	1	103181	103180-103025	12/02/2003	1730	1.0000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1327	

Lab ID: 222519-5 Client ID: B-19 CUTTINGS Date Recvd: 11/21/2003 Sample Date: 11/20/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	103206		12/03/2003	1840	
5030B	5030CP TCLP/SPLP Prep	1	103180		12/02/2003	1752	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	104230	104230	12/11/2003	1109	
7.3.3.2/9014	Reactivity, Cyanide	1	103573	103573	12/04/2003	1650	
7.3.4.2/9034	Reactivity, Sulfide	1	104015	104015	12/09/2003	1449	
1311	TCLP Zero Headspace Extraction	1	103025		12/01/2003	1655	
8260B	Volatile Organics	1	103181	103180-103025	12/02/2003	1752	1.0000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1329	

Lab ID: 222519-6 Client ID: B-3 CUTTINGS Date Recvd: 11/21/2003 Sample Date: 11/20/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	103206		12/03/2003	1840	
5030B	5030CP TCLP/SPLP Prep	1	103180		12/02/2003	1814	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	104230	104230	12/11/2003	1200	
7.3.3.2/9014	Reactivity, Cyanide	1	103573	103573	12/04/2003	1651	
7.3.4.2/9034	Reactivity, Sulfide	1	104015	104015	12/09/2003	1452	
1311	TCLP Zero Headspace Extraction	1	103025		12/01/2003	1655	
8260B	Volatile Organics	1	103181	103180-103025	12/02/2003	1814	1.0000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1330	

Lab ID: 222519-7 Client ID: B-14(3-5) Date Recvd: 11/21/2003 Sample Date: 11/20/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102742		11/25/2003	2321	
5030A	5030 Purge & Trap	1	103540		11/30/2003	0500	
5035	5035 Archon Closed Purge & Trap	1	102897		11/26/2003	1450	
5035	5035 Preservation High (Methanol)	1	102989		11/22/2003	0606	
5035	5035 Preservation Low	1	102988		11/22/2003	0607	
5035	5035 Preservation Low	2	102988		11/22/2003	0607	
3541	Extraction Soxhlet (DRO)	1	103128		12/02/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	103369		12/04/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	104230	104230	12/11/2003	0743	
8082	PCB Analysis	1	104684	103369	12/15/2003	1702	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	103573	103573	12/04/2003	1652	
7.3.4.2/9034	Reactivity, Sulfide	1	103930	103930	12/05/2003	1348	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103774	103128	12/05/2003	2317	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	103541	103540	11/30/2003	0919	1.00000
8260B	Volatile Organics	1	102991	102988-102897	11/26/2003	1450	1.00000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1331	

Lab ID: 222519-8 Client ID: B-9(5-7) Date Recvd: 11/21/2003 Sample Date: 11/20/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102742		11/25/2003	2321	
5030A	5030 Purge & Trap	1	103540		11/30/2003	0500	
5035	5035 Archon Closed Purge & Trap	1	102897		11/26/2003	1612	
5035	5035 Preservation High (Methanol)	1	102989		11/22/2003	0606	

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LABORATORY CHRONICLE

Job Number: 222519 Date: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222519-8 Client ID: B-9(5-7) Date Recvd: 11/21/2003 Sample Date: 11/20/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5035	5035 Preservation Low	1	102988		11/22/2003	0609	
5035	5035 Preservation Low	2	102988		11/22/2003	0609	
3541	Extraction Soxhlet (DRO)	1	103128		12/02/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	103369		12/04/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	104230	104230	12/11/2003	0834	
8082	PCB Analysis	1	104684	103369	12/15/2003	1840	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	103573	103573	12/04/2003	1655	
7.3.4.2/9034	Reactivity, Sulfide	1	104015	104015	12/09/2003	1455	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103774	103128	12/06/2003	0113	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	103541	103540	11/30/2003	1106	1.00000
8260B	Volatile Organics	1	102991	102988-102897	11/26/2003	1612	1.00000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1335	

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SURROGATE RECOVERIES REPORT

Job Number.: 222519 Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: Water Prep Batch..: 102768
Method Code...: 8015D Batch(s).....: 103778

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCD			12/02/2003	88	89
LCS			12/02/2003	88	91
MB			12/02/2003	80	87
222519- 3		FB112003	12/02/2003	79	86

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 119
OTERPH	o-Terphenyl (surr)	58 - 119

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: 3541 Solid Prep Batch..: 103128
Method Code...: 8015D Batch(s).....: 103774

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCS			12/04/2003	104*	106
MB			12/04/2003	92	94
222519- 1		B-8(3-5)	12/07/2003	319*I	111
222519- 2		B-5(3-5)	12/05/2003	86	92
222519- 7		B-14(3-5)	12/05/2003	23*	101
222519- 7	MS	B-14(3-5)	12/05/2003	85	91
222519- 7	MSD	B-14(3-5)	12/06/2003	100	104
222519- 8		B-9(5-7)	12/06/2003	94	104

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 103
OTERPH	o-Terphenyl (surr)	44 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222519 Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Solid Prep Batch..: 103530
Method Code...: 8015G Batch(s).....: 103531

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			12/04/2003	90	96
MB			12/04/2003	82	87
222519- 2		B-5(3-5)	12/04/2003	79	84
222519- 2	MS	B-5(3-5)	12/04/2003	87	92
222519- 2	MSD	B-5(3-5)	12/04/2003	86	92

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	68 - 113
BRFLBE	4-Bromofluorobenzene (surr)	41 - 125

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Water Prep Batch..: 103535
Method Code...: 8015G Batch(s).....: 103536

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/30/2003	97	110
MB			11/30/2003	93	95
222519- 3		FB112003	11/30/2003	95	98

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	79 - 110
BRFLBE	4-Bromofluorobenzene (surr)	67 - 124

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: High/Med Level Prep Batch..: 103537
Method Code...: 8015G Batch(s).....: 103539

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
222519- 1		B-8(3-5)	11/30/2003	91	113

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	76 - 110
BRFLBE	4-Bromofluorobenzene (surr)	48 - 173

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: High/Med Level Prep Batch..: 103538
Method Code...: 8015G Batch(s).....: 103539

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/30/2003	97	108
MB			11/30/2003	94	94

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	76 - 110
BRFLBE	4-Bromofluorobenzene (surr)	48 - 173

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SURROGATE RECOVERIES REPORT

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Meck Astorga

Method.....: TPH - Gasoline Range Organics (GRO)
Method Code...: 8015G

Test Matrix...: Solid
Batch(s).....: 103541

Prep Batch..: 103540

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			11/30/2003	81	86
MB			11/30/2003	75	78
222519- 7		B-14(3-5)	11/30/2003	72	75
222519- 7	MS	B-14(3-5)	11/30/2003	80	85
222519- 7	MSD	B-14(3-5)	11/30/2003	79	85
222519- 8		B-9(5-7)	11/30/2003	74	78

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	68 - 113
BRFLBE	4-Bromofluorobenzene (surr)	41 - 125

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SURROGATE RECOVERIES REPORT

Job Number.: 222519 Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: Water
Batch(s).....: 104392
Prep Batch..: 102625

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			11/28/2003	86	77
MB			11/28/2003	45	90
222519- 3		FB112003	11/28/2003	46	52

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 116
TCX	Tetrachloro-m-xylene (surr)	33 - 111

Method.....: PCB Analysis
Method Code...: 8082
Test Matrix...: 3541 Solid
Batch(s).....: 104684
Prep Batch..: 103369

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			12/15/2003	109	84
MB			12/15/2003	95	86
222519- 1		B-8(3-5)	12/15/2003	89	73
222519- 2		B-5(3-5)	12/15/2003	102	86
222519- 7		B-14(3-5)	12/15/2003	113	84
222519- 7	MS	B-14(3-5)	12/15/2003	89	80
222519- 7	MSD	B-14(3-5)	12/15/2003	115	100
222519- 8		B-9(5-7)	12/15/2003	75	53

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	33 - 131
TCX	Tetrachloro-m-xylene (surr)	42 - 122

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SURROGATE RECOVERIES REPORT

Job Number.: 222519 Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics (5mL Purge) Test Matrix...: Water Prep Batch..: 102698
Method Code...: 8260.5 Batch(s).....: 102701

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/25/2003	89	110	99	113
MB			11/25/2003	81	93	90	100
222519- 3		FB112003	11/25/2003	85	93	92	102

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	66 - 132
BRFLBE	4-Bromofluorobenzene (surr)	79 - 122
DBRFLM	Dibromofluoromethane (surr)	66 - 132
TOLD8	Toluene-d8 (surr)	78 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222519 Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 102991
Prep Batch..: 102897

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/26/2003	93	99	94	108
MB			11/26/2003	98	97	95	107

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 102991
Prep Batch..: 102988

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/26/2003	115	92	106	101
222519- 1		B-8(3-5)	11/26/2003	109	68	111	101
222519- 2		B-5(3-5)	11/26/2003	110	99	99	101
222519- 7		B-14(3-5)	11/26/2003	103	87	90	98
222519- 7	MS	B-14(3-5)	11/26/2003	111	101	107	103
222519- 7	MSD	B-14(3-5)	11/26/2003	106	100	97	102
222519- 8		B-9(5-7)	11/26/2003	106	90	95	98

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: TCLP Leach
Batch(s).....: 103181
Prep Batch..: 103180

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			12/02/2003	96	103	102	113
LCS			12/02/2003	89	103	94	108
MB			12/02/2003	85	91	91	101
222519- 4		B-8 CUTTINGS	12/02/2003	85	92	94	103
222519- 5		B-19 CUTTINGS	12/02/2003	88	92	94	104
222519- 6		B-3 CUTTINGS	12/02/2003	87	92	94	104

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	66 - 132
BRFLBE	4-Bromofluorobenzene (surr)	79 - 122
DBRFLM	Dibromofluoromethane (surr)	66 - 132
TOLD8	Toluene-d8 (surr)	78 - 128

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLPCBA	102625-002		11/28/2003	0308

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104392

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	3.611		5.001	0.500 U	72	%	62-104	
Aroclor 1260	ug/L	4.552		5.010	0.500 U	91	%	69-105	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102625-001		11/28/2003	0232

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104392

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	0.500	U							
Aroclor 1221	ug/L	0.500	U							
Aroclor 1232	ug/L	0.500	U							
Aroclor 1242	ug/L	0.500	U							
Aroclor 1248	ug/L	0.500	U							
Aroclor 1254	ug/L	0.500	U							
Aroclor 1260	ug/L	0.500	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLPCBA	103369-002		12/15/2003	1301

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 104684

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	159.780		166.700	16.700 U	96	%	60-112	
Aroclor 1260, 3541 Solid	ug/Kg	184.736		167.000	16.700 U	111	%	64-119	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		103369-001		12/15/2003	1228

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 104684

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1221, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1232, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1242, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1248, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1254, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1260, 3541 Solid	ug/Kg	16.700	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 104684

Analyst...: pjg

MS	Matrix Spike	003KWLPCBA	222519-7		12/15/2003	1735

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	141.631		184.000	18.437 U	77	%	60-112	
Aroclor 1260, 3541 Solid	ug/Kg	159.991		184.300	18.437 U	87	%	64-119	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MSD	Matrix Spike Duplicate	003KWLPCBA	222519-7		12/15/2003	1808

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 104684

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	186.207	141.631	183.900	18.419	U	101	%	60-112	
							27	R	30	
Aroclor 1260, 3541 Solid	ug/Kg	218.671	159.991	184.300	18.419	U	119	%	64-119	
							31	R	30	*

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLDIEA	103128-002		12/04/2003	1749

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 103774
Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	67.739		66.670	4.199 U	102	%	70-106	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103774

Analyst...: mgk

MB	Method Blank		103128-001		12/04/2003	1710

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	4.199 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103774

Analyst...: mgk

MS	Matrix Spike	003KWLD1EA	222519-7		12/05/2003	2356

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	61.702		73.510	4.630 U	84	%	70-106	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103774

Analyst...: mgk

MSD	Matrix Spike Duplicate	003KWLDIEA	222519-7		12/06/2003	0035

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	72.300	61.702	74.070	4.665 U	98	%	70-106	
						15	R	30	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103778

Analyst...: mgk

LCD	Laboratory Control Sample Duplicate	003KWLDIEA	102768-003		12/02/2003	1121

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.734460	1.755325	2.000000	0.125000 U	87	%	57-107	
						1	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLDIEA	102768-002		12/02/2003	1042

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 103778
Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.755325		2.000000	0.125000 U	88	%	57-107	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 103778
Analyst...: mgk

MB	Method Blank		102768-001		12/02/2003	1003

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	0.125000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 103531
Analyst...: wre

LCS	Laboratory Control Sample	G03L030SA	103530-002		12/04/2003	0123

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	388.782		400.000	50.000 U	97	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 103531
Analyst...: wre

MB	Method Blank		103530-001		12/04/2003	0048

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	50.000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MS	Matrix Spike	G03L03DSA	222519-2		12/04/2003	0234

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 103531
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	410.143		458.700	26.960 J	89	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MSD	Matrix Spike Duplicate	G03L03DSA	222519-2		12/04/2003	0310

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 103531
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	445.216	410.143	458.700	26.960 J	97	%	79-130	
						9	R	30	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K30DSA	103535-002		11/30/2003	0424

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 103536
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	443.197		400.000	50.000 U	111	%	85-124	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 103536
Analyst...: wre

MB	Method Blank		103535-001		11/30/2003	0349

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	50.000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K30DSA	103538-002		11/30/2003	0424

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 103539
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), High/Me	ug/Kg	22184.600		20000.000	2500.000 U	111	%	77-127	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 103539
Analyst...: wre

MB	Method Blank		103538-001		11/30/2003	0349

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), High/Me	ug/Kg	2500.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03K300SA	103540-002		11/30/2003	0808

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 103541
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	394.017		400.000	50.000 U	99	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 103541
Analyst...: wre

MB	Method Blank		103540-001		11/30/2003	0733

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	50.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 103541
Analyst...: wre

MS	Matrix Spike	G03K300SA	222519-7		11/30/2003	0955

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	438.015		447.400	55.928 U	98	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MSD	Matrix Spike Duplicate	G03K30DSA	222519-7		11/30/2003	1030

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 103541
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	401.692	438.015	447.400	55.928 U	90	%	79-130	
						9	R	30	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519 Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	-222519	102988-011		11/26/2003	1422

Test Method.....: 8260B Equipment Code....: GCL6 Analyst...: jdn
Method Description.: Volatile Organics Batch.....: 102991

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519 Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K26DSG	102897-017		11/26/2003	1309

Test Method.....: 8260B
Method Description.: Volatile Organics
Equipment Code....: GCL6
Batch.....: 102991
Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	34.007		50.000	5.000 U	68	%	51-132	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	52.671		50.000	5.000 U	105	%	61-132	
Benzene, Solid	ug/Kg	44.911		50.000	5.000 U	90	%	72-128	
Trichloroethene, Solid	ug/Kg	47.836		50.000	5.000 U	96	%	75-129	
Toluene, Solid	ug/Kg	49.947		50.000	5.000 U	100	%	75-125	
Ethylbenzene, Solid	ug/Kg	48.085		50.000	5.000 U	96	%	79-123	
Xylenes (total), Solid	ug/Kg	145.875		150.000	5.000 U	97	%	82-125	

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519 Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102897-016		11/26/2003	1242

Test Method.....: 8260B Equipment Code....: GCL6 Analyst...: jdn
Method Description.: Volatile Organics Batch.....: 102991

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102991

Analyst...: jdn

MS	Matrix Spike	V03K260SG	222519-7		11/26/2003	2046

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	44.734		70.080	7.008 U	64	%	51-132	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	89.612		70.080	7.008 U	128	%	61-132	
Benzene, Solid	ug/Kg	57.133		70.080	7.008 U	82	%	72-128	
Trichloroethene, Solid	ug/Kg	59.499		70.080	7.008 U	85	%	75-129	
Toluene, Solid	ug/Kg	58.251		70.080	7.008 U	83	%	75-125	
Ethylbenzene, Solid	ug/Kg	56.450		70.080	7.008 U	81	%	79-123	
Xylenes (total), Solid	ug/Kg	170.052		210.300	7.008 U	81	%	82-125	*

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 102991

Analyst...: jdn

MSD	Matrix Spike Duplicate	V03K26DSG	222519-7		11/26/2003	1544

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	54.060	44.734	85.780	8.578	U	63 2	% R	51-132 20	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	106.107	89.612	85.780	8.578	U	124 3	% R	61-132 20	
Benzene, Solid	ug/Kg	68.654	57.133	85.780	8.578	U	80 2	% R	72-128 20	
Trichloroethene, Solid	ug/Kg	72.169	59.499	85.780	8.578	U	84 1	% R	75-129 20	
Toluene, Solid	ug/Kg	73.983	58.251	85.780	8.578	U	86 4	% R	75-125 20	
Ethylbenzene, Solid	ug/Kg	71.850	56.450	85.780	8.578	U	84 4	% R	79-123 20	
Xylenes (total), Solid	ug/Kg	218.266	170.052	257.300	8.578	U	85 5	% R	82-125 20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519 Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	652,519	103180-003		12/02/2003	1645

Test Method.....: 8260B Equipment Code....: GCL16 Analyst...: jdn
Method Description.: Volatile Organics Batch.....: 103181

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Vinyl chloride, TCLP Leach	ug/L	100.000	U							
1,1-Dichloroethene, TCLP Leach	ug/L	100.000	U							
2-Butanone (MEK), TCLP Leach	ug/L	100.000	U							
Chloroform, TCLP Leach	ug/L	100.000	U							
Carbon tetrachloride, TCLP Leach	ug/L	100.000	U							
Benzene, TCLP Leach	ug/L	100.000	U							
1,2-Dichloroethane, TCLP Leach	ug/L	100.000	U							
Trichloroethene, TCLP Leach	ug/L	100.000	U							
Tetrachloroethene, TCLP Leach	ug/L	100.000	U							
Chlorobenzene, TCLP Leach	ug/L	100.000	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL16
Batch.....: 103181

Analyst...: jdn

LCS	Laboratory Control Sample	V03L02DSB	103180-002		12/02/2003	1214

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Vinyl chloride, TCLP Leach	ug/L	922.024		1000.000	100.000	U	92	%	50-141	
1,1-Dichloroethene, TCLP Leach	ug/L	1051.090		1000.000	100.000	U	105	%	48-132	
2-Butanone (MEK), TCLP Leach	ug/L	933.884		1000.000	100.000	U	93	%	55-140	
Chloroform, TCLP Leach	ug/L	1015.762		1000.000	100.000	U	102	%	66-127	
Carbon tetrachloride, TCLP Leach	ug/L	1147.384		1000.000	100.000	U	115	%	66-121	
Benzene, TCLP Leach	ug/L	1101.770		1000.000	100.000	U	110	%	68-130	
1,2-Dichloroethane, TCLP Leach	ug/L	985.630		1000.000	100.000	U	99	%	68-125	
Trichloroethene, TCLP Leach	ug/L	1194.074		1000.000	100.000	U	119	%	71-128	
Tetrachloroethene, TCLP Leach	ug/L	1233.822		1000.000	100.000	U	123	%	74-123	
Chlorobenzene, TCLP Leach	ug/L	1136.498		1000.000	100.000	U	114	%	77-121	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		103180-001		12/02/2003	1022

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL16
Batch.....: 103181

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Vinyl chloride, TCLP Leach	ug/L	100.000	U							
1,1-Dichloroethene, TCLP Leach	ug/L	100.000	U							
2-Butanone (MEK), TCLP Leach	ug/L	100.000	U							
Chloroform, TCLP Leach	ug/L	100.000	U							
Carbon tetrachloride, TCLP Leach	ug/L	100.000	U							
Benzene, TCLP Leach	ug/L	100.000	U							
1,2-Dichloroethane, TCLP Leach	ug/L	100.000	U							
Trichloroethene, TCLP Leach	ug/L	100.000	U							
Tetrachloroethene, TCLP Leach	ug/L	100.000	U							
Chlorobenzene, TCLP Leach	ug/L	100.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K25DSB	102698-002		11/25/2003	1030

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)

Equipment Code....: GCL16
Batch.....: 102701

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	39.995		50.000	5.000	U	80	%	48-132	
Methyl-tert-butyl-ether (MTBE)	ug/L	55.856		50.000	5.000	U	112	%	49-139	
Benzene	ug/L	51.330		50.000	5.000	U	103	%	68-130	
Trichloroethene	ug/L	57.388		50.000	5.000	U	115	%	71-128	
Toluene	ug/L	55.127		50.000	5.000	U	110	%	72-122	
Ethylbenzene	ug/L	58.873		50.000	5.000	U	118	%	78-121	
Xylenes (total)	ug/L	172.005		150.000	5.000	U	115	%	76-129	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102698-001		11/25/2003	1007

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)

Equipment Code....: GCL16
Batch.....: 102701

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	5.000	U							
Methyl-tert-butyl-ether (MTBE)	ug/L	5.000	U							
Benzene	ug/L	5.000	U							
Trichloroethene	ug/L	5.000	U							
Toluene	ug/L	5.000	U							
Ethylbenzene	ug/L	5.000	U							
Xylenes (total)	ug/L	5.000	U							
tert-Butyl alcohol	ug/L	200.000	U							
tert-amyl methyl ether	ug/L	5.000	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519 Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: Method Batch.....: 102742 Analyst...: clb
Method Description.: % Solids Determination Equipment Code....: Test Code.: %SOLID
Parameter.....: % Solids

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102742-001		%	0.1000 U								11/25/2003	2321
MD	222519-7		%	89.20000			89.40000	0.2		R	5.0	11/25/2003	2321

Test Method.....: Method Batch.....: 103206 Analyst...: pfk
Method Description.: % Solids Determination Equipment Code....: Test Code.: %SOLID
Parameter.....: % Solids

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	103206-001		%	0.1000 U								12/03/2003	1840

Test Method.....: 7.3.3.2/9014 Batch.....: 103380 Analyst...: rnm
Method Description.: Reactivity, Cyanide Equipment Code....: SPEC4 Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	103380-004		mg/L	0.01000 U								12/03/2003	1731
LCS	103380-005	I03ISTCN2	mg/L	0.09480		0.10000	0.01000 U	95		%	80-120	12/03/2003	1732

Test Method.....: 7.3.3.2/9014 Batch.....: 103573 Analyst...: rnm
Method Description.: Reactivity, Cyanide Equipment Code....: SPEC4 Test Code.: REACCN
Parameter.....: Reactivity, Cyanide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	103573-004		mg/L	0.01000 U								12/04/2003	1646
LCS	103573-005	I03ISTCN2	mg/L	0.09950		0.10000	0.01000 U	100		%	85-115	12/04/2003	1647
MS	222519-7	I03ISTCN2	mg/Kg	1.52 U		1.52	1.52 U	88		%	75-125	12/04/2003	1653
MSD	222519-7	I03ISTCN2	mg/Kg	2.07 U	2.07 U	2.07	2.07 U	97		%	75-125	12/04/2003	1654
								9.7		R	20		

Test Method.....: 1010 Batch.....: 104230 Analyst...: jmk
Method Description.: Ignitability (Pensky-Martens Closed-Cup) Equipment Code....: Test Code.: IGNPMC
Parameter.....: Ignitability (Flashpoint)

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MD	222519-7		degrees F	>200			>200					12/11/2003	0926

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519 Report Date.: 12/18/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Meck Astorga

Test Method.....: 9045C Batch.....: 104003 Analyst...: nrp
Method Description.: pH (Soil) Equipment Code....: Test Code.: CORSOL
Parameter.....: Corrosivity (pH Solid)

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MDPH	222519-7		pH Units	7.02000			7.81000	0.82000		A	0.20000	12/09/2003	1334

Test Method.....: 9040B Batch.....: 102622 Analyst...: nrp
Method Description.: pH (Liquid) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	102622-002	I03KPH7B	pH Units	7.02000		7.00000		0.02000		A	0.20000	11/21/2003	1527
LCDP	102622-003	I03KPH7B	pH Units	7.01000		7.00000		0.01000		A	0.20000	11/21/2003	1528
MDPH	222519-3		pH Units	5.26000			5.23000	0.03000		A	0.20000	11/21/2003	1544

Test Method.....: 9045C Batch.....: 104003 Analyst...: nrp
Method Description.: pH (Soil) Equipment Code....: Test Code.: PH
Parameter.....: pH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	104003-002	I03KPH7B	pH Units	6.96000		7.00000		0.04000		A	0.20000	12/09/2003	1301
LCDP	104003-003	I03KPH7B	pH Units	6.96000		7.00000		0.04000		A	0.20000	12/09/2003	1303

Test Method.....: 7.3.4.2/9034 Batch.....: 103054 Analyst...: bms
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	103054-019		mg/Kg	91.00	U							11/26/2003	1613
LCS	103054-020	I03HSTSF1	mg/Kg	96.00	B	151.10	91.00	U 64		%	0-200	11/26/2003	1614

Test Method.....: 7.3.4.2/9034 Batch.....: 103930 Analyst...: rmm
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result	QC Result		True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	103930-001		mg/Kg	91.00	U								12/05/2003	1325
LCS	103930-002	I03HSTSF1	mg/Kg	116.30	B		151.10	91.00	U 77		%	0-200	12/05/2003	1328
MS	222519-7	I03HSTSF1	mg/Kg	88.18	U		151.10	88.18	U 37		%	0-200	12/05/2003	1352
MSD	222519-7	I03HSTSF1	mg/Kg	88.00	U	88.00 U	151.10	88.00	U 35		%	0-200	12/05/2003	1355
									6		R	200		

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222519

Report Date.: 12/18/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Test Method.....: 7.3.4.2/9034
Method Description.: Reactivity, Sulfide
Parameter.....: Reactivity, Sulfide

Batch.....: 104015
Equipment Code....:

Analyst...: bms
Test Code.: REACS

QC	Lab ID	Reagent	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	104015-001		mg/Kg	91.00	U								12/09/2003	1440
LCS	104015-002	103HSTSF1	mg/Kg	142.50	B		151.10		94		%	0-200	12/09/2003	1443

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/18/2003

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Soil, sediment and sludge sample results are reported on a "dry weight" basis except when analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received" basis unless noted differently.
3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
4) The test results for the noted analytical method(s) meet the requirements of NELAC. Lab Cert. ID# 100201
5) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report)

Inorganic Qualifiers (Q-Column)

U Analyte was not detected at or above the stated limit.
< Not detected at or above the reporting limit.
J Result is less than the RL, but greater than or equal to the method detection limit.
B Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.
S Result was determined by the Method of Standard Additions.
F AFCEE: Result is less than the RL, but greater than or equal to the method detection limit.

Inorganic Flags (Flag Column)

^ ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
+ MSA correlation coefficient is less than 0.995.
4 MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
E SD: Serial dilution exceeds the control limits.
H MB, EB1, EB2, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.
N MS, MSD: Spike recovery exceeds the upper or lower control limits.
W AS(GFAA) Post-digestion spike was outside 85-115% control limits.

Organic Qualifiers (Q - Column)

U Analyte was not detected at or above the stated limit.
ND Compound not detected.
J Result is an estimated value below the reporting limit or a tentatively identified compound (TIC).
Q Result was qualitatively confirmed, but not quantified.
C Pesticide identification was confirmed by GC/MS.
Y The chromatographic response resembles a typical fuel pattern.
Z The chromatographic response does not resemble a typical fuel pattern.
E Result exceeded calibration range, secondary dilution required.
F AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)

Organic Flags (Flags Column)

B MB: Batch QC is greater than reporting limit.
* LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits.
^ EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
A Concentration exceeds the instrument calibration range
a Concentration is below the method Reporting Limit (RL)
B Compound was found in the blank and sample.
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
H Alternate peak selection upon analytical review
I Indicates the presence of an interfence, recovery is not calculated.
M Manually integrated compound.
P The lower of the two values is reported when the % difference between the results of two GC columns is

greater than 25%.

Abbreviations

AS	Post Digestion Spike (GFAA Samples - See Note 1 below)
Batch	Designation given to identify a specific extraction, digestion, preparation set, or analysis set
CAP	Capillary Column CCB Continuing Calibration Blank
CCV	Continuing Calibration Verification
CF	Confirmation analysis of original
C1	Confirmation analysis of A1 or D1
C2	Confirmation analysis of A2 or D2
C3	Confirmation analysis of A3 or D3
CRA	Low Level Standard Check - GFAA; Mercury
CRI	Low Level Standard Check - ICP
CV	Calilbration Verification Standard
Dil Fac	Dilution Factor - Secondary dilution analysis
D1	Dilution 1
D2	Dilution 2
D3	Dilution 3
DLFac	Detection Limit Factor
DSH	Distilled Standard - High Level
DSL	Distilled Standard - Low Level
DSM	Distilled Standard - Medium Level
EB1	Extraction Blank 1
EB2	Extraction Blank 2
EB3	DI Blank
ELC	Method Extracted LCS
ELD	Method Extracted LCD
ICAL	Initial calibration
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ISA	Interference Check Sample A - ICAP
ISB	Interference Check Sample B - ICAP
Job No.	The first six digits of the sample ID which refers to a specific client, project and sample group Lab ID An 8 number unique laboratory identification
LCD	Laboratory Control Standard Duplicate
LCS	Laboratory Control Standard with reagent grade water or a matrix free from the analyte of interest
MB	Method Blank or (PB) Preparation Blank
MD	Method Duplicate
MDL	Method Detection Limit
MLE	Medium Level Extraction Blank
MRL	Method Reporting Limit Standard
MSA	Method of Standard Additions
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not Detected
PREPF	Preparation factor used by the Laboratory's Information Management System (LIMS)
PDS	Post Digestion Spike (ICAP)
RA	Re-analysis of original
A1	Re-analysis of D1
A2	Re-analysis of D2
A3	Re-analysis of D3
RD	Re-extraction of dilution
RE	Re-extraction of original
RC	Re-extraction Confirmation
RL	Reporting Limit
RPD	Relative Percent Difference of duplicate (unrounded) analyses
RRF	Relative Response Factor
RT	Retention Time

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/18/2003

RTW	Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number
SCB	Seeded Control Blank
SD	Serial Dilution (Calculated when sample concentration exceeds 50 times the MDL)
UCB	Unseeded Control Blank
SSV	Second Source Verification Standard
SLCS	Solid Laboratory Control Standard(LCS)
PHC	pH Calibration Check LCSP pH Laboratory Control Sample
LCDP	pH Laboratory Control Sample Duplicate
MDPH	pH Sample Duplicate
MDFP	Flashpoint Sample Duplicate
LCFP	Flashpoint LCS
G1	Gelex Check Standard Range 0-1
G2	Gelex Check Standard Range 1-10
G3	Gelex Check Standard Range 10-100
G4	Gelex Check Standard Range 100-1000

Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCS S=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Note 2: The MD calculates an absolute difference (A) when the sample concentration is less than 5 times the reporting limit. The control limit is represented as +/- the RL.

Amendment No. 0010

STL EDISON

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

222519

Name (for report and invoice): Mack Astorga
Company: ENSR International
Address: 2005 Cabot Boulevard West, Suite 100
City: Lansdorne State: PA 19047
Phone: 215-757-4900 Fax: 215-757-3904

Samplers Name (Printed): Rich Firely
P.O. #:

Site/Project Identification: Dover AFB
State (Location of site): NJ: ☐ NY: ☐ Other: DE
Regulatory Program:

Analysis Turnaround Time
Standard ☐
Rush Charges Authorized For:
2 Week ☐
1 Week ☑
Other ☐

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No:

	Sample Identification	Date	Time	Matrix	No. of Cont.	8260B-TCLP TCLP VOA *	8260B APVOA	GRO	DRO	8082-PCB	Reactivity (Cyanide, Sulfide)	Corrosivity	Ignitability				Sample Numbers
1	B-8(3-5)	11/20/03	850	Soil	7	X	X	X	X	X	X	X	X				
2	B-5(3-5)	11/20/03	915	Soil	7	X	X	X	X	X	X	X	X				
3	FB112003	11/20/03	1040	AQ	7		X	X	X	X	X	X	X				
4	B-8 Cuttings	11/20/03	1120	Soil	2	X					X	X	X				
5	B-19 Cuttings	11/20/03	1130	Soil	2	X					X	X	X				
6	B-3 Cuttings	11/20/03	1150	Soil	2	X					X	X	X				
7	B-14(3-5)	↓	1555	Soil	7	X	X	X	X	X	X	X	X				
	B-14(3-5) MS		1555	Soil	7	X	X	X	X	X	X	X	X				
	B-14(3-5) MSD		1555	Soil	7	X	X	X	X	X	X	X	X				
8	B-9(5-7)	✓	1620	Soil	4	X	X	X	X	X	X	X	X				
	Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH — Soil:					1	1,6	1	1	1	1	1	1				
	6 = Other ENCORE, 7 = Other _____ — Water:					1	1,2	1,2	1	1	1	1	1				

Special Instructions: DPVOA - BTEX, Tert-amyl methyl ether, TBA, MTBE, TCE, 1,1-DCE *-only for B-8(3-5), B-5(3-5), B-14a, B-9
Water Metals Filtered (Yes/No)?

Relinquished by	Company	Date / Time	Received by	Company
1) R. Firely	ENSR	11/20/03	1) [signature]	STL 11/21/03 0930
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL-6003

Amendment No. 0010

SEVERN TRENT STL

STL Chicago
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University Park, IL 60466

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SEVERN TRENT LABORATORIES ANALYTICAL REPORT

JOB NUMBER: 222551

Prepared For:

ENSR
2005 Cabot Boulevard West
Suite 100
Langhorne, PA 19047

Project: Dover AFB

Attention: Mack Astorga

Date: 12/16/2003

Signature

Date 12-16-03

Name: Eric A. Lang

Title: Project Manager

E-Mail: elang@stl-inc.com

STL Chicago
2417 Bond Street
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FAX..: (708) 534-5211

This Report Contains (47) Pages

Severn Trent Laboratories Chicago
GC Volatile Case Narrative

ENSR-DOVER AFB
Job Number: 222551
Method 8015B

1. All required holding times were met for the analysis.

2. The Method Blanks had all target compounds below the reporting limits.

3. The surrogate compounds used for this analysis were 4-Bromofluorobenzene and a,a,a-Trifluorotoluene. All surrogate recoveries were within the in-house generated QC limits.

4. The LCS (Laboratory Control Sample) had all spike recoveries within the in-house generated QC limits.

5. The Matrix Spike/Matrix Spike Duplicate (MS/MSD) analyses were not performed on this analytical batch.

6. The initial and continuing standard calibrations associated with these samples were within control limits.

7. The samples were analyzed as low-level waters (-4) and soils (-3) for GRO (GRO) based on SW846 methods 5030 and 8015B. The samples (-1 and -2) were analyzed undiluted using the high level methanol method. A HP 5890 gas chromatograph equipped with a flame-ionization detector (FID) and a Tekmar LSC 2000/2016 ALS was used for the analysis of these samples. The soil results are on a dry weight basis.

Gary Rynkar
GC/VOA Section Manager

12/15/3
Date

STL Chicago
Extractable Hydrocarbon Case Narrative

ENSR
Dover AFB
Job# 222551-1, 2, 3, and 4
Diesel Range Organics (DRO)

1. The water sample associated with this SDG was extracted based on SW846 Method 3510. The soil sample was extracted based on the SW846 method 3541. The extracts were analyzed for DRO based on SW846 method 8015B. A HP5890 gas chromatograph equipped with a flame ionization detector and a Xti-5 column was used for the analysis.

2. All required holding times were met for the extraction and analysis.

3. The method blanks were below the reporting limit for DRO.

4. The surrogate compounds used for this analysis were o-Terphenyl and 2-Fluorobiphenyl. All surrogate recoveries were within statistical control limits except o-Terphenyl in sample 222551-2, which had 130% recovery (flagged "I"), and 2-Fluorobiphenyl in 103128 blank spike, which had 104% recovery.

5. All blank spike and blank spike duplicate recoveries and RPDs were within statistical control limits. A solution of Diesel Fuel was used for spiking.

6. A matrix spike and a matrix spike duplicate were not performed on a sample from this SDG.

7. A Diesel Fuel #2 standard was used for quantitating DRO results, using a hydrocarbon range from C10 through C28. An alkane standard ranging from C8 through C36 was analyzed for qualitative purposes.

8. All initial and continuing standard calibrations associated with these samples were in control.

9. DRO was detected in samples 222551-1 and 2, which appear to match a typical fuel pattern, which is in Diesel fuel hydrocarbon range and "later" than Diesel fuel.

Patti Gibson
Organics Section Manager

12/16/03
Date

Severn Trent Laboratories Chicago
GC/MS Case Narrative

ENSR
Dover AFB
Job Number: 222551
VOA DATA

1. The samples were prepared and analyzed within the recommended hold times from the date of collection.

2. The Method Blanks and Extraction Blanks had all target compounds below the reporting limits.

3. The LCS samples had all controlled spike recoveries within the in-house generated QC limits.

4. Matrix Spike and Matrix Spike Duplicate analyses were not performed on this sample set.

5. The volatile samples had all surrogate recoveries within the in-house generated QC limits.

6. The water samples were prepared using Method 5030. The soil samples were prepared for the low level soil procedure using Method 5035. The samples were analyzed following SW846 Method 8260B and 8000B. All initial and continuing calibration criteria were met per method or SOP (for minimum R values for certain compounds). The low point in the initial calibration verifies the base reporting limits. The target compounds were quantitated using the initial calibration.

7. The volatile samples had all internal standard areas and retention times within the acceptance limits as compared to the corresponding calibration verification standard.

8. The water samples were analyzed using a 5-mL purge volume. The soil samples were analyzed using the 5035 low level soil procedure. The soil results and reporting limits were adjusted to account for the sample weights, the analytical procedure and on a dry weight basis.

John Nagel
GC/MS VOA Dept.

12-2-03
Date

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SAMPLE INFORMATION
Date: 12/16/2003

Job Number.: 222551
Customer...: ENSR
Attn.....: Mack Astorga

Project Number.....: 20003849
Customer Project ID....: DOVER AFB
Project Description....: Dover AFB

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
222551-1	B-11(3-5)	Soil	11/21/2003	07:10	11/22/2003	09:00
222551-2	B-16(3-5)	Soil	11/21/2003	08:15	11/22/2003	09:00
222551-3	B-13(4-6)	Soil	11/21/2003	09:00	11/22/2003	09:00
222551-4	FB112103	Water	11/21/2003	09:45	11/22/2003	09:00
222551-5	DECONFLUID-1	Water	11/21/2003	10:00	11/22/2003	09:00
222551-6	TB103103	Water	11/21/2003	09:00	11/22/2003	09:00

Amendment No. 0010

LABORATORY TEST RESULTS

Job Number: 222551

Date: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-11(3-5)
Date Sampled.....: 11/21/2003
Time Sampled.....: 07:10
Sample Matrix.....: Soil

Laboratory Sample ID: 222551-1
Date Received.....: 11/22/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	20	U		2.2	20	1.00000	ug/Kg	104684		12/15/03 1913	pjg
	Aroclor 1221, 3541 Solid*	20	U		2.4	20	1.00000	ug/Kg	104684		12/15/03 1913	pjg
	Aroclor 1232, 3541 Solid*	20	U		2.4	20	1.00000	ug/Kg	104684		12/15/03 1913	pjg
	Aroclor 1242, 3541 Solid*	20	U		2.4	20	1.00000	ug/Kg	104684		12/15/03 1913	pjg
	Aroclor 1248, 3541 Solid*	20	U		2.4	20	1.00000	ug/Kg	104684		12/15/03 1913	pjg
	Aroclor 1254, 3541 Solid*	20	U		2.4	20	1.00000	ug/Kg	104684		12/15/03 1913	pjg
	Aroclor 1260, 3541 Solid*	20	U		1.7	20	1.00000	ug/Kg	104684		12/15/03 1913	pjg
8015B NDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	45			0.033	4.8	1.00000	mg/Kg	103785		12/06/03 0231	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), High/Med L*vel	11000			870	4400	1.0000	ug/Kg	103534		12/04/03 0547	wre
Method	% Solids Determination											
	% Solids, Solid	84.4			0.10	0.10	1	%	102742		11/25/03 2321	clb
	% Moisture, Solid	15.6			0.10	0.10	1	%	102742		11/25/03 2321	clb
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	1.5	U		1.5	1.5	1	mg/Kg	103573		12/04/03 1655	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	104366		12/12/03 0620	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	7.3				0.2	1	pH Units	104003		12/09/03 1337	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1337	nrp

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222551

Date:12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-11(3-5)
Date Sampled.....: 11/21/2003
Time Sampled.....: 07:10
Sample Matrix.....: Soil

Laboratory Sample ID: 222551-1
Date Received.....: 11/22/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	230	U		85	230	1	mg/Kg	104015		12/09/03 1509	bms
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	10	U		2.0	10	1.00000	ug/Kg	103072		11/26/03 1734	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	10	U		1.3	10	1.00000	ug/Kg	103072		11/26/03 1734	jdn
	Benzene, Solid*	9.8	J	a	1.3	10	1.00000	ug/Kg	103072		11/26/03 1734	jdn
	Trichloroethene, Solid*	10	U		1.2	10	1.00000	ug/Kg	103072		11/26/03 1734	jdn
	Toluene, Solid*	10	U		2.0	10	1.00000	ug/Kg	103072		11/26/03 1734	jdn
	Ethylbenzene, Solid*	10	U		2.2	10	1.00000	ug/Kg	103072		11/26/03 1734	jdn
	Xylenes (total), Solid*	10	U		5.8	10	1.00000	ug/Kg	103072		11/26/03 1734	jdn
	tert-Butyl alcohol, Solid*	400	U		290	400	1.00000	ug/Kg	103072		11/26/03 1734	jdn
	tert-amyl methyl ether, Solid*	10	U		1.2	10	1.00000	ug/Kg	103072		11/26/03 1734	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222551

Date:12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-16(3-5)
Date Sampled.....: 11/21/2003
Time Sampled.....: 08:15
Sample Matrix.....: Soil

Laboratory Sample ID: 222551-2
Date Received.....: 11/22/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	19	U		2.2	19	1.00000	ug/Kg	104684		12/15/03 1946	pjg
	Aroclor 1221, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 1946	pjg
	Aroclor 1232, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 1946	pjg
	Aroclor 1242, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 1946	pjg
	Aroclor 1248, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 1946	pjg
	Aroclor 1254, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 1946	pjg
	Aroclor 1260, 3541 Solid*	19	U		1.6	19	1.00000	ug/Kg	104684		12/15/03 1946	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	170			0.17	25	5.00000	mg/Kg	103785		12/07/03 1733	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), High/Med L*vel	7900			700	3500	1.0000	ug/Kg	103534		12/04/03 0623	wre
Method	% Solids Determination											
	% Solids, Solid	84.2			0.10	0.10	1	%	102742		11/25/03 2321	clb
	% Moisture, Solid	15.8			0.10	0.10	1	%	102742		11/25/03 2321	clb
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	1.9	U		1.9	1.9	1	mg/Kg	103573		12/04/03 1656	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	104366		12/12/03 0810	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	7.3				0.2	1	pH Units	104003		12/09/03 1338	nrp
	Temperature at Analysis, Solid	20.0				1.0	1	pH Units	104003		12/09/03 1338	nrp

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222551

Date:12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-16(3-5)
Date Sampled.....: 11/21/2003
Time Sampled.....: 08:15
Sample Matrix.....: Soil

Laboratory Sample ID: 222551-2
Date Received.....: 11/22/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	220	U		81	220	1	mg/Kg	104015		12/09/03 1512	bms
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	7.2	U		1.4	7.2	1.00000	ug/Kg	103072		11/26/03 1801	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	7.2	U		0.92	7.2	1.00000	ug/Kg	103072		11/26/03 1801	jdn
	Benzene, Solid*	7.2	U		0.95	7.2	1.00000	ug/Kg	103072		11/26/03 1801	jdn
	Trichloroethene, Solid*	7.2	U		0.85	7.2	1.00000	ug/Kg	103072		11/26/03 1801	jdn
	Toluene, Solid*	7.2	U		1.4	7.2	1.00000	ug/Kg	103072		11/26/03 1801	jdn
	Ethylbenzene, Solid*	7.2	U		1.6	7.2	1.00000	ug/Kg	103072		11/26/03 1801	jdn
	Xylenes (total), Solid*	7.2	U		4.2	7.2	1.00000	ug/Kg	103072		11/26/03 1801	jdn
	tert-Butyl alcohol, Solid*	290	U		210	290	1.00000	ug/Kg	103072		11/26/03 1801	jdn
	tert-amyl methyl ether, Solid*	7.2	U		0.89	7.2	1.00000	ug/Kg	103072		11/26/03 1801	jdn

* In Description = Dry Wgt.

Amendment No. 0010

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 222551

Date:12/16/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: B-13(4-6)
Date Sampled.....: 11/21/2003
Time Sampled.....: 09:00
Sample Matrix.....: Soil

Laboratory Sample ID: 222551-3
Date Received.....: 11/22/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	19	U		2.2	19	1.00000	ug/Kg	104684		12/15/03 2018	pjg
	Aroclor 1221, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 2018	pjg
	Aroclor 1232, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 2018	pjg
	Aroclor 1242, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 2018	pjg
	Aroclor 1248, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 2018	pjg
	Aroclor 1254, 3541 Solid*	19	U		2.3	19	1.00000	ug/Kg	104684		12/15/03 2018	pjg
	Aroclor 1260, 3541 Solid*	19	U		1.6	19	1.00000	ug/Kg	104684		12/15/03 2018	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO), 3541 Solid*	4.9	U		0.034	4.9	1.00000	mg/Kg	103785		12/06/03 0506	mgk
Method	% Solids Determination											
	% Solids, Solid	85.2			0.10	0.10	1	%	102742		11/25/03 2321	clb
	% Moisture, Solid	14.8			0.10	0.10	1	%	102742		11/25/03 2321	clb
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO), Solid*	24	J	a	11	59	1.00000	ug/Kg	103531		12/04/03 0345	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide, Solid	2.0	U		2.0	2.0	1	mg/Kg	103573		12/04/03 1657	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint), Solid	>200					1	degrees F	104366		12/12/03 1000	jmk
9045C	pH (Soil)											
	Corrosivity (pH Solid), Solid	5.8				0.2	1	pH Units	104003		12/09/03 1341	nrp
	Temperature at Analysis, Solid	19.0				1.0	1	pH Units	104003		12/09/03 1341	nrp

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222551

Date:12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: B-13(4-6)
Date Sampled.....: 11/21/2003
Time Sampled.....: 09:00
Sample Matrix.....: Soil

Laboratory Sample ID: 222551-3
Date Received.....: 11/22/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide, Solid	240	U		89	240	1	mg/Kg	104015		12/09/03 1515	bms
8260B	Volatile Organics											
	1,1-Dichloroethene, Solid*	8.0	U		1.6	8.0	1.00000	ug/Kg	103072		11/26/03 1829	jdn
	Methyl-tert-butyl-ether (MTBE), Solid*	8.0	U		1.0	8.0	1.00000	ug/Kg	103072		11/26/03 1829	jdn
	Benzene, Solid*	8.0	U		1.1	8.0	1.00000	ug/Kg	103072		11/26/03 1829	jdn
	Trichloroethene, Solid*	8.0	U		0.94	8.0	1.00000	ug/Kg	103072		11/26/03 1829	jdn
	Toluene, Solid*	8.0	U		1.6	8.0	1.00000	ug/Kg	103072		11/26/03 1829	jdn
	Ethylbenzene, Solid*	8.0	U		1.8	8.0	1.00000	ug/Kg	103072		11/26/03 1829	jdn
	Xylenes (total), Solid*	8.0	U		4.6	8.0	1.00000	ug/Kg	103072		11/26/03 1829	jdn
	tert-Butyl alcohol, Solid*	320	U		230	320	1.00000	ug/Kg	103072		11/26/03 1829	jdn
	tert-amyl methyl ether, Solid*	8.0	U		0.99	8.0	1.00000	ug/Kg	103072		11/26/03 1829	jdn

* In Description = Dry Wgt.

Amendment No. 0010

LABORATORY TEST RESULTS

Job Number: 222551

Date:12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: FB112103
Date Sampled.....: 11/21/2003
Time Sampled.....: 09:45
Sample Matrix.....: Water

Laboratory Sample ID: 222551-4
Date Received.....: 11/22/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016	0.51	U		0.17	0.51	1.00000	ug/L	104392		11/28/03 1345	pjg
	Aroclor 1221	0.51	U		0.46	0.51	1.00000	ug/L	104392		11/28/03 1345	pjg
	Aroclor 1232	0.51	U		0.22	0.51	1.00000	ug/L	104392		11/28/03 1345	pjg
	Aroclor 1242	0.51	U		0.19	0.51	1.00000	ug/L	104392		11/28/03 1345	pjg
	Aroclor 1248	0.51	U		0.21	0.51	1.00000	ug/L	104392		11/28/03 1345	pjg
	Aroclor 1254	0.51	U		0.13	0.51	1.00000	ug/L	104392		11/28/03 1345	pjg
	Aroclor 1260	0.51	U		0.15	0.51	1.00000	ug/L	104392		11/28/03 1345	pjg
8015B MDRO	TPH - Diesel Range Organics (DRO)											
	Diesel Range Organics (DRO)	0.13	U		0.029	0.13	1.00000	mg/L	103781		12/02/03 1551	mgk
8015B MGRO	TPH - Gasoline Range Organics (GRO)											
	Gasoline Range Organics (GRO)	50	U		7.1	50	1.00000	ug/L	103529		12/04/03 0734	wre
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide	0.01	U		0.01	0.01	1	mg/L	103380		12/03/03 1738	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint)	>200					1	degrees F	103852		12/08/03 1006	jmk
9040B	pH (Liquid)											
	Corrosivity (pH-Liquids)	5.71			0.20	0.20	1	pH Units	102631		11/24/03 1645	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide	1.0	U		1.0	1.0	1	mg/L	103054		11/26/03 1624	bms
8260B	Volatile Organics (5mL Purge)											
	1,1-Dichloroethene	5.0	U		1.7	5.0	1.00000	ug/L	102701		11/25/03 1223	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222551

Date:12/16/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

Customer Sample ID: FB112103
Date Sampled.....: 11/21/2003
Time Sampled.....: 09:45
Sample Matrix.....: Water

Laboratory Sample ID: 222551-4
Date Received.....: 11/22/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Methyl-tert-butyl-ether (MTBE)	5.0	U		2.0	5.0	1.00000	ug/L	102701		11/25/03 1223	jdn
	Benzene	5.0	U		0.96	5.0	1.00000	ug/L	102701		11/25/03 1223	jdn
	Trichloroethene	5.0	U		1.6	5.0	1.00000	ug/L	102701		11/25/03 1223	jdn
	Toluene	5.0	U		1.1	5.0	1.00000	ug/L	102701		11/25/03 1223	jdn
	Ethylbenzene	5.0	U		0.93	5.0	1.00000	ug/L	102701		11/25/03 1223	jdn
	Xylenes (total)	5.0	U		1.8	5.0	1.00000	ug/L	102701		11/25/03 1223	jdn
	tert-Butyl alcohol	200	U		30	200	1.00000	ug/L	102701		11/25/03 1223	jdn
	tert-amyl methyl ether	5.0	U		0.47	5.0	1.00000	ug/L	102701		11/25/03 1223	jdn

* In Description = Dry Wgt.

Amendment No. 0010

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LABORATORY TEST RESULTS

Job Number: 222551

Date:12/16/2003

CUSTOMER: ENSR

PROJECT: DOVER AFB

ATTN: Mack Astorga

Customer Sample ID: DECONFLUID-1
Date Sampled.....: 11/21/2003
Time Sampled.....: 10:00
Sample Matrix.....: Water

Laboratory Sample ID: 222551-5
Date Received.....: 11/22/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
7.3.3.2/9014	Reactivity, Cyanide											
	Reactivity, Cyanide	0.01	U		0.01	0.01	1	mg/L	103380		12/03/03 1739	rnm
1010	Ignitability (Pensky-Martens Closed-Cup)											
	Ignitability (Flashpoint)	>200					1	degrees F	103852		12/08/03 1230	jmk
9040B	pH (Liquid)											
	Corrosivity (pH-Liquids)	10.57			0.20	0.20	1	pH Units	102631		11/24/03 1648	nrp
7.3.4.2/9034	Reactivity, Sulfide											
	Reactivity, Sulfide	1.0	U		1.0	1.0	1	mg/L	103054		11/26/03 1625	bms
8260B	Volatile Organics (5mL Purge)											
	1,1-Dichloroethene	5.0	U		1.7	5.0	1.00000	ug/L	102701		11/25/03 1245	jdn
	Methyl-tert-butyl-ether (MTBE)	5.0	U		2.0	5.0	1.00000	ug/L	102701		11/25/03 1245	jdn
	Benzene	5.0	U		0.96	5.0	1.00000	ug/L	102701		11/25/03 1245	jdn
	Trichloroethene	5.0	U		1.6	5.0	1.00000	ug/L	102701		11/25/03 1245	jdn
	Toluene	5.0	U		1.1	5.0	1.00000	ug/L	102701		11/25/03 1245	jdn
	Ethylbenzene	5.0	U		0.93	5.0	1.00000	ug/L	102701		11/25/03 1245	jdn
	Xylenes (total)	8.2			1.8	5.0	1.00000	ug/L	102701		11/25/03 1245	jdn
	tert-Butyl alcohol	200	U		30	200	1.00000	ug/L	102701		11/25/03 1245	jdn
	tert-amyl methyl ether	5.0	U		0.47	5.0	1.00000	ug/L	102701		11/25/03 1245	jdn

* In Description = Dry Wgt.

Amendment No. 0010

LABORATORY TEST RESULTS

Job Number: 222551

Date:12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Customer Sample ID: TB103103
Date Sampled.....: 11/21/2003
Time Sampled.....: 09:00
Sample Matrix.....: Water

Laboratory Sample ID: 222551-6
Date Received.....: 11/22/2003
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8260B	Volatile Organics (5mL Purge)											
	1,1-Dichloroethene	5.0	U		1.7	5.0	1.00000	ug/L	102701		11/25/03 1308	jdn
	Methyl-tert-butyl-ether (MTBE)	5.0	U		2.0	5.0	1.00000	ug/L	102701		11/25/03 1308	jdn
	Benzene	5.0	U		0.96	5.0	1.00000	ug/L	102701		11/25/03 1308	jdn
	Trichloroethene	5.0	U		1.6	5.0	1.00000	ug/L	102701		11/25/03 1308	jdn
	Toluene	5.0	U		1.1	5.0	1.00000	ug/L	102701		11/25/03 1308	jdn
	Ethylbenzene	5.0	U		0.93	5.0	1.00000	ug/L	102701		11/25/03 1308	jdn
	Xylenes (total)	5.0	U		1.8	5.0	1.00000	ug/L	102701		11/25/03 1308	jdn
	tert-Butyl alcohol	200	U		30	200	1.00000	ug/L	102701		11/25/03 1308	jdn
	tert-amyl methyl ether	5.0	U		0.47	5.0	1.00000	ug/L	102701		11/25/03 1308	jdn

* In Description = Dry Wgt.

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LABORATORY CHRONICLE

Job Number: 222551 Date: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222551-1 Client ID: B-11(3-5) Date Recvd: 11/22/2003 Sample Date: 11/21/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102742		11/25/2003	2321	
5030A	5030 GC VOA (High Level Methanol)	1	103532		12/03/2003	2330	
5035	5035 Archon Closed Purge & Trap	1	102897		11/26/2003	1734	
5035	5035 Archon Closed Purge & Trap	2	102897		11/26/2003	1639	
5035	5035 Preservation High (Methanol)	1	103077		11/23/2003	0625	
5035	5035 Preservation High (Methanol)	1	103533		11/23/2003	0625	
5035	5035 Preservation Low	1	103074		11/23/2003	0625	
5035	5035 Preservation Low	2	103074		11/23/2003	0626	
Data Managemen	Data Management	1					
EDD	Electronic Data Deliverable	1					
3541	Extraction Soxhlet (DRO)	1	103128		12/02/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	103369		12/04/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	104366	104366	12/12/2003	0620	
8082	PCB Analysis	1	104684	103369	12/15/2003	1913	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	103573	103573	12/04/2003	1655	
7.3.4.2/9034	Reactivity, Sulfide	1	104015	104015	12/09/2003	1509	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103785	103128	12/06/2003	0231	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	103534	103533-103532	12/04/2003	0547	1.0000
8260B	Volatile Organics	1	103072	103074-102897	11/26/2003	1734	1.00000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1337	

Lab ID: 222551-2 Client ID: B-16(3-5) Date Recvd: 11/22/2003 Sample Date: 11/21/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102742		11/25/2003	2321	
5030A	5030 GC VOA (High Level Methanol)	1	103532		12/03/2003	2330	
5035	5035 Archon Closed Purge & Trap	1	102897		11/26/2003	1801	
5035	5035 Preservation High (Methanol)	1	103077		11/23/2003	0627	
5035	5035 Preservation High (Methanol)	1	103533		11/23/2003	0627	
5035	5035 Preservation Low	1	103074		11/23/2003	0627	
5035	5035 Preservation Low	2	103074		11/23/2003	0628	
3541	Extraction Soxhlet (DRO)	1	103128		12/02/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	103369		12/04/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	104366	104366	12/12/2003	0810	
8082	PCB Analysis	1	104684	103369	12/15/2003	1946	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	103573	103573	12/04/2003	1656	
7.3.4.2/9034	Reactivity, Sulfide	1	104015	104015	12/09/2003	1512	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103785	103128	12/07/2003	1733	5.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	103534	103533-103532	12/04/2003	0623	1.0000
8260B	Volatile Organics	1	103072	103074-102897	11/26/2003	1801	1.00000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1338	

Lab ID: 222551-3 Client ID: B-13(4-6) Date Recvd: 11/22/2003 Sample Date: 11/21/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	102742		11/25/2003	2321	
5030A	5030 Purge & Trap	1	103530		12/03/2003	2200	
5035	5035 Archon Closed Purge & Trap	1	102897		11/26/2003	1829	
5035	5035 Preservation High (Methanol)	1	103077		11/23/2003	0628	
5035	5035 Preservation Low	1	103074		11/23/2003	0628	
5035	5035 Preservation Low	2	103074		11/23/2003	0629	
3541	Extraction Soxhlet (DRO)	1	103128		12/02/2003	0800	
3541	Extraction Soxhlet (PCBs)	1	103369		12/04/2003	0800	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	104366	104366	12/12/2003	1000	
8082	PCB Analysis	1	104684	103369	12/15/2003	2018	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	103573	103573	12/04/2003	1657	
7.3.4.2/9034	Reactivity, Sulfide	1	104015	104015	12/09/2003	1515	

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LABORATORY CHRONICLE

Job Number: 222551 Date: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Lab ID: 222551-3 Client ID: B-13(4-6) Date Recvd: 11/22/2003 Sample Date: 11/21/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103785	103128	12/06/2003	0506	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	103531	103530	12/04/2003	0345	1.00000
8260B	Volatile Organics	1	103072	103074-102897	11/26/2003	1829	1.00000
9045C	pH (Soil)	1	104003	104003	12/09/2003	1341	

Lab ID: 222551-4 Client ID: FB112103 Date Recvd: 11/22/2003 Sample Date: 11/21/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030 5 mL Purge Prep	1	102698		11/25/2003	1223	
5030A	5030 Purge & Trap	1	103528		12/03/2003	2330	
3520C	Extraction Continuous Liq/Liq (PCBs)	1	102625		11/25/2003	1100	
3510C	Extraction Sep. Funnel (Diesel)	1	102768		11/26/2003	1045	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	103852	103852	12/08/2003	1006	
8082	PCB Analysis	1	104392	102625	11/28/2003	1345	1.00000
7.3.3.2/9014	Reactivity, Cyanide	1	103380	103380	12/03/2003	1738	
7.3.4.2/9034	Reactivity, Sulfide	1	103054	103054	11/26/2003	1624	
8015B MDRO	TPH - Diesel Range Organics (DRO)	1	103781	102768	12/02/2003	1551	1.00000
8015B MGRO	TPH - Gasoline Range Organics (GRO)	1	103529	103528	12/04/2003	0734	1.00000
8260B	Volatile Organics (5mL Purge)	1	102701	102698	11/25/2003	1223	1.00000
9040B	pH (Liquid)	1	102631	102631	11/24/2003	1645	

Lab ID: 222551-5 Client ID: DECONFLUID-1 Date Recvd: 11/22/2003 Sample Date: 11/21/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030 5 mL Purge Prep	1	102698		11/25/2003	1245	
1010	Ignitability (Pensky-Martens Closed-Cup)	1	103852	103852	12/08/2003	1230	
7.3.3.2/9014	Reactivity, Cyanide	1	103380	103380	12/03/2003	1739	
7.3.4.2/9034	Reactivity, Sulfide	1	103054	103054	11/26/2003	1625	
8260B	Volatile Organics (5mL Purge)	1	102701	102698	11/25/2003	1245	1.00000
9040B	pH (Liquid)	1	102631	102631	11/24/2003	1648	

Lab ID: 222551-6 Client ID: TB103103 Date Recvd: 11/22/2003 Sample Date: 11/21/2003

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
5030B	5030 5 mL Purge Prep	1	102698		11/25/2003	1308	
8260B	Volatile Organics (5mL Purge)	1	102701	102698	11/25/2003	1308	1.00000

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SURROGATE RECOVERIES REPORT

Job Number.: 222551 Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: Water Prep Batch..: 102768
Method Code...: 8015D Batch(s).....: 103781

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCD			12/02/2003	88	89
LCS			12/02/2003	88	91
MB			12/02/2003	80	87
222551- 4		FB112103	12/02/2003	83	89

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 119
OTERPH	o-Terphenyl (surr)	58 - 119

Method.....: TPH - Diesel Range Organics (DRO) Test Matrix...: 3541 Solid Prep Batch..: 103128
Method Code...: 8015D Batch(s).....: 103785

Lab ID	DT	Sample ID	Date	2FLUBP	OTERPH
LCS			12/04/2003	104*	106
MB			12/04/2003	92	94
222551- 1		B-11(3-5)	12/06/2003	88	103
222551- 2		B-16(3-5)	12/07/2003	94	130*I
222551- 3		B-13(4-6)	12/06/2003	79	86

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	48 - 103
OTERPH	o-Terphenyl (surr)	44 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222551 Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Water Prep Batch..: 103528
Method Code...: 8015G Batch(s).....: 103529

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			12/04/2003	94	108
MB			12/04/2003	91	93
222551- 4		FB112103	12/04/2003	96	98

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	79 - 110
BRFLBE	4-Bromofluorobenzene (surr)	67 - 124

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: Solid Prep Batch..: 103530
Method Code...: 8015G Batch(s).....: 103531

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			12/04/2003	90	96
MB			12/04/2003	82	87
222551- 3		B-13(4-6)	12/04/2003	81	88

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	68 - 113
BRFLBE	4-Bromofluorobenzene (surr)	41 - 125

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: High/Med Level Prep Batch..: 103532
Method Code...: 8015G Batch(s).....: 103534

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
LCS			12/04/2003	95	104
MB			12/04/2003	92	92

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	76 - 110
BRFLBE	4-Bromofluorobenzene (surr)	48 - 173

Method.....: TPH - Gasoline Range Organics (GRO) Test Matrix...: High/Med Level Prep Batch..: 103533
Method Code...: 8015G Batch(s).....: 103534

Lab ID	DT	Sample ID	Date	ATFT	BRFLBE
222551- 1		B-11(3-5)	12/04/2003	85	130
222551- 2		B-16(3-5)	12/04/2003	92	115

Test	Test Description	Limits
ATFT	a,a,a-Trifluorotoluene	76 - 110
BRFLBE	4-Bromofluorobenzene (surr)	48 - 173

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SURROGATE RECOVERIES REPORT

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: PCB Analysis
Method Code...: 8082

Test Matrix...: Water
Batch(s).....: 104392

Prep Batch..: 102625

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			11/28/2003	86	77
MB			11/28/2003	45	90
222551- 4		FB112103	11/28/2003	38	93

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 116
TCX	Tetrachloro-m-xylene (surr)	33 - 111

Method.....: PCB Analysis
Method Code...: 8082

Test Matrix...: 3541 Solid
Batch(s).....: 104684

Prep Batch..: 103369

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			12/15/2003	109	84
MB			12/15/2003	95	86
222551- 1		B-11(3-5)	12/15/2003	76	78
222551- 2		B-16(3-5)	12/15/2003	33	102
222551- 3		B-13(4-6)	12/15/2003	120	100

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	33 - 131
TCX	Tetrachloro-m-xylene (surr)	42 - 122

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SURROGATE RECOVERIES REPORT

Job Number.: 222551 Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics (5mL Purge) Test Matrix...: Water Prep Batch..: 102698
Method Code...: 8260.5 Batch(s).....: 102701

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/25/2003	89	110	99	113
MB			11/25/2003	81	93	90	100
222551- 4		FB112103	11/25/2003	89	101	98	109
222551- 5		DECONFLUID-1	11/25/2003	84	96	93	102
222551- 6		TB103103	11/25/2003	83	93	92	101

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	66 - 132
BRFLBE	4-Bromofluorobenzene (surr)	79 - 122
DBRFLM	Dibromofluoromethane (surr)	66 - 132
TOLD8	Toluene-d8 (surr)	78 - 128

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SURROGATE RECOVERIES REPORT

Job Number.: 222551 Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 103072
Prep Batch..: 102897

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
LCS			11/26/2003	93	99	94	108
MB			11/26/2003	98	97	95	107

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

Method.....: Volatile Organics
Method Code...: 8260B
Test Matrix...: Solid
Batch(s).....: 103072
Prep Batch..: 103074

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
EB1			11/26/2003	110	94	97	103
222551- 1		B-11(3-5)	11/26/2003	104	90	99	96
222551- 2		B-16(3-5)	11/26/2003	102	89	109	95
222551- 3		B-13(4-6)	11/26/2003	106	95	101	98

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4 (surr)	50 - 145
BRFLBE	4-Bromofluorobenzene (surr)	60 - 140
DBRFLM	Dibromofluoromethane (surr)	60 - 140
TOLD8	Toluene-d8 (surr)	66 - 141

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLPCBA	102625-002		11/28/2003	0308

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104392

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	3.611		5.001	0.500 U	72	%	62-104	
Aroclor 1260	ug/L	4.552		5.010	0.500 U	91	%	69-105	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102625-001		11/28/2003	0232

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST4142
Batch.....: 104392

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016	ug/L	0.500	U							
Aroclor 1221	ug/L	0.500	U							
Aroclor 1232	ug/L	0.500	U							
Aroclor 1242	ug/L	0.500	U							
Aroclor 1248	ug/L	0.500	U							
Aroclor 1254	ug/L	0.500	U							
Aroclor 1260	ug/L	0.500	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN: Mack Astorga

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLPCBA	103369-002		12/15/2003	1301

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 104684

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	159.780		166.700	16.700 U	96	%	60-112	
Aroclor 1260, 3541 Solid	ug/Kg	184.736		167.000	16.700 U	111	%	64-119	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		103369-001		12/15/2003	1228

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST0708
Batch.....: 104684

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1221, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1232, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1242, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1248, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1254, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1260, 3541 Solid	ug/Kg	16.700	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCD	Laboratory Control Sample Duplicate	003KWLDIEA	102768-003		12/02/2003	1121

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103781

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.734460	1.755325	2.000000	0.125000 U	87	%	57-107	
						1	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLDIEA	102768-002		12/02/2003	1042

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103781

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	1.755325		2.000000	0.125000 U	88	%	57-107	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103781

Analyst...: mgk

MB	Method Blank		102768-001		12/02/2003	1003

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO)	mg/L	0.125000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	003KWLDIEA	103128-002		12/04/2003	1749

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)

Equipment Code....: INST10
Batch.....: 103785

Analyst...: mgk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	67.739		66.670	0.125 U	102	%	70-106	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MDRO
Method Description.: TPH - Diesel Range Organics (DRO)
Equipment Code....: INST10
Batch.....: 103785
Analyst...: mgk

MB	Method Blank		103128-001		12/04/2003	1710

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Diesel Range Organics (DRO), 3541 Soli	mg/Kg	0.125	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03L03DSA	103528-002		12/04/2003	0231

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 103529
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	429.433		400.000	50.000 U	107	%	85-124	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 103529
Analyst...: wre

MB	Method Blank		103528-001		12/04/2003	0155

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO)	ug/L	50.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G031030SA	103530-002		12/04/2003	0123

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 103531
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	388.782		400.000	50.000 U	97	%	79-130	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1314
Batch.....: 103531
Analyst...: wre

MB	Method Blank		103530-001		12/04/2003	0048

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), Solid	ug/Kg	50.000 U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	G03L030SA	103532-002		12/04/2003	0231

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 103534
Analyst...: wre

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), High/Me	ug/Kg	21465.000		20000.000	2500.000 U	107	%	77-127	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8015B MGRO
Method Description.: TPH - Gasoline Range Organics (GRO)
Equipment Code....: INST1112
Batch.....: 103534
Analyst...: wre

MB	Method Blank		103532-001		12/04/2003	0155

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Gasoline Range Organics (GRO), High/Me	ug/Kg	2500.000	U						

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
EB1	Extraction Blank 1	+222551	103074-007		11/26/2003	1355

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 103072

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K26DSG	102897-017		11/26/2003	1309

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 103072

Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	34.007		50.000	5.000 U	68	%	51-132	
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	52.671		50.000	5.000 U	105	%	61-132	
Benzene, Solid	ug/Kg	44.911		50.000	5.000 U	90	%	72-128	
Trichloroethene, Solid	ug/Kg	47.836		50.000	5.000 U	96	%	75-129	
Toluene, Solid	ug/Kg	49.947		50.000	5.000 U	100	%	75-125	
Ethylbenzene, Solid	ug/Kg	48.085		50.000	5.000 U	96	%	79-123	
Xylenes (total), Solid	ug/Kg	145.875		150.000	5.000 U	97	%	82-125	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR | PROJECT: DOVER AFB | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102897-016		11/26/2003	1242

Test Method.....: 8260B
Method Description.: Volatile Organics

Equipment Code....: GCL6
Batch.....: 103072

Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene, Solid	ug/Kg	5.000	U							
Methyl-tert-butyl-ether (MTBE), Solid	ug/Kg	5.000	U							
Benzene, Solid	ug/Kg	5.000	U							
Trichloroethene, Solid	ug/Kg	5.000	U							
Toluene, Solid	ug/Kg	5.000	U							
Ethylbenzene, Solid	ug/Kg	5.000	U							
Xylenes (total), Solid	ug/Kg	5.000	U							
tert-Butyl alcohol, Solid	ug/Kg	200.000	U							
tert-amyl methyl ether, Solid	ug/Kg	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	V03K250SB	T0269B-002		11/25/2003	1030

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)
Equipment Code....: GCL16
Batch.....: 102701
Analyst...: jdn

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	39.995		50.000	5.000 U	80	%	48-132	
Methyl-tert-butyl-ether (MTBE)	ug/L	55.856		50.000	5.000 U	112	%	49-139	
Benzene	ug/L	51.330		50.000	5.000 U	103	%	68-130	
Trichloroethene	ug/L	57.388		50.000	5.000 U	115	%	71-128	
Toluene	ug/L	55.127		50.000	5.000 U	110	%	72-122	
Ethylbenzene	ug/L	58.873		50.000	5.000 U	118	%	78-121	
Xylenes (total)	ug/L	172.005		150.000	5.000 U	115	%	76-129	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551

Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank		102698-001		11/25/2003	1007

Test Method.....: 8260B
Method Description.: Volatile Organics (5mL Purge)
Equipment Code....: GCL16
Batch.....: 102701
Analyst...: jdn

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
1,1-Dichloroethene	ug/L	5.000	U							
Methyl-tert-butyl-ether (MTBE)	ug/L	5.000	U							
Benzene	ug/L	5.000	U							
Trichloroethene	ug/L	5.000	U							
Toluene	ug/L	5.000	U							
Ethylbenzene	ug/L	5.000	U							
Xylenes (total)	ug/L	5.000	U							
tert-Butyl alcohol	ug/L	200.000	U							
tert-amyl methyl ether	ug/L	5.000	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551 Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: Method
Method Description.: % Solids Determination
Parameter.....: % Solids
Batch.....: 102742
Equipment Code....:
Analyst...: clb
Test Code.: %SOLID

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	102742-001		%	0.1000 U								11/25/2003	2321

Test Method.....: 7.3.3.2/9014
Method Description.: Reactivity, Cyanide
Parameter.....: Reactivity, Cyanide
Batch.....: 103380
Equipment Code....: SPEC4
Analyst...: rhm
Test Code.: REACCN

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	103380-004		mg/L	0.01000 U								12/03/2003	1731
LCS	103380-005	I03ISTCN2	mg/L	0.09480		0.10000	0.01000 U	95		%	80-120	12/03/2003	1732

Test Method.....: 7.3.3.2/9014
Method Description.: Reactivity, Cyanide
Parameter.....: Reactivity, Cyanide
Batch.....: 103573
Equipment Code....: SPEC4
Analyst...: rhm
Test Code.: REACCN

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	103573-004		mg/L	0.01000 U								12/04/2003	1646
LCS	103573-005	I03ISTCN2	mg/L	0.09950		0.10000	0.01000 U	100		%	85-115	12/04/2003	1647

Test Method.....: 1010
Method Description.: Ignitability (Pensky-Martens Closed-Cup)
Parameter.....: Ignitability (Flashpoint)
Batch.....: 103852
Equipment Code....:
Analyst...: jmk
Test Code.: IGNPMC

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MD	222551-4		degrees F	>200			>200					12/08/2003	1118

Test Method.....: 9040B
Method Description.: pH (Liquid)
Parameter.....: pH
Batch.....: 102631
Equipment Code....:
Analyst...: nrp
Test Code.: PH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	102631-002	I03KPH7B	pH Units	6.98000		7.00000		0.02000		A	0.20000	11/24/2003	1639
LCDP	102631-003	I03KPH7B	pH Units	6.97000		7.00000		0.03000		A	0.20000	11/24/2003	1640
MDPH	222551-4		pH Units	5.71000			5.71000	0.00		A	0.20000	11/24/2003	1646
MDPH	222551-5		pH Units	10.58000			10.57000	0.01000		A	0.20000	11/24/2003	1649

Test Method.....: 9045C
Method Description.: pH (Soil)
Parameter.....: pH
Batch.....: 104003
Equipment Code....:
Analyst...: nrp
Test Code.: PH

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
LCSP	104003-002	I03KPH7B	pH Units	6.96000		7.00000		0.04000		A	0.20000	12/09/2003	1301
LCDP	104003-003	I03KPH7B	pH Units	6.96000		7.00000		0.04000		A	0.20000	12/09/2003	1303

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 222551 Report Date.: 12/16/2003

CUSTOMER: ENSR PROJECT: DOVER AFB ATTN: Mack Astorga

Test Method.....: 7.3.4.2/9034 Batch.....: 103054 Analyst...: bms
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result		QC Result	True Value	Orig. Value		QC Calc.	F	*	Limits	Date	Time
MB	103054-019		mg/Kg	91.00	U									11/26/2003	1613
LCS	103054-020	I03HSTSF1	mg/Kg	96.00	B		151.10	91.00	U	64		%	0-200	11/26/2003	1614

Test Method.....: 7.3.4.2/9034 Batch.....: 104015 Analyst...: bms
Method Description.: Reactivity, Sulfide Equipment Code....: Test Code.: REACS
Parameter.....: Reactivity, Sulfide

QC	Lab ID	Reagent	Units	QC Result		QC Result	True Value	Orig. Value		QC Calc.	F	*	Limits	Date	Time
MB	104015-001		mg/Kg	91.00	U									12/09/2003	1440
LCS	104015-002	I03HSTSF1	mg/Kg	142.50	B		151.10			94		%	0-200	12/09/2003	1443

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/16/2003

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Soil, sediment and sludge sample results are reported on a "dry weight" basis except when analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received" basis unless noted differently.
3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
4) The test results for the noted analytical method(s) meet the requirements of NELAC. Lab Cert. ID# 100201
5) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report)

Inorganic Qualifiers (Q-Column)

U Analyte was not detected at or above the stated limit.
< Not detected at or above the reporting limit.
J Result is less than the RL, but greater than or equal to the method detection limit.
B Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.
S Result was determined by the Method of Standard Additions.
F AFCEE: Result is less than the RL, but greater than or equal to the method detection limit.

Inorganic Flags (Flag Column)

- ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
+ MSA correlation coefficient is less than 0.995.
4 MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
E SD: Serial dilution exceeds the control limits.
H MB, EB1, EB2, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.
N MS, MSD: Spike recovery exceeds the upper or lower control limits.
W AS(GFAA) Post-digestion spike was outside 85-115% control limits.

Organic Qualiffiers (Q - Column)

U Analyte was not detected at or above the stated limit.
ND Compound not detected.
J Result is an estimated value below the reporting limit or a tentatively identified compound (TIC).
Q Result was qualitatively confirmed, but not quantified.
C Pesticide identification was confirmed by GC/MS.
Y The chromatographic response resembles a typical fuel pattern.
Z The chromatographic response does not resemble a typical fuel pattern.
E Result exceeded calibration range, secondary dilution required.
F AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)

Organic Flags (Flags Column)

B MB: Batch QC is greater than reporting limit.
* LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits.
^ EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
A Concentration exceeds the instrument calibration range
a Concentration is below the method Reporting Limit (RL)
B Compound was found in the blank and sample.
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
H Alternate peak selection upon analytical review
I Indicates the presence of an interfence, recovery is not calculated.
M Manually integrated compound.
P The lower of the two values is reported when the % difference between the results of two GC columns is

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/16/2003

greater than 25%.

Abbreviations

AS	Post Digestion Spike (GFAA Samples - See Note 1 below)
Batch	Designation given to identify a specific extraction, digestion, preparation set, or analysis set
CAP	Capillary Column CCB Continuing Calibration Blank
CCV	Continuing Calibration Verification
CF	Confirmation analysis of original
C1	Confirmation analysis of A1 or D1
C2	Confirmation analysis of A2 or D2
C3	Confirmation analysis of A3 or D3
CRA	Low Level Standard Check - GFAA; Mercury
CRI	Low Level Standard Check - ICP
CV	Calilbration Verification Standard
Dil Fac	Dilution Factor - Secondary dilution analysis
D1	Dilution 1
D2	Dilution 2
D3	Dilution 3
DLFac	Detection Limit Factor
DSH	Distilled Standard - High Level
DSL	Distilled Standard - Low Level
DSM	Distilled Standard - Medium Level
EB1	Extraction Blank 1
EB2	Extraction Blank 2
EB3	DI Blank
ELC	Method Extracted LCS
ELD	Method Extracted LCD
ICAL	Initial calibration
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ISA	Interference Check Sample A - ICAP
ISB	Interference Check Sample B - ICAP
Job No.	The first six digits of the sample ID which refers to a specific client, project and sample group Lab ID An 8 number unique laboratory identification
LCD	Laboratory Control Standard Duplicate
LCS	Laboratory Control Standard with reagent grade water or a matrix free from the analyte of interest
MB	Method Blank or (PB) Preparation Blank
MD	Method Duplicate
MDL	Method Detection Limit
MLE	Medium Level Extraction Blank
MRL	Method Reporting Limit Standard
MSA	Method of Standard Additions
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not Detected
PREPF	Preparation factor used by the Laboratory's Information Management System (LIMS)
PDS	Post Digestion Spike (ICAP)
RA	Re-analysis of original
A1	Re-analysis of D1
A2	Re-analysis of D2
A3	Re-analysis of D3
RD	Re-extraction of dilution
RE	Re-extraction of original
RC	Re-extraction Confirmation
RL	Reporting Limit
RPD	Relative Percent Difference of duplicate (unrounded) analyses
RRF	Relative Response Factor
RT	Retention Time

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/16/2003

RTW	Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number
SCB	Seeded Control Blank
SD	Serial Dilution (Calculated when sample concentration exceeds 50 times the MDL)
UCB	Unseeded Control Blank
SSV	Second Source Verification Standard
SLCS	Solid Laboratory Control Standard(LCS)
PHC	pH Calibration Check LCSP pH Laboratory Control Sample
LCDP	pH Laboratory Control Sample Duplicate
MDPH	pH Sample Duplicate
MDFP	Flashpoint Sample Duplicate
LCFP	Flashpoint LCS
G1	Gelex Check Standard Range 0-1
G2	Gelex Check Standard Range 1-10
G3	Gelex Check Standard Range 10-100
G4	Gelex Check Standard Range 100-1000

Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCS S=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Note 2: The MD calculates an absolute difference (A) when the sample concentration is less than 5 times the reporting limit. The control limit is represented as +/- the RL.

Amendment No. 0010

STL EDISON

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Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

222551

Name (for report and invoice): Mack Astorga
Company: ENSR International
Address: 2005 Cabot Boulevard West Suite 100
City: Langhorne State: PA 19047
Phone: 215-757-4900 Fax: 215-757-3904

Samplers Name (Printed): Rich Firely
P.O. #:

Site/Project Identification: Dover AFB
State (Location of site): NJ: ☒ NY: ☐ Other: DE
Regulatory Program:

Analysis Turnaround Time
Standard ☐
Rush Charges Authorized For:
2 Week ☐
1 Week ☑
Other ☐

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No:

	Sample Identification	Date	Time	Matrix	No. of. Cont.	8260 BTCLP TCLP VOA *	8260B PPVOA	GRO	DRO	8080-PCB	Reactivity Cyanide Sulfide	[illegible]	Corrosivity	Ignitability			Sample Numbers
1	B-11(3-5)	11/21/03	740	Soil	7	X	X	X	X	X	X		X	X			
2	B-16(3-5)	11/21/03	815	Soil	7	X	X	X	X	X	X		X	X			
3	B-13(4-6)	11/21/03	900	Soil	7	X	X	X	X	X	X		X	X			
4	FB112103	11/21/03	945	AQ	7		X	X	X	X	X		X	X			
5	Deconfluid-1	11/21/03	1000	AQ	4	X					X		X	X			
6	TB 103103	10/31/03	900	AQ	2		X										
	Custody Seals - 67916 + 67917																
	Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH — Soil:					1	1, 6	1	1	1	1	1	1				
	6 = Other ice only, 7 = Other _____ — Water:					1	1, 2	1, 2	1	1	1	1	1				

Special Instructions: PPVOA - BTEX, Tert-amyl methyl ether, TBA, MTBE, TBA, TCE, 1,1-DCE *ONHold B-11, B-16, B-13
Water Metals Filtered (Yes/No)?

Relinquished by	Company	Date / Time	Received by	Company
1) R. Firely	ENSR	11/21/03 1400	1) [illegible]	STL 11/22/03 0900
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL-6003