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**SITE STATUS MONITORING
REPORT AND
SITE RANKING FORM
FOR UNDERGROUND STORAGE
TANK 2331-U
AT BUILDING 9201-1**

**OAK RIDGE Y-12 PLANT
OAK RIDGE, TENNESSEE
FACILITY ID #0-010117**

May 1996

**Environmental Management Department
Health, Safety, Environment,
and Accountability Organization**

MASTER

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MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

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**Environmental Management Department
Health, Safety, Environment,
and Accountability Organization**

Prepared by

**Science Applications International Corporation
Under Subcontract 22B-99069C
for the
Oak Ridge Y-12 Plant
Oak Ridge, Tennessee 37831**

Managed by

**Lockheed Martin Energy Systems, Inc.
for the
U.S. Department of Energy
Under Contract No. DE-AC05-84OR21400**

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TABLE OF CONTENTS

	Page
LIST OF FIGURES	iv
LIST OF TABLES	iv
LIST OF ACRONYMS	v
SIGNATURE PAGE	vi
CERTIFICATION PAGE	vii

SITE STATUS MONITORING REPORT

1. INTRODUCTION	1-1
1.1 Purpose and Scope	1-1
1.2 Site Description	1-1
2. GROUNDWATER MONITORING	2-1
2.1 Groundwater Measurement, Sample Collection, and Analysis	2-1
2.1.1 Well Locations	2-1
2.1.2 Groundwater Measurement and Sampling	2-1
2.1.3 Sample Analysis	2-1
2.2 Potentiometric Data	2-1
2.3 Groundwater Analytical Data	2-6
3. VAPOR MONITORING	3-1
3.1 Monitoring Method and Locations	3-1
3.2 Vapor Monitoring Results	3-1
REFERENCES	R-1
APPENDICES	
Appendix A Laboratory Analytical Results for Site Status Monitoring, April 1996	A-1
Appendix B Annual Resubmittal of the Site Specific Standard Request, May 1996	B-1

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>	<u>Page</u>
1-1	Location of the Building 9201-1 Site at the Y-12 Plant	1-2
1-2	Building 9201-1 Site Map	1-3
2-1	Building 9201-1 Site Monitoring Well Location Map	2-2
2-2	Building 9201-1 Site Groundwater Potentiometric Contour Map October 1995	2-4
2-3	Building 9201-1 Site Groundwater Potentiometric Contour Map April 1996	2-5
3-1	Building 9201-1 Site Vapor Monitoring Sampling Location Map	3-2

LIST OF TABLES

<u>Table</u>	<u>Title</u>	<u>Page</u>
2-1	Water level measurements at the Building 9201-1 Site for the periods of October 1995 and April 1996	2-3
2-2	Analytical results for groundwater samples collected during site status and comprehensive monitoring	2-6
3-1	Vapor monitoring results for the Building 9201-1 Site, April 16, 1996	3-3

LIST OF ACRONYMS

BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
BTOC	below top of casing
CAP	Corrective Action Plan
GRO	gasoline range organic
LEL	lower explosive limit
MSL	mean sea level
OVM	organic vapor meter
TDEC	Tennessee Department of Environment and Conservation
TPH	total petroleum hydrocarbon
TWA	time weighted average
UEFPC	Upper East Fork Poplar Creek
UST	underground storage tank

SIGNATURE PAGE FOR THE
SITE STATUS MONITORING REPORT AND
THE SITE RANKING FORM
FOR THE UNDERGROUND STORAGE TANK 2331-U,
AT BUILDING 9201-1

I certify under penalty of law, including but not limited to penalties for perjury, that the information contained in this report and on any attachments, is true, accurate, and complete to the best of my knowledge, information, and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for intentional violations.

See Attached Certification

Owner/Operator (Print)

Signature

Date

Christopher D. Potter

CHD TN 2345

5/7/96

P.E. or P.G. (Print)

Signature TN Lic./Reg. #

Date

If a P.E. signs this report, please indicate the area of expertise.

(Print or Type)

County of Anderson State of Tennessee

(P.E./P.G. Stamp/Seal)

Subscribed and Sworn to before me this

7 day of May, 1996.

Suzanne Knott
Notary Public

NOTARY PUBLIC STATE OF TENNESSEE AT LARGE
MY COMMISSION EXPIRES: Dec. 22, 1999.

My Commission expires RECORDED THRU NOTARY PUBLIC UNDERWRITERS (Notary Seal)

**CERTIFICATION STATEMENT FOR THE
SITE STATUS MONITORING REPORT
AND SITE RANKING FORM FOR
THE UNDERGROUND STORAGE TANK 2331-U,
AT BUILDING 9201-1**

I certify that this document and all enclosures were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

U.S. Department of Energy
Owner and Operator

By:

R.J. Spence
Department of Energy, Y-12 Site Manager

5/21/96
Date Signed

Lockheed Martin Energy Systems, Inc.
Co-Operator

By:

T.R. Butz
Lockheed Martin Energy Systems, Inc.
Y-12 Plant Manager

5/16/96
Date Signed

Note: Both signatures have been notarized per requirements.

Y-12 PLANT SITE

BUILDING 9201-1 SITE

MARTIN MARIETTA ENERGY SYSTEMS, INC.
ENVIRONMENTAL MANAGEMENT DEPARTMENT
LOCATION OF THE BUILDING 9201-1 SITE
AT THE Y-12 PLANT

Figure I-1. Location of the Building 9201-1 Site at the Y-12 Plant

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Environmental Management Department

FIGURE 1-2
Building 9201-1 Site
Site Map

2. GROUNDWATER MONITORING

2.1 Groundwater Measurement, Sample Collection, and Analysis

2.1.1 Well Locations

Seven wells identified by TDEC have been measured and sampled as part of the Monitoring Only program for the site. These wells include GW-193, GW-657, GW-707, GW-708, GW-808, GW-809, and GW-810. The locations of these wells are presented in Figure 2-1. Well installation reports and construction details for monitoring wells GW-193, GW-657, GW-707, and GW-708 are presented in the CAP for the Site [*Corrective Action Plan for Underground Storage Tank 2331-U at the Building 9201-1 Site, Appendix C, Y/SUB-92-99928C/3* (Energy Systems 1992)]. Well installation reports and construction details for monitoring wells GW-808, GW-809, and GW-810 that were installed in July 1993 are presented in the Corrective Action Baseline Report for the Site [*Corrective Action Baseline Report for Underground Storage Tank 2331-U, Building 9201-1, Appendix A, Y/SUB/94-99069C/Y15/2* (Energy Systems 1994)].

2.1.2 Groundwater Measurement and Sampling

Current groundwater level measurement and sampling of the monitoring wells at the Building 9201-1 Site occurred on April 18, 1996. The previous round of site status monitoring occurred on October 19, 1995. Water levels were measured to the nearest 0.01 ft using an electronic water level indicator. Each well was then purged of three well volumes prior to sampling. Field measurement of pH, conductivity, temperature, and dissolved oxygen was conducted during purging to ensure representativeness for sampling. No measurable free product or petroleum odors were noted during water level measurement or sampling in any of these wells. Samples were collected using a bailer and transferred into pre-cleaned glass containers with zero headspace.

2.1.3 Sample Analysis

Groundwater samples were analyzed for total petroleum hydrocarbons-gasoline range organics (TPH-GRO), and for benzene, toluene, ethylbenzene, and xylenes (BTEX) at the Y-12 Plant Environmental Laboratory (a TDEC Division of UST approved laboratory).

2.2 Potentiometric Data

Potentiometric data for monitoring wells at the Building 9201-1 Site from the two most recent site status monitoring measurement events are presented in Table 2-1. Figures 2-2 and 2-3 present potentiometric contour maps from these two events. These figures indicate an irregular potentiometric surface with locally variable groundwater flow directions. A localized water table high southeast of the former UST site (around wells GW-707 and GW-657) appears to be reasonably persistent. This water table high may be related to a subsurface feature (e.g., fracture) or may reflect a small difference in head between unconsolidated and bedrock wells.

**Table 2-1. Water level measurements at the Building 9201-1 Site
for the periods of April 1996 and October 1995**

Monitoring well number	Date measured	Well depth (from TOC)	Top of casing (ft-MSL)	Top of casing to water level (ft-BTOC)	Potentiometric surface elevation (ft-MSL)
GW-193	10/19/95	21.0	934.00	8.44	925.56
	04/18/96	21.0	934.00	9.50	924.50
GW-657	10/19/95	15.2	930.53	6.18	924.35
	04/18/96	15.2	930.53	6.23	924.30
GW-707	10/19/95	16.6	930.91	5.89*	925.02
	04/18/96	16.6	930.91	8.60	922.31
GW-708	10/19/95	13.1	930.87	4.83	926.04
	04/18/96	13.1	930.87	4.70	926.17
GW-808	10/19/95	36.1	930.75	8.02	922.73
	04/18/96	36.1	930.75	7.61	923.14
GW-809	10/19/95	36.0	931.04	8.27	922.77
	04/18/96	36.0	931.04	7.82	923.22
GW-810	10/19/95	26.1	931.44	9.42	922.02
	04/18/96	26.1	931.44	9.53	921.91

Notes:

MSL = mean sea level

BTOC = below top of casing

TOC = top of casing

* = Apparent transcription error in field notes (water depth and water column height transposed)

This technical site plan depicts two buildings, Building 9105 and Building 9201-2, within a rectangular boundary. Building 9105 is a large, irregularly shaped structure on the left side. Building 9201-2 is a smaller, more complex structure on the right side. A north arrow is located in the upper left corner, pointing towards the top of the page. A line with 'x' markers runs diagonally from the top left towards the center. A curved line with an arrow points towards the bottom left corner. The plan is annotated with several coordinates: 'E 59,700' at the top and bottom center, and 'N 29,300' on the right side. A well identifier '3W-810 (921.91)' is located near the top left corner.

Well Location
at 1996
Metric Contour
Potentiometric Contour

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Environmental Management Department

FIGURE 2-3

Building 9201-1 Site Groundwater
Potentiometric Contour Map April 1996

Studies of the Y-12 Plant hydrogeology indicate that an overall south/southeasterly hydraulic gradient is present in the unconsolidated and bedrock intervals at the Building 9201-1 Site (HSW 1994). Seasonal variation in groundwater elevations is relatively small, but does produce an apparent northeasterly deflection of the water table in the vicinity of GW-707 and GW-810. However, the overall flow direction, for any petroleum contaminants entering groundwater from the former UST depicted for both periods of measurement, is from north to south/southeast across the site.

2.3 Groundwater Analytical Data

Analytical data for groundwater sampled at the site during site status monitoring are presented in Table 2-2. Original analytical laboratory results for environmental and quality control samples are presented in Appendix A. Quality control sampling (trip blank) for this round of site status monitoring indicate no cross-contamination of the samples for the analytes of interest occurred. Analytical results for this round of site status monitoring did not indicate any significant change in the level of contamination as compared to historical monitoring data. Some contaminant levels in GW-708 were slightly elevated as compared to the last round of site status monitoring data. However, contaminant levels in GW-193 were slightly lower than found during the previous round of sampling.

Benzene and TPH-GRO values for GW-193 and GW-708 continued to exceed the applicable Closure Action Levels of 0.07 ppm for benzene and 1.0 ppm for TPH. Both of these wells have historically produced values in excess of these Closure Action Limits. These results produce no change in the horizontal area of groundwater contamination as defined by the comprehensive monitoring data. Analytical results for GW-657, GW-707, GW-808, GW-809, and GW-810 show no groundwater contamination detected above analytical quantitation limits, which are below the applicable Closure Action Levels. These data indicate that groundwater contamination has not migrated downgradient to the location of these wells, and suggest that the area of groundwater contamination is relatively stable over time.

These results are consistent with previous monitoring results and the calculated hydraulic gradient, velocity, and conductivity from slug testing of wells GW-193 and GW-707 (Energy Systems 1992). It is expected that contaminant levels will generally fall off because of natural attenuation. The processes of natural attenuation (dilution/dispersion and degradation) result in decreases in contaminant concentrations. However, the rate of the concentration decreases will likely be slow because site specific conditions limit dispersion and mixing with uncontaminated groundwater.

**Table 2-2. Analytical results for groundwater samples collected during
site status monitoring**

Sampling event	Sampling date	TPH-GRO ¹ (ppm)	Benzene (ppm)	Ethylbenzene (ppm)	Toluene (ppm)	Xylenes (ppm)
<i>GW-193</i>						
Site status monitoring	04-18-96	*1.800	*0.220	0.200	0.030	0.120
Site status monitoring	10-19-95	*3.900	*0.520	0.480	0.045	0.300
Site status monitoring	05-04-95	*2.400	*0.350	0.280	0.077	0.200
Site status monitoring	12-14-94	*3.000	*0.620	0.320	0.230B ²	0.360B
<i>GW-657</i>						
Site status monitoring	04-18-96	<0.100	0.010U ⁴	0.010U	0.010U	0.010U
Site status monitoring	10-19-95	<0.100J ³	0.010U	0.010U	0.010U	0.010U
Site status monitoring	05-04-95	<0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	12-14-94	<0.100	0.010U	0.010U	0.010U	0.010U
<i>GW-707</i>						
Site status monitoring	04-18-96	<0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	10-19-95	0.100J	0.010U	0.010U	0.010U	0.010U
Site status monitoring	05-04-95	0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	12-14-94	0.100	0.010U	0.010U	0.010U	0.010U

Table 2.2 (continued)

Sampling event	Sampling date	TPH-GRO ¹ (ppm)	Benzene (ppm)	Ethylbenzene (ppm)	Toluene (ppm)	Xylenes (ppm)
<i>GW-708</i>						
Site status monitoring	04-18-96	*9.600	*0.680	0.590	0.068	0.760
Site status monitoring	10-19-95	*6.700	*0.670	0.620	0.075	0.630
Site status monitoring	05-04-95	*6.400	*0.500	0.430	0.062	0.930
Site status monitoring	12-14-94	*5.300	*0.820	0.610	0.094B	1.200B
<i>GW-808</i>						
Site status monitoring	04-18-96	<0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	10-19-95	<0.100J	0.010U	0.010U	0.010U	0.010U
Site status monitoring	05-04-95	0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	12-14-94	0.100	0.010U	0.010U	0.010U	<.010B
<i>GW-809</i>						
Site status monitoring	04-18-96	<0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	10-19-95	<0.100J	0.010U	0.010U	0.010U	0.010U
Site status monitoring	05-04-95	0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	12-14-94	0.100	0.010U	0.010U	0.010U	0.010U

Table 2.2 (continued)

Sampling event	Sampling date	TPH-GRO ¹ (ppm)	Benzene (ppm)	Ethylbenzene (ppm)	Toluene (ppm)	Xylenes (ppm)
<i>GW-810</i>						
Site status monitoring	04-18-96	<0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	10-19-95	<0.100J	0.010U	0.010U	0.010U	0.010U
Site status monitoring	05-04-95	0.100	0.010U	0.010U	0.010U	0.010U
Site status monitoring	12-14-94	0.100	0.010U	0.010U	0.010U	0.010U

¹ TPH-GRO = Total Petroleum Hydrocarbons-Gasoline Range Organics.

² B = Indicates the analyte was found in the associated blank as well as in the sample.

³ J = Value estimated for contaminant.

⁴ U = Contaminant was not detected above quantitation limit during the analysis.

* Denotes contamination above the applicable closure action levels for the site.

3. VAPOR MONITORING

3.1 Monitoring Methods and Locations

Site status vapor monitoring has been conducted as part of the Monitoring Only program at seven access points along subsurface stormwater and sewer drainage lines that cross the Building 9201-1 Site. However, none of the subsurface utilities present at the site crosses the groundwater plume defined by the most recent data. The locations of vapor monitoring locations are illustrated in Figure 3-1.

At each utility location, the internal atmosphere was monitored using direct reading instruments. Organic vapors were measured using a Thermo Environmental™ organic vapor meter (OVM) (serial number M249385). Oxygen and lower explosive limit (LEL) were monitored with an MSA-260 combination meter (serial number M218197).

3.2 Vapor Monitoring Results

The results of site status vapor monitoring conducted April 16, 1996 at the Building 9201-1 Site are presented in Table 3-1. Measured oxygen percentages are within the range of normal air concentrations. LEL readings of 0% indicate that an explosion hazard does not exist within any of the monitored utilities. Organic vapor readings were all at 0.0 ppm except at sampling location 409 where readings ranged from 0.3 to 0.5 ppm above background and at location C-4019 where readings ranged from 0.0 to 8.1 ppm above background. Results from previous rounds of monitoring have predominantly shown no detectable concentrations of organic vapors. However, during the May 1995 monitoring effort, concentrations of organic vapors were detected at up to 1.8 ppm in 1 location (C-4021), and up to 0.6 ppm at locations 402A, 409, C4019, and C-4111. Organic vapor results and groundwater analytical results are not directly comparable for any site status monitoring event. The temporal variability of the occurrence of organic vapors suggests that these are related to either conditional (i.e., seasonal, temperature-related, etc.) off-gassing of the Building 9201-1 groundwater contamination plume, or a transient non-UST source.

The 8.1 ppm organic vapor reading detected during the current round of monitoring poses no hazard and is considered to be of limited significance.

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Environmental Management Department

FIGURE 3-1

**Building 9201-1 Site
Vapor Monitoring Sampling
Location Map**

**Table 3-1. Vapor monitoring results for the Building 9201-1 Site,
April 16, 1996**

Sampling location	O ₂ %	LEL %	Organic vapors (ppm)	Background organic vapors (ppm)
402A	20.8	0	0.0	0.0
409	20.8	0	0.0	0.3-0.5
C-4019	20.8	0	0.0	0.0-8.1
C-4021	20.8	0	0.0	0.0
C-4112	20.8	0	0.0	0.0
C-4111	20.8	0	0.0	0.0
C-4024	20.8	0	0.0	0.0

REFERENCES

- Energy Systems (Martin Marietta Energy Systems, Inc.) 1992. *Corrective Action Plan for Underground Storage Tank 2331-U at the Building 9201-1 Site*, Y/SUB-92-99928C/3.
- Energy Systems 1994. *Corrective Action Baseline Report for Underground Storage Tank 2331-U, Building 9201-1*, Y/SUB/94-99069C/Y15/2.
- HSW Environmental Consultants, Inc. 1994. *Calendar Year 1993 Groundwater Quality Report for the Upper East Fork Poplar Creek Hydrogeologic Regime, Y-12 Plant, Oak Ridge, Tennessee*, Y/SUB/94-EAQ10C/2/P1.
- TDEC (Tennessee Department of Environment and Conservation) 1994. *Underground Storage Tank Reference Handbook*, Second Edition.

APPENDIX A
LABORATORY ANALYTICAL RESULTS FOR
SITE STATUS MONITORING

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Y-12 ANALYTICAL SERVICES ORGANIZATION

PAGE 1 OF 1

<u>SUBMITTER</u>	<u>ADDRESS</u>	<u>CUSTOMER ID</u>	<u>REQ NO</u>	<u>SAMPLE NO</u>	<u>MTC</u>	<u>STATUS</u>
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090005	8601	APPROVED
DATE SAMPLED: 04/18/96 09:25:00	DATE NEEDED: 04/25/96	LOCATION: UST GW-193			CHARGE #:	S2205F26
DATE RECEIVED: 04/18/96	DATE COMPLETED: 05/01/96	PROJECT CODE:			CASE:	U03130
SAMPLER: 13303	SAMPLE DESCRIPTION: GRAB					

FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1, FACILITY ID # 0-010117

TEST: BTEX	VOA Analysis, BTEX Compounds (SW846 8020)	REPLICATE: 1	STATUS: CANCELLED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED:	APPROVER:
THIS TEST WAS CANCELLED BY 4RW			

TEST: GRO	TPH Gasoline Range Organics Including BTEX	REPLICATE: 1	STATUS: APPROVED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED: 04/21/96 13:31:00	APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
V2664	Gasoline Range Organics		1800		ug/L
V71432	Benzene		220		ug/L
V100414	Ethylbenzene		200		ug/L
V108883	Toluene		30		ug/L
V1330207	Xylene		120		ug/L
V1672	GRO Quantitation Limit		200		ug/L
V1912	BTEX Quantitation Limit		20		ug/L
V1661	GRO Amount in Blank		NONE		ug/L

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PAGE 1 OF 1

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090006	8601	APPROVED
DATE SAMPLED: 04/18/96 14:32:00	DATE NEEDED: 04/25/96	LOCATION: UST GW-657			CHARGE #: S2205F26	
DATE RECEIVED: 04/18/96	DATE COMPLETED: 05/01/96	PROJECT CODE:			CASE: U03130	
SAMPLER: 13303	SAMPLE DESCRIPTION: GRAB					

FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID # 0-010117

TEST: BTEX	VOA Analysis, BTEX Compounds (SW846 8020)	REPLICATE: 1	STATUS: CANCELLED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED:	APPROVER:
THIS TEST WAS CANCELLED BY 4RW			

TEST: GRO	TPH Gasoline Range Organics Including BTEX	REPLICATE: 1	STATUS: APPROVED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED: 04/21/96 14:16:00	APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
N2664	Gasoline Range Organics		<100		ug/L
71432	Benzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L
108883	Toluene		10 U		ug/L
1330207	Xylene		10 U		ug/L
N1672	GRO Quantitation Limit		100		ug/L
N1912	BTEX Quantitation Limit		10		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

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PAGE 1 OF 1

<u>SUBMITTER</u>	<u>ADDRESS</u>	<u>CUSTOMER ID</u>	<u>REQ NO</u>	<u>SAMPLE NO</u>	<u>MTC</u>	<u>STATUS</u>
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090007	8601	APPROVED
DATE SAMPLED: 04/18/96 14:17:00	DATE NEEDED: 04/25/96	LOCATION: UST GW-707			CHARGE #: S2205F26	
DATE RECEIVED: 04/18/96	DATE COMPLETED: 05/01/96	PROJECT CODE:			CASE: U03130	
SAMPLER: 13303	SAMPLE DESCRIPTION: GRAB					

FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID # 0-010117

TEST: BTEX	VOA Analysis, BTEX Compounds (SW846 8020)	REPLICATE: 1	STATUS: CANCELLED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED:	APPROVER:
	THIS TEST WAS CANCELLED BY 4RW		

TEST: GRO	TPH Gasoline Range Organics Including BTEX	REPLICATE: 1	STATUS: APPROVED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED: 04/20/96 16:31:00	APPROVER: E030124

<u>CAS NUMBER</u>	<u>DETERMINATION</u>	<u>DT</u>	<u>RESULT</u>	<u>CONFIDENCE</u>	<u>UNIT</u>
N2664	Gasoline Range Organics		<100		ug/L
71432	Benzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L
108883	Toluene		10 U		ug/L
1330207	Xylene		10 U		ug/L
N1672	GRO Quantitation Limit		100		ug/L
N1912	BTEX Quantitation Limit		10		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

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PAGE 1 OF 1

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090009	8601	APPROVED
DATE SAMPLED: 04/18/96 09:32:00	DATE NEEDED: 04/25/96	LOCATION: UST GW-708			CHARGE #: S2205F26	
DATE RECEIVED: 04/18/96	DATE COMPLETED: 05/01/96	PROJECT CODE:			CASE: U03130	
SAMPLER: 13303	SAMPLE DESCRIPTION: GRAB					

FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID #0-010117

TEST: BTEX	VOA Analysis, BTEX Compounds (SW846 8020)	REPLICATE: 1	STATUS: CANCELLED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED:	APPROVER:
THIS TEST WAS CANCELLED BY 4RW			

TEST: GRO	TPH Gasoline Range Organics Including BTEX	REPLICATE: 1	STATUS: APPROVED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED: 04/21/96 16:04:00	APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
N2664	Gasoline Range Organics		9600		ug/L
71432	Benzene		680		ug/L
100414	Ethylbenzene		590		ug/L
108883	Toluene		68		ug/L
1330207	Xylene		760		ug/L
N1672	GRO Quantitation Limit		500		ug/L
N1912	BTEX Quantitation Limit		50		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

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CORRECTION REPORT

05/02/96 13:36:18

Y-12 ANALYTICAL SERVICES ORGANIZATION

PAGE 1 OF 1

<u>SUBMITTER</u>	<u>ADDRESS</u>	<u>CUSTOMER ID</u>	<u>REQ NO</u>	<u>SAMPLE NO</u>	<u>MTC</u>	<u>STATUS</u>
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090010	8601	APPROVED
DATE SAMPLED: 04/18/96 11:20:00	DATE NEEDED: 04/25/96	LOCATION: UST GW-808			CHARGE #: S2205F26	
DATE RECEIVED: 04/18/96	DATE COMPLETED: 05/01/96	PROJECT CODE:			CASE: U03130	
SAMPLER: 13303	SAMPLE DESCRIPTION: GRAB					

FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID # 0-010117

TEST: BTEX	VOA Analysis, BTEX Compounds (SW846 8020)	REPLICATE: 1	STATUS: CANCELLED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED:	APPROVER:
THIS TEST WAS CANCELLED BY 4RW			

TEST: GRO	TPH Gasoline Range Organics Including BTEX	REPLICATE: 1	STATUS: APPROVED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED: 04/21/96 16:53:00	APPROVER: E030124

<u>CAS NUMBER</u>	<u>DETERMINATION</u>	<u>DT</u>	<u>RESULT</u>	<u>CONFIDENCE</u>	<u>UNIT</u>
N2664	Gasoline Range Organics		<100		ug/L
71432	Benzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L
108883	Toluene		10 U		ug/L
1330207	Xylene		10 U		ug/L
N1672	GRO Quantitation Limit		100		ug/L
N1912	BTEX Quantitation Limit		10		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

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CORRECTION REPORT

05/02/96 13:36:25

Y-12 ANALYTICAL SERVICES ORGANIZATION

PAGE 1 OF 1

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTC	STATUS
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090012	8601	APPROVED
DATE SAMPLED: 04/18/96 11:19:00	DATE NEEDED: 04/25/96	LOCATION: UST GW-809			CHARGE #:	S2205F26
DATE RECEIVED: 04/18/96	DATE COMPLETED: 05/01/96	PROJECT CODE:			CASE:	U03130
SAMPLER: 13303	SAMPLE DESCRIPTION: GRAB					

FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID # 0-010117

TEST: BTEX	VOA Analysis, BTEX Compounds (SW846 8020)	REPLICATE: 1	STATUS: CANCELLED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED:	APPROVER:
	THIS TEST WAS CANCELLED BY 4RW		

TEST: GRO	TPH Gasoline Range Organics Including BTEX	REPLICATE: 1	STATUS: APPROVED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED: 04/21/96 17:29:00	APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
N2664	Gasoline Range Organics		<100		ug/L
71432	Benzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L
108883	Toluene		10 U		ug/L
1330207	Xylene		10 U		ug/L
N1672	GRO Quantitation Limit		100		ug/L
N1912	BTEX Quantitation Limit		10		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

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CORRECTION REPORT

05/02/96 13:36:31

Y-12 ANALYTICAL SERVICES ORGANIZATION

PAGE 1 OF 1

<u>SUBMITTER</u>	<u>ADDRESS</u>	<u>CUSTOMER ID</u>	<u>REQ NO</u>	<u>SAMPLE NO</u>	<u>MTC</u>	<u>STATUS</u>
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090013	8601	APPROVED
DATE SAMPLED: 04/18/96 14:15:00	DATE NEEDED: 04/25/96	LOCATION: UST GW-810			CHARGE #: S2205F26	
DATE RECEIVED: 04/18/96	DATE COMPLETED: 05/01/96	PROJECT CODE:			CASE: U03130	
SAMPLER: 13303	SAMPLE DESCRIPTION: GRAB					

FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID # 0-010117

TEST: BTEX	VOA Analysis, BTEX Compounds (SW846 8020)	REPLICATE: 1	STATUS: CANCELLED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED:	APPROVER:
THIS TEST WAS CANCELLED BY 4RW			

TEST: GRO	TPH Gasoline Range Organics Including BTEX	REPLICATE: 1	STATUS: APPROVED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED: 04/21/96 18:12:00	APPROVER: E030124

<u>CAS NUMBER</u>	<u>DETERMINATION</u>	<u>DT</u>	<u>RESULT</u>	<u>CONFIDENCE</u>	<u>UNIT</u>
N2664	Gasoline Range Organics		<100		ug/L
71432	Benzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L
108883	Toluene		10 U		ug/L
1330207	Xylene		10 U		ug/L
N1672	GRO Quantitation Limit		100		ug/L
N1912	BTEX Quantitation Limit		10		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

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05/02/96 13:36:38

Y-12 ANALYTICAL SERVICES ORGANIZATION

PAGE 1 OF 1

SUBMITTER	ADDRESS	CUSTOMER ID	REQ NO	SAMPLE NO	MTG	STATUS
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090015	8601	APPROVED
DATE SAMPLED: 04/18/96 08:30:00	DATE NEEDED: 04/25/96	LOCATION: EQUIPMENT RINSE			CHARGE #: S2205F26	
DATE RECEIVED: 04/18/96	DATE COMPLETED: 05/01/96	PROJECT CODE:			CASE: U03130	
SAMPLER: 13303	SAMPLE DESCRIPTION: GRAB					

FINAL APPROVAL:

COMMENTS: UST WELLS AT 9201-1 SITE, FACILITY ID # 0-010117

TEST: BTEX	VOA Analysis, BTEX Compounds (SW846 8020)	REPLICATE: 1	STATUS: CANCELLED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED:	APPROVER:
THIS TEST WAS CANCELLED BY 4RW			
TEST: GRO	TPH Gasoline Range Organics Including BTEX	REPLICATE: 1	STATUS: APPROVED
PREP MTH:	PROC MTH: SW846 8020 PHASE:	TIME ANALYZED: 04/21/96 18:48:00	APPROVER: E030124

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
N2664	Gasoline Range Organics		<100		ug/L
71432	Benzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L
108883	Toluene		<10		ug/L
1330207	Xylene		<10		ug/L
N1672	GRO Quantitation Limit		100		ug/L
N1912	BTEX Quantitation Limit		10		ug/L
N1661	GRO Amount in Blank		NONE		ug/L

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*** LAST PAGE ***

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04/25/96 15:09:46

Y-12 ANALYTICAL SERVICES ORGANIZATION

PAGE 1 OF 1

<u>SUBMITTER</u>	<u>ADDRESS</u>	<u>CUSTOMER ID</u>	<u>REQ NO</u>	<u>SAMPLE NO</u>	<u>MTC</u>	<u>STATUS</u>
Ingram, Edward M	Building 9115 Room 0128 M.S.8219			E961090016	8601	APPROVED
DATE SAMPLED: 04/18/96 08:00:00	DATE NEEDED: 04/25/96	LOCATION: TRIP BLANK		CHARGE #: S2205F26		
DATE RECEIVED: 04/18/96	DATE COMPLETED: 04/25/96	PROJECT CODE:		CASE: U03130		
SAMPLER: 13303	SAMPLE DESCRIPTION: GRAB	FINAL APPROVAL:				

COMMENTS: UST PROGRAM E. INGRAM

TEST: VOA624	Volatile Organics by GC/MS (EPA 624)	REPLICATE: 1	STATUS: APPROVED
PREP MTH: EPA624	PROC MTH: EPA 624	PHASE:	TIME ANALYZED: 04/23/96 11:00:00
			APPROVER: E030124

<u>CAS NUMBER</u>	<u>DETERMINATION</u>	<u>DT</u>	<u>RESULT</u>	<u>CONFIDENCE</u>	<u>UNIT</u>
74873	Chloromethane		10 U		ug/L
74839	Bromomethane		10 U		ug/L
75014	Vinyl chloride		10 U		ug/L
75003	Chloroethane		10 U		ug/L
75694	Trichlorofluoromethane		10 U		ug/L
75092	Methylene chloride		10 U		ug/L
75354	1,1-Dichloroethene		10 U		ug/L
75343	1,1-Dichloroethane		10 U		ug/L
156605	trans-1,2-Dichloroethene		10 U		ug/L
67663	Chloroform		10 U		ug/L
107062	1,2-Dichloroethane		10 U		ug/L
71556	1,1,1-Trichloroethane		10 U		ug/L
56235	Carbon tetrachloride		10 U		ug/L
75274	Bromodichloromethane		10 U		ug/L
110758	2-Chloroethylvinyl ether		10 U		ug/L
78875	1,2-Dichloropropane		10 U		ug/L
10061015	cis-1,3-Dichloropropene		10 U		ug/L
79016	Trichloroethene		10 U		ug/L
124481	Dibromochloromethane		10 U		ug/L
79005	1,1,2-Trichloroethane		10 U		ug/L
71432	Benzene		10 U		ug/L
10061026	trans-1,3-Dichloropropene		10 U		ug/L
75252	Bromoform		10 U		ug/L
127184	Tetrachloroethene		10 U		ug/L
79345	1,1,2,2,-Tetrachloroethane		10 U		ug/L
108883	Toluene		10 U		ug/L
108907	Chlorobenzene		10 U		ug/L
100414	Ethylbenzene		10 U		ug/L

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*** LAST PAGE ***

**APPENDIX B
SITE RANKING FORM
MAY 1996**

UST SITE RANKING FORM

Facility ID Number: 0-010117

Facility Name: Oak Ridge Y-12 Plant

Facility Address: Building 9201-1 Site

Geologic and Hydrogeologic Factors

1	Minimum depth to the water table		
	< 5.0 feet (GW-708 4.51 ft)	50	
	5.1 to 10.0 feet	45	
	10.1 to 15.0 feet	40	
	15.1 to 30.0 feet	35	
	30.1 to 50.0 feet	25	
	50.1 to 75.0 feet	15	
	75.1 to 100.0 feet	10	
	> 100.0 feet	5	
	Score		50

2	Minimum distance between water table and contaminated soil		
	< 5.0 feet (at water table)	50	
	5.1 to 10.0 feet	45	
	10.1 to 15.0 feet	40	
	15.1 to 30.0 feet	35	
	30.1 to 50.0 feet	25	
	50.1 to 75.0 feet	15	
	75.1 to 100.0 feet	10	
	> 100.0 feet	5	
	(After overexcavation no soil samples above applicable TDEC cleanup levels)	Score	0

3	Soil permeability		
	> 10^{-4} cm/sec	30	
	10^{-4} to 10^{-6} cm/sec (GW-193 2.38×10^{-4})	20	
	< 10^{-6} cm/sec	10	
	Score		20

4	Calculated ground water flow rate		
	< 10 feet/day	3	
	10 to 40 feet/day	6	
	40 to 90 feet/day	12	
	90 to 130 feet/day	18	
	130 to 260 feet/day	24	
	> 260 feet/day	30	
	Karst (Maynardville Limestone)	30	
	Score		30

Receptor Factors

5	Basements		
	< 50.0 feet from known contamination	150	
	50.1 to 100.0 feet from known contamination (approx. 55 ft to Building 9201-1)	75	
	100.1 to 200.0 feet from known contamination	50	
	200.1 to 300.0 feet from known contamination	25	
	> 300.1 feet	0	
	Score		75

6	Sanitary sewers		
	< 50.0 feet from known contamination (approx. 36 ft to delineated GW contamination)	75	
	50.1 to 100.0 feet from known contamination	40	
	100.1 to 200.0 feet from known contamination	20	
	200.1 to 300.0 feet from known contamination	10	
	> 300.1 feet	0	
	Score		75

7	Storm water sewers		
	< 50.0 feet from known contamination (approx. 10 ft to delineated GW contamination)	50	
	50.1 to 100.0 feet from known contamination	30	
	100.1 to 200.0 feet from known contamination	10	
	200.1 to 300.0 feet from known contamination	5	
	> 300.1 feet	0	
	Score		50

8	Other subsurface utilities		
	< 50.0 feet from known contamination (approx. 36 ft from chilled water lines)	30	
	50.1 to 100.0 feet from known contamination	20	
	100.1 to 200.0 feet from known contamination	10	
	200.1 to 300.0 feet from known contamination	5	
	> 300.1 feet	0	
	Score		30

9	Public water supply source		
	< .1 miles	300	
	.1 to .25 miles	200	
	.25 to .5 miles	100	
	> .51 miles (approx. 2.2 miles to pumping station at Melton Hill Lake)	0	
	Score		0

10	Private water supply source		
	< .1 miles	200	
	.1 to .25 miles	150	
	.25 to .5 miles	100	
	> .51 miles (approx. 2.4 miles to a private well in Wiltshire Estates, Oak Ridge)	0	
	Score		0

11	Distance to surface water	
	<.1 miles (approx. 120 ft to Upper East Fork Poplar Creek)	25
	.1 to .25 miles	15
	.25 to .5 miles	5
	>.51 miles	2
	Visibly impacted surface water from a petroleum product	200
	Score	25

Contaminant Factors

12	Contaminant concentration	A. Max. Contam. Levels	B. App. Cleanup Levels	C. Cont. Conc. Ratio A/B
	Benzene in ground water (GW-708 04/18/96*)	0.68 ppm	0.07 ppm	9.71
	TPH in ground water (GW-708 04/18/96*)	9.6 ppm	1.0 ppm	9.6
	BTX in soil (Tank Pit West 3/94*)	2.4 ppm	250 ppm	0.01
	TPH in soil (Tank Pit West 3/94*)	240 ppm	500 ppm	0.48

* Reflects most recent data per TDEC instruction

13	Benzene in ground water	
	<1.0	0
	1.1 to 10.0	25
	10.1 to 50.0	50
	50.1 to 100.0	100
	100.1 to 500.0	200
	>500.1	300
	Score	25

14	TPH in ground water	
	<1.0	0
	1.1 to 10.0	20
	10.1 to 50.0	40
	50.1 to 100.0	80
	100.1 to 500.0	120
	>500.1	200
	Score	20

15	BTX in soil	
	<1.0	0
	1.1 to 5.0	25
	5.1 to 10.0	50
	10.1 to 50.0	100
	>50.1	200
	Score	0

16	TPH in soil	
	<1.0	0
	1.1 to 5.0	20
	5.1 to 10.0	40
	10.1 to 50.0	80
	>50.1	100
	Score	0

17	Total site score	400
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