Environmental
Restoration
*University of California*
Environmental Restoration Project, MS M992
Los Alamos, New Mexico 87545
505-667-0808/FAX 505-665-4747

*U.S. Department of Energy*
Los Alamos Area Office, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
505-667-7203/FAX 505-665-4504

*Date:* March 25, 1999
*Refer to:* EM/ER:99-

MAR 1999
RECEIVED

Dr. Robert S. Dinwiddie
NMED-HRMB
P.O. Box 26110
Santa Fe, NM 87502

**SUBJECT: ADDITIONAL INFORMATION TO RSI RESPONSE FOR TA-53 WP/SAP AND SAP ADDENDUM [PRS 53-002 (a and b) AND 53-006(a-e)]**

Dear Dr. Dinwiddie:

Enclosed are copies of waste profile forms associated with classification of the radioactive liquid waste from underground decay tanks TA-53-68, -69, -144, and 145 (Potential Release Sites [PRSs] 53-006[b,c,d, and e], respectively) prior to discharge to the south impoundment (PRS 53-002[b]). These waste profile forms are being forwarded to the New Mexico Environment Department Hazardous and Radioactive Materials Bureau (NMED-HRMB) per our response to specific comment 8 in your request for supplemental information (RSI) for Resource Conservation and Recovery Act Facility Investigation Work Plan/Sampling and Analysis Plan (SAP) for TA-53 Surface Impoundments, and the TA-53 SAP Addendum. Our response to the RSI was submitted to NMED-HRMB on Friday, March 19, 1999.

If you have any questions, please call Dave McInroy at (505) 667-0819 or Joe Mose at (505) 667-5808.

Sincerely,

Julie A. Canepa, Program Manager
LANL/ER Project

Sincerely,

Theodore J. Taylor, Program Manager
DOE/LAAO

JC/TT/VR/dm

Enclosure: Waste Profile Forms



4512

TV

Cy (w/enc.):
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J. Mose, LAAO, MS A316
D. Neleigh, EPA, R. 6, 6PD–N
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EM/ER File, MS M992
Tracker RM 604, MS M992

**Los Alamos**
**National Laboratory**

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# WASTE PROFILE FORM

COPY

Account information

For rapid processing, complete all sections in black or blue ink and mail this form to Waste Services Group at MS J579

Reference Number: 25026

| Waste Generator's Name (Print) | Znumber | Waste Management Coordinator's Name (Print) | Znumber |
|---|---|---|---|
| Rich Ryder | 084353 | Bernadette Pesenti | 099231 |

| Generator's Group | Generator's Telephone | Generator's Mail Stop | Waste Stream Technical Area | Building | Room |
|---|---|---|---|---|---|
| AOT-FM | 7-2936 | H814 | 53 | Area A | Tank |

**Waste Accumulation**
Check as many as apply.

- ☐ Satellite accumulation area --> site no.: _____
- ☐ Less than 90 day accumulation area --> site no.: _____
- ☑ Radioactive Materials Management Area ~~(RMMA)~~ --> RCRA site no.: _____
- ☐ None of the above

**Method of Characterization**
Check as many as apply.

- ☐ Acceptable Knowledge (AK)
- ☒ Analysis attached --> sample/request no. _____
- ☐ MSDS attached
- ☐ Request for analysis

## Section 1- Chemical and Physical Characteristics

*For help in completing this section of the form, call 5-WAST or 5-4000.*

**Waste Type**
Check only one.

- ☐ Unused/unspent chemical
  *Check Waste Classes and Associated Documentation Only*
- ☒ Process waste/spent chemical
  Complete all of Section 1.

**Waste Classes**
Check as many as apply.

- ☒ On-going generation
- ☐ One-time generation
- ☒ Radioactive (complete Sec. 2)
- ☐ Non-radioactive
- ☒ Wastewater (complete Sec. 3) DS
- ☐ Classified/Sensitive

**Associated Documentation**
Check as many as apply.

- ☐ Process SOP --> no.: ____
- ☐ RMMA OP --> no.: ____
- ☐ WM SOP --> no.: ____
- ☐ Other --> ____
- ☒ None --> describe below

**Waste Category**
Check as many as apply.

- ☐ Solvent
- ☐ Degreaser
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated hazardous waste residue
- ☐ Explosive process waste
- ☐ Infectious/biological waste
- ☐ Beryllium
- ☐ Asbestos-friable
- ☐ Asbestos-nonfriable
- ☐ Empty containers
- ☐ PCB (<50 ppm)
  - ☐ PCB (50 - 500 ppm)
  - ☐ PCB (> 500 ppm)
  - --> id. no. : _____
- ☒ Not applicable --> describe below

**Waste Sources**
Check as many as apply.

- ☒ Research and development
- ☐ Maintenance
- ☐ Construction
- ☐ Material processing
- ☐ Decon/decom
- ☐ Investigation derived
- ☐ Remediation
- ☐ UST - petroleum
- ☐ UST - non-petroleum
- ☐ Generator treatment
- ☐ Interim/permitted treatment
- ☐ Industrial sludge
- ☐ Sanitary sludge
- ☐ Abatement

**Waste Matrix**
Check only one.

**Gas**

- ☐ ≤ 1.5 Atmospheres
- ☐ > 1.5 Atmospheres

**Liquid**

- ☒ Aqueous
- ☐ Organic
- ☐ Inorganic

**Solid**

- ☐ Powder/ash
- ☐ Solid
- ☐ Absorbed liquid

**Matrix Type**
Check only one.

- ☒ Homogeneous
- ☐ Heterogeneous --> describe below

**Waste/Process Description**

~~Holding tank: Area A~~

Analysis attached. Sample numbers: 96DS322, 96DS323, 96DS324, 96DS325

10-07-96 DS

TA-53 Hedeny Pad-Water Tank
Area A Samples taken 8/14/96

## Section 1- Chemical and Physical Characteristics (continued)

**Ignitability (degrees F.)**
Check only one.

- ☐ < 73
- ☐ 73-99
- ☐ 100-139
- ☐ 140-200
- ☐ > 200
- ☐ Ignitable solid
- ☐ DOT oxidizer
- ☒ Not ignitable

**Corrosivity (pH)**
Check only one.

- ☐ ≤ 2.0
- ☐ 2.1-4.0
- ☒ 4.1-6.0
- ☐ 6.1-9.0
- ☐ 9.1-12.4
- ☐ ≥ 12.5
- ☐ Liquid corrosive to steel
- ☐ Not aqueous

**Reactivity**
Check as many as apply.

- ☐ Unstable
- ☐ Water reactive
- ☐ Pyrophoric
- ☐ Cyanide bearing
- ☐ Sulfide bearing
- ☐ Shock sensitive
- ☐ Explosive - class _____
- ☒ Non-reactive

**Boiling Point (degrees F.)**
Check only one.

- ☐ ≤ 95
- ☒ > 95
- ☐ Not applicable

| Identify presence of contaminants. | | | Minimum | | Maximum | Unit (ppm or % only) | Analytical method | |
|---|---|---|---|---|---|---|---|---|
| **Toxicity Characteristic Metals** | | | | | | | | |
| Arsenic | ☐ None | ☒ < 5.0 ppm | | to | | | ☒ TCLP | ☐ Total |
| Barium | ☐ None | ☒ < 100.0 ppm | | to | | | ☒ TCLP | ☐ Total |
| Cadmium | ☒ None | ☐ < 1.0 ppm | | to | | | ☒ TCLP | ☐ Total |
| Chromium | ☐ None | ☒ < 5.0 ppm | | to | | | ☒ TCLP | ☐ Total |
| Lead | ☒ None | ☐ < 5.0 ppm | | to | | | ☒ TCLP | ☐ Total |
| Mercury | ☒ None | ☐ < 0.2 ppm | | to | | | ☒ TCLP | ☐ Total |
| Selenium | ☐ None | ☒ < 1.0 ppm | | to | | | ☒ TCLP | ☐ Total |
| Silver | ☒ None | ☐ < 5.0 ppm | | to | | | ☒ TCLP | ☐ Total |
| **Toxicity Characteristic Organic Compounds** | | | | | | | | |
| Benzene | ☒ None | ☐ < 0.5 ppm | | to | | | ☐ TCLP | ☐ Total |
| Carbon tetrachloride | ☒ None | ☐ < 0.5 ppm | | to | | | ☐ TCLP | ☐ Total |
| Chlorobenzene | ☒ None | ☐ < 100.0 ppm | | to | | | ☐ TCLP | ☐ Total |
| Chloroform | ☒ None | ☐ < 6.0 ppm | | to | | | ☐ TCLP | ☐ Total |
| Cresol | ☒ None | ☐ < 200.0 ppm | | to | | | ☐ TCLP | ☐ Total |
| 1,4-dichlorobenzene | ☒ None | ☐ < 7.5 ppm | | to | | | ☐ TCLP | ☐ Total |
| 1,2-Dichloroethane | ☒ None | ☐ < 0.5 ppm | | to | | | ☐ TCLP | ☐ Total |
| 1,1-Dichloroethylene | ☒ None | ☐ < 0.7 ppm | | to | | | ☐ TCLP | ☐ Total |
| 2,4-Dinitrotoluene | ☒ None | ☐ < 0.13 ppm | | to | | | ☐ TCLP | ☐ Total |
| Hexachlorobenzene | ☒ None | ☐ < 0.13 ppm | | to | | | ☐ TCLP | ☐ Total |
| Hexachlorobutadiene | ☒ None | ☐ < 0.5 ppm | | to | | | ☐ TCLP | ☐ Total |
| Hexachloroethane | ☒ None | ☐ < 3.0 ppm | | to | | | ☐ TCLP | ☐ Total |
| Methyl ethyl ketone | ☒ None | ☐ < 200.0 ppm | | to | | | ☐ TCLP | ☐ Total |
| Nitrobenzene | ☒ None | ☐ < 2.0 ppm | | to | | | ☐ TCLP | ☐ Total |
| Pentachlorophenol | ☒ None | ☐ < 100.0 ppm | | to | | | ☐ TCLP | ☐ Total |
| Pyridine | ☒ None | ☐ < 5.0 ppm | | to | | | ☐ TCLP | ☐ Total |
| Perchloroethylene or tetrachloroethylene | ☒ None | ☐ < 0.7 ppm | | to | | | ☐ TCLP | ☐ Total |
| Trichloroethylene | ☒ None | ☐ < 0.5 ppm | | to | | | ☐ TCLP | ☐ Total |
| 2,4,5-Trichlorophenol | ☒ None | ☐ < 400.0 ppm | | to | | | ☐ TCLP | ☐ Total |
| 2,4,6-Trichlorophenol | ☒ None | ☐ < 2.0 ppm | | to | | | ☐ TCLP | ☐ Total |
| Vinyl chloride | ☒ None | ☐ < 0.2 ppm | | to | | | ☐ TCLP | ☐ Total |

**Additional Chemical Constituents and Contaminants (for hazardous constituents, see AR 10-3, Appendix A)**
List all other constituents (including inerts) not identified above and attach any applicable analyses.

| Name of constituent | Cas no.(optional) | Minimum | | Maximum | Unit (ppm or % only) |
|---|---|---|---|---|---|
| Water | | 95 | to | 100 | % |
| | | | to | | |
| | | | to | | |
| | | | to | | |
| | | | to | | |
| | | | to | | |
| | | | to | | |
| | | | to | | |
| | | | to | | |

## Section 2- Radiological Characteristics

*For help in completing this section of the form, call 5-WAST or 5-4000.*

| | Range minimum | | Range maximum | Unit (Ci/g or Ci/l) |
|---|---|---|---|---|
| **General** | | | | |
| ☐ Alpha | | to | | |
| ☐ Beta | | to | | |
| ☐ Gamma | | to | | |
| **TRU radionuclides** | | | | |
| ☐ None present | | | | |
| ☐ Am-241 | | to | | |
| ☐ Am-243 | | to | | |
| ☐ Cf-249 | | to | | |
| ☐ Cf-251 | | to | | |
| ☐ Cm-243 | | to | | |
| ☐ Cm-245 | | to | | |
| ☐ Cm-247 | | to | | |
| ☐ Pu-238 | | to | | |
| ☐ Pu-239 | | to | | |
| ☐ Pu-240 | | to | | |
| ☐ Pu-242 | | to | | |
| **Fission products** | | | | |
| ☐ None present | | | | |
| ☐ Ba-140 | | to | | |
| ☐ Ce-144 | | to | | |
| ☐ Cs-134 | | to | | |
| ☐ Cs-137 | | to | | |
| ☐ I-129 | | to | | |
| ☐ I-133 | | to | | |
| ☐ Kr-85 | | to | | |
| ☐ Nb-95 | | to | | |
| ☐ Ru-106 | | to | | |
| ☐ Sb-125 | | to | | |
| ☐ Sr-90 | | to | | |
| ☐ Tc-99 | | to | | |
| ☐ Zr-93 | | to | | |
| ☐ Zr-95 | | to | | |
| **Activation products** | | | | |
| ☐ None present | | | | |
| ☐ As-74 | | to | | |
| ☒ Be-7 | 73.9 | to | 121.1 | nCi/L |
| ☐ C-14 | | to | | |
| ☐ Co-56 | | to | | |
| ☒ Co-57 | 12.9 | to | 15.7 | nCi/L |
| ☐ Co-58 | | to | | |
| ☒ Co-60 | 8.1 | to | 10.3 | nCi/L |
| ☐ Cr-51 | | to | | |
| ☐ Eu-152 | | to | | |
| ☐ Mn-52 | | to | | |
| ☒ Mn-54 | 44.6 | to | 50.4 | nCi/L |
| ☐ Nb-94 | | to | | |
| ☐ Ni-59 | | to | | |
| ☐ Ni-63 | | to | | |
| ☐ Rb-83 | | to | | |
| ☐ Rb-84 | | to | | |
| ☐ Se-75 | | to | | |
| ☐ Sr-82 | | to | | |
| ☐ Sr-85 | | to | | |
| ☐ V-48 | | to | | |
| ☐ Y-88 | | to | | |
| ☐ Zn-65 | | to | | |
| ☐ Zr-88 | | to | | |

| | Range minimum | | Range maximum | Unit (Ci/g or Ci/l) |
|---|---|---|---|---|
| **Other** | | | | |
| ☐ None present | | | | |
| ☐ Am-242 | | to | | |
| ☐ Bi-207 | | to | | |
| ☐ Bi-210 | | to | | |
| ☐ Cf-250 | | to | | |
| ☐ Cf-252 | | to | | |
| ☐ Cm-244 | | to | | |
| ☐ H-3 | | to | | |
| ☐ Pa-231 | | to | | |
| ☐ Pb-210 | | to | | |
| ☐ Po-210 | | to | | |
| ☐ Pu-236 | | to | | |
| ☐ Pu-241 | | to | | |
| ☐ Ra-226 | | to | | |
| ☐ Ra-228 | | to | | |
| ☐ Th-230 | | to | | |
| ☐ Th-232 | | to | | |
| ☐ U-232 | | to | | |
| ☐ U-233 | | to | | |
| ☐ U-234 | | to | | |
| ☐ U-235 | | to | | |
| ☐ U-236 | | to | | |
| ☐ U-238 | | to | | |
| **Add'l radionuclides** | | | | |
| ☐ No additional radionuclides present | | | | |
| $Na^{22}$ | 6.1 | to | 8.6 | nCi/L |
| | | to | | |
| | | to | | |
| | | to | | |
| | | to | | |
| | | to | | |
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| | | to | | |
| | | to | | |
| | | to | | |
| | | to | | |
| | | to | | |

**Contamination Type:** *Check as many as apply.*

☑ Volume Contamination

☑ Surface Contamination

## Section 3 - Wastewater Characteristics

*For help in completing this section of the form, call 7-4301.*

| Identify presence of contaminants | | | Minimum | Maximum | Unit (ppm or % only) | Analytical method |
|---|---|---|---|---|---|---|
| Aluminum | ☐ None | ☐ < 5.0 ppm | _____ | to _____ | _____ | ☐ TCLP ☐ Total |
| Boron | ☐ None | ☐ < 5.0 ppm | _____ | to _____ | _____ | ☐ TCLP ☐ Total |
| Cobalt | ☐ None | ☐ < 1.0 ppm | _____ | to _____ | _____ | ☐ TCLP ☐ Total |
| Copper | ☐ None | ☐ < 1.0 ppm | _____ | to _____ | _____ | ☐ TCLP ☐ Total |
| Vanadium | ☐ None | ☐ < 0.10 ppm | _____ | to _____ | _____ | ☐ TCLP ☐ Total |
| Zinc | ☐ None | ☐ < 95.4 ppm | _____ | to _____ | _____ | ☐ TCLP ☐ Total |

**Maximum daily flow** when discharge occurs: _____ ☐ Gallon ☐ Liters

**Average daily flow** when discharge occurs: _____ ☐ Gallon ☐ Liters

Estimated number of days per year that discharge will occur: _____

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50-1: _____ ☐ Gallon ☐ Liters

**For TA-55 use only.** Wastewater will be discharged through one of the following:

☐ Acid line ☐ Caustic line ☐ Industrial waste line

## Section 4 - Additional Information

*If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:*

**WASTE GENERATOR CERTIFICATION:** *Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.*

| Signature | Date |
|---|---|
| [illegible] | 10/8/96 |

# *CST-9 Radiochemistry Screening Results*
## *MRAL III TA-DS SDG# XXX*

***Date :*** *8/14/96* ***Analyst :*** ***DD***

***Gross Gamma Screening Results, 5 minute count time***

| Sample # | Result | Uncertainty | MDA | Units |
|---|---|---|---|---|
| 96ds322 | 143.18 | 0.40 | 0.95 | pCi/mL |
| 96ds327 | 1377.25 | 1.04 | 0.95 | pCi/mL |
| wtrqc | 8.66 | 0.25 | 0.95 | pCi/mL |

***Gross Alpha, Beta Screening Results, 5 minute count time***

| Sample # | Alpha | Uncertainty | MDA | Beta | Uncertainty | MDA | Units |
|---|---|---|---|---|---|---|---|
| 96ds322 | -0.12 | 0.12 | 2.02 | 81.96 | 3.68 | 4.86 | pCi/mL |
| 96ds327 | 23.23 | 2.36 | 2.02 | 1829.08 | 17.29 | 4.86 | pCi/mL |

1 sigma counting uncertainty

# CST-9 Radiochemistry Screening Results
## MRAL II TA-DS SDG# XXX

**Date :** 8/14/96 **Analyst :** DD

### Tritium Screening Results

| Sample # | Tritium | Uncertainty | MDA | Units |
|---|---|---|---|---|
| 96ds322 | 207.94 | 2.92 | 1.63 | pCi/ml |
| 96ds327 | 1187.66 | 7.00 | 1.63 | pCi/ml |

0 sigma counting uncertainty

Sample description
96DS322 500ML DI 8/14/96 DD

Spectrum Filename: 00010016.SPC

Acquisition information
Start time 14-Aug-96 08:04:38
Live time 500
Real time 552
Dead time 9.42%
Detector/Geometry IDs 0 & 0

Detector system
MCB 1

Calibration
Filename: ML3WAT.CLB
Created: 02-May-96 09:22:25 &
Amersham QCY.48, 200 lamda on 500ml in water, R6/25/43,
Feb 1, 1996, prep by GB, 4/30/96, pg 282, NB R6125.

Zero offset -11.394 keV; Gain .494 keV/channel

Library Files
Main analysis library: C:\USER\DUSTY2.LIB

Analysis parameters
Start channel 10 for an energy of -6.46keV
Stop channel 4000 for an energy of 1962.30keV
Peak rejection level 50.000%
Activity scaling factor 5.4010E+01/ 1.0000E+00 = 5.4010E+01
Detection limit method:
Currie limit
Additional random error: 1.0000000E+00
Additional systematic error: 1.0000000E+00
Background width: best method (based on spectrum).
Peak acceptance width = 2.0000000E+00

| Corrections | Status | Comments |
|---|---|---|
| Decay correct to date | NO | |
| Decay during acquisition | NO | |
| Peaked background correction | NO | |
| Absorption (Internal) | NO | |
| Geometry correction | NO | |
| Random summing | NO | |

Energy calibration normalized difference: .0531

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

| PEAK CHANNEL | CENTROID ENERGY | BACKGROUND COUNTS | NET AREA COUNTS | INTENSITY CTS/SEC | UNCERT 3 SIGMA % | FWHM keV | SUSPECTED NUCLIDE | |
|---|---|---|---|---|---|---|---|---|
| 38.04 | 7.39 | 0. | 1691. | 3.382 | 7.30 | 1.222 | - | s |
| 108.45 | 42.15 | 152. | 125. | .250 | 67.48 | 1.403 | - | s |
| 148.67 | 62.01 | 438. | 70. | .140 | 131.55 | 2.868 | - | D |
| 198.78 | 86.76 | 1392. | 161. | .322 | 100.98 | 2.871 | - | D |
| 209.61 | 92.10 | 1002. | 132. | .264 | 105.23 | 2.872 | - | D |
| 255.00 | 114.52 | 6119. | 238. | .476 | 140.78 | 2.875 | - | D |
| 316.00 | 144.63 | 806. | 90. | .179 | 137.95 | 2.879 | - | D |
| 361.10 | 166.90 | 2491. | 161. | .321 | 133.86 | 2.883 | - | D |
| 370.27 | 171.43 | 2280. | 187. | .373 | 110.70 | 2.883 | - | D |
| 416.60 | 194.31 | 1271. | 125. | .250 | 123.94 | 2.887 | - | D |
| 431.86 | 201.84 | 887. | 137. | .273 | 95.98 | 2.888 | - | D |
| 508.17 | 239.51 | 638. | 85. | .171 | 129.65 | 2.895 | - | D |
| 526.47 | 248.54 | 261. | 101. | .203 | 73.93 | 2.897 | - | D |
| 598.69 | 284.20 | 522. | 89. | .179 | 113.13 | 2.904 | - | D |
| 631.79 | 300.54 | 107. | 85. | .171 | 82.18 | .486 | - | s |
| 813.82 | 390.40 | 224. | 385. | .771 | 50.81 | .696 | - | s |
| 1057.08 | 510.48 | 593. | 1107. | 2.215 | 12.97 | 2.957 | - | D |
| 1155.80 | 559.21 | 152. | 295. | .590 | 49.00 | 1.578 | - | s |
| 1246.90 | 604.17 | 1073. | 103. | .207 | 137.45 | 2.984 | - | D |
| 1258.80 | 610.05 | 894. | 101. | .202 | 129.35 | 2.985 | - | D |
| 1272.16 | 616.64 | 724. | 90. | .179 | 131.34 | 2.987 | - | D |
| 1278.91 | 619.97 | 666. | 80. | .161 | 140.39 | 2.988 | - | D |
| 1417.30 | 688.27 | 454. | 0. | .000 | .00 | 3.010 | - | |
| 1433.10 | 696.07 | 341. | 0. | .000 | .00 | 3.013 | - | |
| 91.44 | 724.86 | 58. | 177. | .355 | 56.06 | .925 | - | s |
| 46.20 | 751.89 | 18. | 252. | .504 | 29.45 | .716 | - | s |
| 1665.09 | 810.56 | 93. | 286. | .573 | 22.75 | 3.053 | - | D |
| 1804.97 | 879.59 | 161. | 40. | .080 | 141.95 | 3.080 | - | D |
| 1941.60 | 947.01 | 16. | 277. | .554 | 26.66 | .555 | - | s |
| 2063.86 | 1007.33 | 221. | 48. | .096 | 138.70 | 3.133 | - | D |
| 2255.76 | 1102.01 | 0. | 111. | .222 | 28.47 | .905 | - | s |
| 2290.67 | 1119.23 | 0. | 87. | .174 | 32.16 | .514 | - | s |

s Peak fails shape tests.
D Peak area deconvoluted.

********** I D E N T I F I E D P E A K S U M M A R Y **********

| NUCLIDE | PEAK CHANNEL | CENTROID ENERGY | BACKGROUND COUNTS | NET AREA COUNTS | INTENSITY CTS/SEC | UNCERT 3 SIGMA % | FWHM keV |
|---|---|---|---|---|---|---|---|
| CO-57 | 52.26 | 14.41 | 0. | 0. | .000 | .00 | 2.862 |
| CO-57 | 270.30 | 122.07 | 2766. | 2812. | 5.624 | 9.74 | 2.876D |
| CO-57 | 299.38 | 136.43 | 1293. | 395. | .790 | 41.47 | 2.878D |
| BE-7 | 990.39 | 477.56 | 2536. | 964. | 1.928 | 24.17 | 2.948D |
| MN-54 | 1713.61 | 834.50 | 42. | 3076. | 6.152 | 6.21 | 2.868s |
| CO-60 | 2400.29 | 1173.32 | 0. | 448. | .896 | 14.17 | 3.081s |
| NA-22 | 2605.47 | 1274.54 | 65. | 342. | .683 | 19.09 | 3.260D |
| CO-60 | 2722.70 | 1332.37 | 13. | 432. | .865 | 19.07 | 2.789 |

s Peak fails shape tests.
D Peak area deconvoluted.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

| NUCLIDE | AVERAGE ACTIVITY Becquerels | PEAK ENERGY keV | PEAK ACTIVITY Becquerels | CODE | MDA VALUE Becquerels | COMMENTS |
|---|---|---|---|---|---|---|
| BE-7 | 1.80527E+03 | 477.56 | 1.805E+03 | ( | 1.5511E+02 | |
| MN-54 | 8.79677E+02 | 834.81 | 8.797E+02 | *( | 3.0488E+00 | |
| CO-57 | 2.64593E+02 | 122.07 | 2.646E+02 | ( | 8.1398E+00 | |
| | | 136.43 | 3.207E+02 | + | 5.4883E+01 | |
| | | 14.41 | 0.000E+00 | - | 2.4244E-02 | |
| CO-60 | 1.69721E+02 | 1332.51 | 1.747E+02 | ( | 2.3691E+00 | |
| | | 1173.23 | 1.647E+02 | *( | 6.0489E-01 | |
| NA-22 | 1.33563E+02 | 1274.54 | 1.336E+02 | ( | 5.1994E+00 | |

( - This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the

library energy centroid for positive identification.
- Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

| NUCLIDE | | TIME OF COUNT ACTIVITY pCi/L | UNCERTAINTY 3 SIGMA COUNTING pCi/L | TOTAL pCi/L | |
|---|---|---|---|---|---|
| BE-7 | | 9.7502E+04 | 23571.21 | 24421.48 | 97.5 ± 23.6 nCi/L |
| MN-54 | # | 4.7511E+04 | 2951.08 | 4289.33 | 47.5 ± 2.9 nCi/L |
| CO-57 | | 1.4291E+04 | 1392.55 | 1678.04 | 14.3 ± 1.4 nCi/L |
| CO-60 | | 9.1667E+03 | 1088.90 | 1243.53 | 9.2 ± 1.1 nCi/L |
| NA-22 | | 7.2137E+03 | 1376.75 | 1455.62 | 7.2 ± 1.4 nCi/L |

# All peaks for activity calculation had bad shape.

---------- S U M M A R Y ----------

TOTAL ACTIVITY ( -6.5 to 1962.3 keV) 1.7568490E+05 pCi/L

Analyzed by: _____
G. Brooks

Reviewed by: _____
Supervisor@

# CST-12 ORGANIC ANALYSIS GROUP
# SUMMARY OF ANALYTICAL RESULTS FOR VOLATILES

**TO:** **Dustie Stephens** **DATE:** August 27, 1996
**FROM:** Laura C. Ortega, CST-12 Organic Analysis Section

**MATRIX:** WATER **REQUEST NUMBER: 23732**

**Results Summary**
Attached is a tabulation of samples submitted for volatiles analysis and a summary of their analytical results (target compounds found and their concentrations; see Table 1). In addition, sample 96.06826 contained tentatively identified non-target compounds, and these results are included on a separate table. The samples, collected on August 13, 1996, were analyzed on August 18, 1996.

**Method Summary**
Samples were analyzed using EPA Method 8260. In summary, a measured volume of sample, usually 5 mL, was analyzed using the purge and trap method combined with capillary column GC/MS. A Delta Perspective PTA-30 Autosampler and a Tekmar 3000 Purge and Trap Concentrator were interfaced to a Hewlett-Packard 5890 Gas Chromatograph / 5971 Mass Selective Detector to perform the analyses. The analytical column used was a J&W Scientific 75 m by 0.53 mm ID, 3 micron film, DB624 capillary column.

**Anomalies And Analysis Notes**
Below is a summary of required QA/QC parameters as outlined in EPA SW-846 and LANL SOPs and a summary of any anomalies which occurred during the analyses.

Calibration QC were within criteria for all analyses.

Surrogate recoveries were ***not*** within criteria for all analyses. The Method Blank had surrogate Toluene-d8 out of criteria, low. The blank was analyzed twice and the same results occurred. Due to time constraints it was not analyzed a third time.

Internal standard responses were within criteria for all analyses.

Matrix spike and matrix spike duplicate were analyzed as part of the analytical batch which included the samples from this work request. All spike recoveries and relative percent differences were within criteria. A copy of the MS/MSD recovery form is included with this report.

Holding times were met for all sample analyses.

If you have any questions regarding this data, please call Laura Ortega at 665-7407.

LMO 8/27/96

## CST-12 ORGANIC ANALYSIS GROUP
## SUMMARY OF ANALYTICAL RESULTS FOR VOLATILES

**Table 1.** Summary of results of sample analyses for volatiles.

**REQUEST NUMBER: 23732**

| SAMPLE ID | TARGET COMPOUNDS FOUND | AMOUNT (ug/L) | LOQ (ug/L) | TICs |
|---|---|---|---|---|
| B96.07125 | Acetone | 8 J | 20 | Y |
| S96.06824 | None | | | N |
| S96.06826 | Acetone | 9 JB | 20 | Y |
| | o,m,p-Xylene(mixed) | 8 | 5 | |
| | n-Propylbenzene | 9 | 5 | |
| | 1,3,5-Trimethylbenzene | 25 | 5 | |
| | 1,2,4-Trimethylbenzene | 30 | 5 | |
| | 4-Isopropyltoluene | 3 J | 5 | |

Sample IDs beginning with the letter S are samples; those beginning with the letter B are blanks.

**LOQ:** Limit of quantitation. LOQs normally range between 5 and 20ug/L depending on the compound, unless otherwise noted.

**TICs:** Tentatively identified compounds. Y = TICs were found. N = TICs were not found.

**J:** This data qualifier indicates that the compound was detected, but the reported result is less than the LOQ and is an estimated value.

**B:** This data qualifier indicates that the reported compound was found in the associated method blank as well as in the sample.

1E

# VOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

**VBLK01**

Lab Name: LANL Contract: _____

Project No. RN23732 Site: _____ Location: _____ Group: CST-12

Matrix: (soil/water) WATER Lab Sample ID: B9607125

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: F081610.D

Level: (low/med) _____ Date Received: 8/16/96

% Moisture: not dec. 0 Date Analyzed: 8/16/96

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. 91-20-3 | Naphthalene | 16.51 | 7 | J |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| 8. | | | | |
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| 29. | | | | |
| 30. | | | | |

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

S9606826

Lab Name: LANL Contract:

Project No. RN23732 Site: Location: Group: CST-12

Matrix: (soil/water) WATER Lab Sample ID: S9606826

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: F081613.D

Level: (low/med) Date Received: 8/16/96

% Moisture: not dec. 0 Date Analyzed: 8/16/96

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 5

Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. | Benzene, -ethyl- -methyl- | 13.11 | 100 | J |
| 2. 1120-21-4 | Undecane | 14.56 | 7000 | J |
| 3. 112-40-3 | Dodecane | 15.75 | 3900 | J |
| 4. 629-50-5 | Tridecane | 16.83 | 3800 | J |
| 5. 629-59-4 | Tetradecane | 17.80 | 73 | J |
| 6. | | | | |
| 7. | | | | |
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| 30. | | | | |

UCB 4/22/96

3A

# WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: LANL Contract: _____

Project No. RN23596 Site: _____ Location: _____ Group: CST-12

Matrix Spike - Sample No.: S9605674

| COMPOUND | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC # | QC. LIMITS REC. |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 50 | 0 | 59 | 118 | (61-145) |
| Benzene | 50 | 0 | 53 | 106 | (76-127) |
| Trichloroethene | 50 | 0 | 52 | 104 | (71-120) |
| Toluene | 50 | 0 | 50 | 100 | (76-125) |
| Chlorobenzene | 50 | 0 | 49 | 98 | (75-130) |

| COMPOUND | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC # | % RPD # | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 50 | 54 | 108 | 9 | 14 | (61-145) |
| Benzene | 50 | 49 | 98 | 8 | 11 | (76-127) |
| Trichloroethene | 50 | 50 | 100 | 4 | 14 | (71-120) |
| Toluene | 50 | 48 | 96 | 4 | 13 | (76-125) |
| Chlorobenzene | 50 | 46 | 92 | 6 | 13 | (75-130) |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

Comments: _____

UNCL 9/23/94

# LOS ALAMOS NATIONAL LABORATORY
# CST-12 ORGANIC ANALYSIS GROUP
# VOLATILE ANALYSIS ANOMALY REPORTING FORM

Reported By: LCORTEGA

Date Reported: 8/21/96

Request Number: 23732

**Type of Anomaly (circle appropriate choices or describe):**

| | | |
|---|---|---|
| Surrogate recovery | Retention time shift | Missed holding time |
| Internal standard response | Calibration QC | Sample matrix effect |
| Other (describe): | | |

**Description:** Include sample numbers, dates, etc., as appropriate.

THE METHOD BLANK'S SURROGATE TOLUENE-d8 WAS OUT OF CRITERIA.

**Corrective actions taken and disposition of affected data:** Include dates taken or a schedule. If problem is ongoing, address actions taken/to be taken to prevent recurrence.

THE METHOD BLANK WAS ANALYZED TWICE AND THE SAME RESULTS OCCURRED. DUE TO TIME CONSTRAINTS IT WAS NOT ANALYZED A THIRD TIME.

Corrective actions taken by: [signature]

Date: 8/21/96

# LOS ALAMOS NATIONAL LABORATORY
# CST-12 ORGANIC ANALYSIS GROUP

## DATA REVIEW CERTIFICATION

Request Number: 23732 Analysis: VOLATILES BY EPA 8260

The data contained in the enclosed report has been reviewed and approved by the people listed below:

| | | |
|---|---|---|
| LAURA C. ORTEGA | | 8/22/96 |
| Analyst Name (print) | Analyst Signature | Date |
| Leah D. Bustos | | 26 August 96 |
| Data Reviewer Name (print) | Data Reviewer Signature | Date |

REPORT NUMBER: 41405

********** CST ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: JA on 27-Aug-1996

REQUEST NUMBER: 23732 MATRIX: W ANALYST: LAURA ORTEGA PROGRAM CODE: XF61 NOTEBOOK: F082015 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 96.06824 Date Collected: 8/13/96 Date Received: 8/14/96 Date Extracted: 8/16/96 Date Analyzed: 8/16/96

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS323 | 96.06824 | 67641 | < 20. | | UG/L | 8/27/96 | | Acetone |
| 96DS323 | 96.06824 | 71432 | < 5. | | UG/L | 8/27/96 | | Benzene |
| 96DS323 | 96.06824 | 108861 | < 5. | | UG/L | 8/27/96 | | Bromobenzene |
| 96DS323 | 96.06824 | 74975 | < 5. | | UG/L | 8/27/96 | | Bromochloromethane |
| 96DS323 | 96.06824 | 75274 | < 5. | | UG/L | 8/27/96 | | Bromodichloromethane |
| 96DS323 | 96.06824 | 75252 | < 5. | | UG/L | 8/27/96 | | Bromoform |
| 96DS323 | 96.06824 | 74839 | < 10. | | UG/L | 8/27/96 | | Bromomethane |
| 96DS323 | 96.06824 | 78933 | < 20. | | UG/L | 8/27/96 | | 2-Butanone |
| 96DS323 | 96.06824 | 104518 | < 5. | | UG/L | 8/27/96 | | n-Butylbenzene |
| 96DS323 | 96.06824 | 135988 | < 5. | | UG/L | 8/27/96 | | sec-Butylbenzene |
| 96DS323 | 96.06824 | 98066 | < 5. | | UG/L | 8/27/96 | | tert-Butylbenzene |
| 96DS323 | 96.06824 | 75150 | < 5. | | UG/L | 8/27/96 | | Carbon disulfide |
| 96DS323 | 96.06824 | 56235 | < 5. | | UG/L | 8/27/96 | | Carbon tetrachloride |
| 96DS323 | 96.06824 | 108907 | < 5. | | UG/L | 8/27/96 | | Chlorobenzene |
| 96DS323 | 96.06824 | 124481 | < 5. | | UG/L | 8/27/96 | | Chlorodibromomethane |
| 96DS323 | 96.06824 | 75003 | < 10. | | UG/L | 8/27/96 | | Chloroethane |
| 96DS323 | 96.06824 | 67663 | < 5. | | UG/L | 8/27/96 | | Chloroform |
| 96DS323 | 96.06824 | 74873 | < 10. | | UG/L | 8/27/96 | | Chloromethane |
| 96DS323 | 96.06824 | 95498 | < 5. | | UG/L | 8/27/96 | | o-Chlorotoluene |
| 96DS323 | 96.06824 | 106434 | < 5. | | UG/L | 8/27/96 | | p-Chlorotoluene |
| 96DS323 | 96.06824 | 96128 | < 10. | | UG/L | 8/27/96 | | 1,2-Dibromo-3-chloropropane |
| 96DS323 | 96.06824 | 74953 | < 5. | | UG/L | 8/27/96 | | Dibromomethane |
| 96DS323 | 96.06824 | 95501 | < 5. | | UG/L | 8/27/96 | | o-Dichlorobenzene (1,2) |
| 96DS323 | 96.06824 | 541731 | < 5. | | UG/L | 8/27/96 | | m-Dichlorobenzene (1,3) |
| 96DS323 | 96.06824 | 106467 | < 5. | | UG/L | 8/27/96 | | p-Dichlorobenzene (1,4) |
| 96DS323 | 96.06824 | 75718 | < 10. | | UG/L | 8/27/96 | | Dichlorodifluoromethane |

********** CST ANALYTICAL REPORT **********

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS323 | 96.06824 | 75343 | < 5. | | UG/L | 8/27/96 | | 1,1-Dichloroethane |
| 96DS323 | 96.06824 | 107062 | < 5. | | UG/L | 8/27/96 | | 1,2-Dichloroethane |
| 96DS323 | 96.06824 | 75354 | < 5. | | UG/L | 8/27/96 | | 1,1-Dichloroethene |
| 96DS323 | 96.06824 | 156605 | < 5. | | UG/L | 8/27/96 | | trans-1,2-Dichloroethene |
| 96DS323 | 96.06824 | 156592 | < 5. | | UG/L | 8/27/96 | | cis-1,2-Dichloroethylene |
| 96DS323 | 96.06824 | 78875 | < 5. | | UG/L | 8/27/96 | | 1,2-Dichloropropane |
| 96DS323 | 96.06824 | 142289 | < 5. | | UG/L | 8/27/96 | | 1,3-Dichloropropane |
| 96DS323 | 96.06824 | 594207 | < 5. | | UG/L | 8/27/96 | | 2,2-Dichloropropane |
| 96DS323 | 96.06824 | 563586 | < 5. | | UG/L | 8/27/96 | | 1,1-Dichloropropene |
| 96DS323 | 96.06824 | 10061015 | < 5. | | UG/L | 8/27/96 | | cis-1,3-Dichloropropene |
| 96DS323 | 96.06824 | 10061026 | < 5. | | UG/L | 8/27/96 | | trans-1,3-Dichloropropene |
| 96DS323 | 96.06824 | 100414 | < 5. | | UG/L | 8/27/96 | | Ethylbenzene |
| 96DS323 | 96.06824 | 106934 | < 5. | | UG/L | 8/27/96 | | Ethylene dibromide |
| 96DS323 | 96.06824 | 591786 | < 20. | | UG/L | 8/27/96 | | 2-Hexanone |
| 96DS323 | 96.06824 | 98828 | < 5. | | UG/L | 8/27/96 | | Isopropylbenzene |
| 96DS323 | 96.06824 | 99876 | < 5. | | UG/L | 8/27/96 | | 4-Isopropyltoluene |
| 96DS323 | 96.06824 | 74884 | < 5. | | UG/L | 8/27/96 | | Methyl iodide |
| 96DS323 | 96.06824 | 108101 | < 20. | | UG/L | 8/27/96 | | 4-Methyl-2-pentanone |
| 96DS323 | 96.06824 | 75092 | < 5. | | UG/L | 8/27/96 | | Methylene chloride |
| 96DS323 | 96.06824 | 103651 | < 5. | | UG/L | 8/27/96 | | Propylbenzene |
| 96DS323 | 96.06824 | 100425 | < 5. | | UG/L | 8/27/96 | | Styrene |
| 96DS323 | 96.06824 | 630206 | < 5. | | UG/L | 8/27/96 | | 1,1,1,2-Tetrachloroethane |
| 96DS323 | 96.06824 | 79345 | < 5. | | UG/L | 8/27/96 | | 1,1,2,2-Tetrachloroethane |
| 96DS323 | 96.06824 | 127184 | < 5. | | UG/L | 8/27/96 | | Tetrachloroethylene |
| 96DS323 | 96.06824 | 108883 | < 5. | | UG/L | 8/27/96 | | Toluene |
| 96DS323 | 96.06824 | 76131 | < 5. | | UG/L | 8/27/96 | | 1,1,2-Trichloro-1,2,2-trifluoroethane |
| 96DS323 | 96.06824 | 71556 | < 5. | | UG/L | 8/27/96 | | 1,1,1-Trichloroethane |
| 96DS323 | 96.06824 | 79005 | < 5. | | UG/L | 8/27/96 | | 1,1,2-Trichloroethane |
| 96DS323 | 96.06824 | 79016 | < 5. | | UG/L | 8/27/96 | | Trichloroethene |
| 96DS323 | 96.06824 | 75694 | < 5. | | UG/L | 8/27/96 | | Trichlorofluoromethane |
| 96DS323 | 96.06824 | 96184 | < 5. | | UG/L | 8/27/96 | | 1,2,3-Trichloropropane |
| 96DS323 | 96.06824 | 95636 | < 5. | | UG/L | 8/27/96 | | 1,2,4-Trimethylbenzene |
| 96DS323 | 96.06824 | 108678 | < 5. | | UG/L | 8/27/96 | | 1,3,5-Trimethylbenzene |
| 96DS323 | 96.06824 | 75014 | < 10. | | UG/L | 8/27/96 | | Vinyl chloride |
| 96DS323 | 96.06824 | 1330207 | < 5. | | UG/L | 8/27/96 | | Mixed-Xylenes (o ± m ± p) |

Tentatively Identified Compounds in Customer Sample # 96.06824

none

Bernadette

# CST-12 SEMIVOLATILE ORGANIC ANALYSIS
# SUMMARY OF ANALYTICAL RESULTS

**TO:** Dustie Stephens **DATE:** August 27, 1996
**FROM:** Mike Handow *through* Anthony Lombardo CST-12 Organic Analysis 9/4/96

**MATRIX:** Water **REQUEST NUMBER: 23732**

**Results Summary**
Attached is a tabulation of samples submitted for semivolatile analysis and their analytical results (Table 1.) Two samples were received for semivolatile analysis. Samples were collected on August 13, 1996. Sample extraction was started August 19, 1996. Samples were analyzed on August 21, 1996. All hold times were met.

**Method Summary**
Samples were extracted by limited volume seperatory funnel shake out method. A measured volume of sample, usually 0.25 liter, is placed in a seperatory funnel. pH is adjusted to <2 (acid extraction), Methylene chloride is added and the sample is shook. Methylene chloride is then separated from the sample. This process is repeated with two more aliquots of methylene chloride.The sample pH is then adjusted to >11 (base-neutral extraction) and methylene chloride extraction is repeated. Sample extracts were then combined, dried and concentrated to 1.0 ml final volume. Appropriate surrogate standards were added prior to extraction. Analysis was performed by capillary column GC/MS methods. Extraction and analysis methods are consistent with EPA SW-846 methods 3510 and 8270. Analytical column used was a J&W Scientific DB5-MS 30M by 0.25 mm ID, 0.25 micron film or equivalent.

This extraction is performed in a glovebox.

**Anomalies And Analysis Notes**
Below is a summary of QA/QC criteria as outlined in EPA SW-846 and LANL SOPs and a summary of any anomalies which occurred during the analyses.

Phthalates (i.e. Di-n-butylphthalate) are common laboratory contaminants and may be seen in blanks and samples. A blank may contain phthalates at five times the limit of quantitation and still be in criteria. The likelihood and severity of contamination is increased when working with samples in a glovebox.

Internal standard responses were in criteria for all analyses.
All other surrogate recoveries were in criteria.
All Calibration QC were within criteria for all analyses.

Blank matrix spike and matrix spike duplicate were analyzed as part of this work request. A copy of the MS/MSD recovery form is included with this report.

If you have any questions regarding this data, please call Anthony Lombardo at 665-7410.

CST-12 SEMIVOLATILE ORGANIC ANALYSIS
SUMMARY OF ANALYTICAL RESULTS

Table 1. Summary of results of sample analyses for semivolatiles.

REQUEST NUMBER: 23732

| SAMPLE ID | TARGET COMPOUNDS FOUND | AMOUNT (ug/L) | LOQ (ug/L) | TICs |
|---|---|---|---|---|
| B96.07127 | Di-n-butylphthalate | 9 J | 40 | Y |
| S96.06825 | NONE | | 40 | Y |
| S96.06827 | Napthalene | 11 J | 40 | Y |
| | Di-n-butylphthalate | 68 B | 40 | |
| | bis-2-Ethylhexylphthalate | 8 J | 40 | |

Sample ID beginning with a B is a blank. Sample ID beginning with a S is a sample.

LOQ: Limit of quantitation. LOQs normally range between 10 and 50ug/L depending on the compound, unless otherwise noted.
TICs: Tentatively identified compounds. Y = TICs were found. N = TICs were not found.

J: Compound is present in the sample, but at a concentration that is less than LOQ. This concentration should be considered an estimate.
B: This compound was seen in the method blank as well as the sample. Concentration is considered significant at ten times the blank amount for phthalate esters and five times blank amount for the remaining compounds.
D: Sample was diluted.

# LOS ALAMOS NATIONAL LABORATORY
# CST-12 ORGANIC ANALYSIS GROUP

## DATA REVIEW CERTIFICATION

Request Number: 23732 Analysis: Semivolatile SW-846 8270

The data contained in the enclosed report has been reviewed and approved by the people listed below:

| | | |
|---|---|---|
| Mike Rawood | Michael Rawood | 8/23/96 |
| Analyst Name (print) | Analyst Signature | Date |
| A Lombardo | A. Lombardo | 9/4/96 |
| Data Reviewer Name (print) | Data Reviewer Signature | Date |

REPORT NUMBER: 41497

********** CST ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: JA on 5-Sep-1996

REQUEST NUMBER: 23732 MATRIX: W ANALYST: ANTHONY LOMBARDO PROGRAM CODE: XF61 NOTEBOOK: K080909 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 96.06825 Date Collected: 8/13/96 Date Received: 8/14/96 Date Extracted: 8/19/96 Date Analyzed: 8/21/96

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS324 | 96.06825 | 83329 | < 40. | | UG/L | 9/05/96 | | Acenaphthene |
| 96DS324 | 96.06825 | 208968 | < 40. | | UG/L | 9/05/96 | | Acenaphthylene |
| 96DS324 | 96.06825 | 62533 | < 40. | | UG/L | 9/05/96 | | Aniline |
| 96DS324 | 96.06825 | 120127 | < 40. | | UG/L | 9/05/96 | | Anthracene |
| 96DS324 | 96.06825 | 103333 | < 40. | | UG/L | 9/05/96 | | Azobenzene |
| 96DS324 | 96.06825 | 92875 | < 200. | | UG/L | 9/05/96 | | m-Benzidine |
| 96DS324 | 96.06825 | 56553 | < 40. | | UG/L | 9/05/96 | | Benzo[a]anthracene |
| 96DS324 | 96.06825 | 50328 | < 40. | | UG/L | 9/05/96 | | Benzo[a]pyrene |
| 96DS324 | 96.06825 | 205992 | < 40. | | UG/L | 9/05/96 | | Benzo[b]fluoranthene |
| 96DS324 | 96.06825 | 191242 | < 40. | | UG/L | 9/05/96 | | Benzo[g,h,i]perylene |
| 96DS324 | 96.06825 | 207089 | < 40. | | UG/L | 9/05/96 | | Benzo[k]fluoranthene |
| 96DS324 | 96.06825 | 65850 | < 200. | | UG/L | 9/05/96 | | Benzoic acid |
| 96DS324 | 96.06825 | 100516 | < 40. | | UG/L | 9/05/96 | | Benzyl alcohol |
| 96DS324 | 96.06825 | 111911 | < 40. | | UG/L | 9/05/96 | | Bis(2-chloroethoxy)methane |
| 96DS324 | 96.06825 | 111444 | < 40. | | UG/L | 9/05/96 | | Bis(2-chloroethyl)ether |
| 96DS324 | 96.06825 | 108601 | < 40. | | UG/L | 9/05/96 | | Bis(2-chloroisopropyl)ether |
| 96DS324 | 96.06825 | 117817 | < 40. | | UG/L | 9/05/96 | | Bis(2-ethylhexyl)phthalate |
| 96DS324 | 96.06825 | 101553 | < 40. | | UG/L | 9/05/96 | | 4-Bromophenylphenyl ether |
| 96DS324 | 96.06825 | 85687 | < 40. | | UG/L | 9/05/96 | | Butyl benzyl phthalate |
| 96DS324 | 96.06825 | 59507 | < 40. | | UG/L | 9/05/96 | | 4-Chloro-3-methylphenol |
| 96DS324 | 96.06825 | 106478 | < 40. | | UG/L | 9/05/96 | | 4-Chloroaniline |
| 96DS324 | 96.06825 | 91587 | < 40. | | UG/L | 9/05/96 | | 2-Chloronaphthalene |
| 96DS324 | 96.06825 | 95578 | < 40. | | UG/L | 9/05/96 | | o-Chlorophenol |
| 96DS324 | 96.06825 | 7005723 | < 40. | | UG/L | 9/05/96 | | 4-Chlorophenylphenyl ether |
| 96DS324 | 96.06825 | 218019 | < 40. | | UG/L | 9/05/96 | | Chrysene |
| 96DS324 | 96.06825 | 84742 | < 40. | | UG/L | 9/05/96 | | Di-n-butyl phthalate |

********** CST ANALYTICAL REPORT **********

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS324 | 96.06825 | 117840 | < 40. | | UG/L | 9/05/96 | | Di-n-octyl phthalate |
| 96DS324 | 96.06825 | 53703 | < 40. | | UG/L | 9/05/96 | | Dibenzo[a,h]anthracene |
| 96DS324 | 96.06825 | 132649 | < 40. | | UG/L | 9/05/96 | | Dibenzofuran |
| 96DS324 | 96.06825 | 95501 | < 40. | | UG/L | 9/05/96 | | o-Dichlorobenzene (1,2) |
| 96DS324 | 96.06825 | 541731 | < 40. | | UG/L | 9/05/96 | | m-Dichlorobenzene (1,3) |
| 96DS324 | 96.06825 | 106467 | < 40. | | UG/L | 9/05/96 | | p-Dichlorobenzene (1,4) |
| 96DS324 | 96.06825 | 91941 | < 80. | | UG/L | 9/05/96 | | 3,3'-Dichlorobenzidine |
| 96DS324 | 96.06825 | 120832 | < 40. | | UG/L | 9/05/96 | | 2,4-Dichlorophenol |
| 96DS324 | 96.06825 | 84662 | < 40. | | UG/L | 9/05/96 | | Diethyl phthalate |
| 96DS324 | 96.06825 | 131113 | < 40. | | UG/L | 9/05/96 | | Dimethyl phthalate |
| 96DS324 | 96.06825 | 105679 | < 40. | | UG/L | 9/05/96 | | 2,4-Dimethylphenol |
| 96DS324 | 96.06825 | 51285 | < 200. | | UG/L | 9/05/96 | | 2,4-Dinitrophenol |
| 96DS324 | 96.06825 | 121142 | < 40. | | UG/L | 9/05/96 | | 2,4-Dinitrotoluene |
| 96DS324 | 96.06825 | 606202 | < 40. | | UG/L | 9/05/96 | | 2,6-Dinitrotoluene |
| 96DS324 | 96.06825 | 206440 | < 40. | | UG/L | 9/05/96 | | Fluoranthene |
| 96DS324 | 96.06825 | 86737 | < 40. | | UG/L | 9/05/96 | | Fluorene |
| 96DS324 | 96.06825 | 118741 | < 40. | | UG/L | 9/05/96 | | Hexachlorobenzene |
| 96DS324 | 96.06825 | 87683 | < 200. | | UG/L | 9/05/96 | | Hexachlorobutadiene |
| 96DS324 | 96.06825 | 77474 | < 40. | | UG/L | 9/05/96 | | Hexachlorocyclopentadiene |
| 96DS324 | 96.06825 | 67721 | < 40. | | UG/L | 9/05/96 | | Hexachloroethane |
| 96DS324 | 96.06825 | 193395 | < 40. | | UG/L | 9/05/96 | | Indeno[1,2,3-cd]pyrene |
| 96DS324 | 96.06825 | 78591 | < 40. | | UG/L | 9/05/96 | | Isophorone |
| 96DS324 | 96.06825 | 534521 | < 200. | | UG/L | 9/05/96 | | 2-Methyl-4,6-dinitrophenol |
| 96DS324 | 96.06825 | 91576 | < 40. | | UG/L | 9/05/96 | | 2-Methylnaphthalene |
| 96DS324 | 96.06825 | 95487 | < 40. | | UG/L | 9/05/96 | | 2-Methylphenol |
| 96DS324 | 96.06825 | 106445 | < 40. | | UG/L | 9/05/96 | | 4-Methylphenol |
| 96DS324 | 96.06825 | 91203 | < 40. | | UG/L | 9/05/96 | | Naphthalene |
| 96DS324 | 96.06825 | 88744 | < 80. | | UG/L | 9/05/96 | | 2-Nitroaniline |
| 96DS324 | 96.06825 | 99092 | < 80. | | UG/L | 9/05/96 | | 3-Nitroaniline |
| 96DS324 | 96.06825 | 100016 | < 80. | | UG/L | 9/05/96 | | 4-Nitroaniline |
| 96DS324 | 96.06825 | 98953 | < 40. | | UG/L | 9/05/96 | | Nitrobenzene |
| 96DS324 | 96.06825 | 88755 | < 40. | | UG/L | 9/05/96 | | 2-Nitrophenol |
| 96DS324 | 96.06825 | 100027 | < 200. | | UG/L | 9/05/96 | | 4-Nitrophenol |
| 96DS324 | 96.06825 | 621647 | < 40. | | UG/L | 9/05/96 | | N-Nitrosodi-n-propylamine |
| 96DS324 | 96.06825 | 62759 | < 40. | | UG/L | 9/05/96 | | N-Nitrosodimethylamine |
| 96DS324 | 96.06825 | 86306 | < 40. | | UG/L | 9/05/96 | | N-Nitrosodiphenylamine |

********** CST ANALYTICAL REPORT **********

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS324 | 96.06825 | 87865 | < 200. | | UG/L | 9/05/96 | | Pentachlorophenol |
| 96DS324 | 96.06825 | 85018 | < 40. | | UG/L | 9/05/96 | | Phenanthrene |
| 96DS324 | 96.06825 | 108952 | < 40. | | UG/L | 9/05/96 | | Phenol |
| 96DS324 | 96.06825 | 109068 | < 40. | | UG/L | 9/05/96 | | 2-Picoline |
| 96DS324 | 96.06825 | 129000 | < 40. | | UG/L | 9/05/96 | | Pyrene |
| 96DS324 | 96.06825 | 110861 | < 40. | | UG/L | 9/05/96 | | Pyridine |
| 96DS324 | 96.06825 | 120821 | < 40. | | UG/L | 9/05/96 | | 1,2,4-Trichlorobenzene |
| 96DS324 | 96.06825 | 95954 | < 40. | | UG/L | 9/05/96 | | 2,4,5-Trichlorophenol |
| 96DS324 | 96.06825 | 88062 | < 40. | | UG/L | 9/05/96 | | 2,4,6-Trichlorophenol |

Tentatively Identified Compounds in Customer Sample # 96.06825

none

100
esults for Sample 200021946 04-Oct-1996 10:39 

Analytical Chemistry Report
Warning: Sample data not yet approved for release

Sample ID: 200021946 Group: ESH-19 QA: Y Priority: 2
Submission ID: 100017440 Program: XF613000 Acct: N Logged: 29-Aug-1996
User sample ID: 96DS325
Sample Type: AH CONTAMINATED SOLUTION
Requester: D. STEPHENS MS: K498 Phone: 5-0792

Sample Description: CONTAM. H2O
Radioactive Elements: N
Radiation: N
Hazards: N
Special Handling: N

WALK-IN CUSTOMER: N

Methods Requested: PSSUR-L

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Analytical Operation: PSSUR-L Task ID: 300068759
Date Completed: 04-Oct-1996 09:08 Replicates: 1 Version: 1

| Component | Result | Units | Component | Result | Units |
|---|---|---|---|---|---|
| SILVER | <0.001 | ug/ml | ARSENIC | 0.03 | ug/ml |
| BARIUM | 0.02 | ug/ml | BERYLLIUM | <0.001 | ug/ml |
| CADMIUM | <0.001 | ug/ml | CHROMIUM | 0.02 | ug/ml |
| MERCURY | <0.016 | ug/ml | NICKEL | <0.057 | ug/ml |
| LEAD | <0.003 | ug/ml | ANTIMONY | <0.001 | ug/ml |
| SELENIUM | 0.01 | ug/ml | THALLIUM | <0.001 | ug/ml |

Notebook reference: ANC75PG204

Analyst: LAG/TMY

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# LOS ALAMOS NATIONAL LABORATORY
# WASTE PROFILE SYSTEM
**WPF #: 25026**



Generator: **RYDER, RICHARD D AOTFM** MS : **H814**
WMC : **PESENTI, BERNADETTE LTA53FM** MS : **H814**
FROM : **EM-SWO** MS : **J595/5-4000**

## WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 25026 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to EM-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 25026
**YES** _____ **NO** ✓
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
**YES** _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
**YES** _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

No longer at this address

**Extension Certification**

I am producing or will produce the same type of waste as indicated in WPF# 25026

*Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.*

**Extension->** Signed _____ Date _____

**Void Approval**

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 25026

**Void->** Signed _____ Date _____

*NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED*

***TO: EM-SWO*** ***MS: J595*** ***PHONE: 5-4000***

# LOS ALAMOS NATIONAL LABORATORY
## WASTE PROFILE SYSTEM
**WPF #: 25026**



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Generator : | RYDER, RICHARD D | MS : | H814 | PH : | 72936 | Z#: | 084353 |
| WMC : | PESENTI, BERNADETTE | MS : | H814 | PH : | 76995 | Z#: | 099231 |
| CSR : | ART, KELLIE | MS : | J595 | PH : | 75909 | Z#: | 112794 |
| Status : | ACTIVE | Activation Date : | 16-OCT-96 | Expiration Date: | 16-OCT-97 | | |
| Group : | AOTFM | TA : | 53 | Bldg : | 000000 | Room: | 0 |

RMMA : **RADIOACTIVE MATERIALS MANAGEMENT AREA (RMMA)**
Waste Accumu : N/A
Method of Char : **ANALYSIS ATTACHED**

Waste Type : **PROCESS WASTE/SPENT CHEMICAL**
Waste Classes: **ON-GOING GENERATION**
**RADIOACTIVE**
Assoc Docum: N/A

Waste Category: **NOT APPLICABLE**

Waste Sources : **RESEARCH AND DEVELOPMENT**

Waste Matrix : **AQUEOUS LIQUID**

Matrix Type : **HOMOGENEOUS**

Waste/Proc Desc : ANALYSIS ATTACHED. SAMPLE NUMBERS: 96DS322, 96DS323, 96DS324, 96DS325, 10-07-96 DS TA-53 HOLDING RAD-WATER TANK AREA A SAMPLES TAKEN 8/14/96

Ignitability : **NOT IGNITABLE**

Corrosivity : **4.1 - 6.0**

Reactivity : **NON REACTIVE**

Boiling Point : **GREATER THAN 95 DEGREES F.**

Toxicity Characteristic Metals :

| Contaminant | LTR | Min | Max | Unit | Method |
|---|---|---|---|---|---|
| **ARSENIC** | Y | | | | **TOTA** |
| **BARIUM** | Y | | | | **TOTA** |
| **CHROMIUM** | Y | | | | **TOTA** |
| **SELENIUM** | Y | | | | **TOTA** |

Toxicity Characteristic Organic Compounds: N/A

Additional Chemical Constituents and Contaminants :

| Constituent | CAS NO | MIN | MAX | UOM |
|---|---|---|---|---|
| **WATER** | | **95** | **100** | **%** |

Radiological Characteristics:

| Radionuclide | Min | Max | Unit |
|---|---|---|---|
| **BE7** | 7.390E-08 | 1.211E-07 | CIL |
| **CO57** | 1.290E-08 | 1.570E-08 | CIL |
| **CO60** | 8.100E-09 | 1.030E-08 | CIL |
| **MN54** | 4.460E-08 | 5.040E-08 | CIL |
| **NA22** | 6.100E-09 | 8.600E-09 | CIL |

| | |
|---|---|
| Rad Contamination Type : | **SURFACE CONTAMINATION**<br>**VOLUME CONTAMINATION** |
| Waste Water Contaminants : | N/A |

WASTE CHARACTERIZATION INFORMATION

| | |
|---|---|
| Radioactivity Category : | **Low Level Rad** |
| RCRA Category : | **Non-hazardous Waste** |
| Misc. Category : | N/A |
| Waste Classification : | **LOW LEVEL RADIOACTIVE WASTE** |
| EPA Hazardous Waste Code : | N/A |

**Los Alamos**
**National Laboratory**

ORIGINAL

# WASTE PROFILE FORM COPY

Account Information

For rapid processing, complete **all sections** in black or blue ink and mail this form to Waste Services Group at MS J579

Reference Number: 25025

| Waste Generator's Name (Print) | Znumber | Waste Management Coordinator's Name (Print) | Znumber |
|---|---|---|---|
| Rich Ryder | 084353 | B Pesenti<br>Bernadette Pesenti | 099231 |

| Generator's Group | Generator's Telephone | Generator's Mail Stop | Waste Stream Technical Area | Building | Room |
|---|---|---|---|---|---|
| AOT-FM | 7-2936 | H814 | 53 | WNR Tank | |

**Waste Accumulation**
Check as many as apply.

- ☐ Satellite accumulation area --> site no.: _____
- ☐ Less than 90 day accumulation area --> site no.: _____
- ☑ Radioactive Materials Management Area ~~(RMMA)~~ --> RCA site no.: _____
- ☐ None of the above

**Method of Characterization**
Check as many as apply.

- ☐ Acceptable Knowledge (AK)
- ☒ Analysis attached --> sample/request no. _____
- ☐ MSDS attached
- ☐ Request for analysis

## Section 1- Chemical and Physical Characteristics

*For help in completing this section of the form, call 5-WAST or 5-4000.*

**Waste Type**
Check only one.

- ☐ Unused/unspent chemical
  *Check Waste Classes and Associated Documentation Only*
- ☒ Process waste/spent chemical
  Complete all of Section 1.

**Waste Classes**
**Check as many as apply.**

- ☒ On-going generation
- ☐ One-time generation
- ☒ Radioactive (complete Sec. 2)
- ☐ Non-radioactive
- ☒ Wastewater (complete Sec. 3) DS
- ☐ Classified/Sensitive

**Associated Documentation**
Check as many as apply.

- ☐ Process SOP --> no.: _____
- ☐ RMMA OP --> no.: _____
- ☐ WM SOP --> no.: _____
- ☐ Other --> _____
- ☒ None --> describe below

**Waste Category**
Check as many as apply.

- ☐ Solvent
- ☐ Degreaser
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated hazardous waste residue
- ☐ Explosive process waste
- ☐ Infectious/biological waste
- ☐ Beryllium
- ☐ Asbestos-friable
- ☐ Asbestos-nonfriable
- ☐ Empty containers
- ☐ PCB (<50 ppm)
  - ☐ PCB (50 - 500 ppm)
  - ☐ PCB (> 500 ppm)
  - --> id. no. : _____
- ☒ Not applicable --> describe below

**Waste Sources**
Check as many as apply.

- ☒ Research and development
- ☐ Maintenance
- ☐ Construction
- ☐ Material processing
- ☐ Decon/decom
- ☐ Investigation derived
- ☐ Remediation
- ☐ UST - petroleum
- ☐ UST - non-petroleum
- ☐ Generator treatment
- ☐ Interim/permitted treatment
- ☐ Industrial sludge
- ☐ Sanitary sludge
- ☐ Abatement

**Waste Matrix**
Check only one.

**Gas**

- ☐ ≤ 1.5 Atmospheres
- ☐ > 1.5 Atmospheres

**Liquid**

- ☒ Aqueous
- ☐ Organic
- ☐ Inorganic

**Solid**

- ☐ Powder/ash
- ☐ Solid
- ☐ Absorbed liquid

**Matrix Type**
Check only one.

- ☒ Homogeneous
- ☐ Heterogeneous --> describe below

**Waste/Process Description**

~~Holding tank: WNR~~

Analysis attached. Sample numbers: 96DS327, 96DS328, 96DS329, 96DS330, 96DS331

10-07-96 DS

TA-53 Holding Rad Water Tank - WNR Samples taken 8/4/96

## Section 1- Chemical and Physical Characteristics (continued)

**Ignitability (degrees F.)**
Check only one.

- ☐ < 73
- ☐ 73-99
- ☐ 100-139
- ☐ 140-200
- ☐ > 200
- ☐ Ignitable solid
- ☐ DOT oxidizer
- ☒ Not ignitable

**Corrosivity (pH)**
Check only one.

- ☐ ≤ 2.0
- ☐ 2.1-4.0
- ☒ 4.1-6.0
- ☐ 6.1-9.0
- ☐ 9.1-12.4
- ☐ ≥ 12.5
- ☐ Liquid corrosive to steel
- ☐ Not aqueous

**Reactivity**
Check as many as apply.

- ☐ Unstable
- ☐ Water reactive
- ☐ Pyrophoric
- ☐ Cyanide bearing
- ☐ Sulfide bearing
- ☐ Shock sensitive
- ☐ Explosive - class _____
- ☒ Non-reactive

**Boiling Point (degrees F.)**
Check only one.

- ☐ ≤ 95
- ☒ > 95
- ☐ Not applicable

| Identify presence of contaminants. | | | Minimum | Maximum | Unit (ppm or % only) | Analytical method | |
|---|---|---|---|---|---|---|---|
| **Toxicity Characteristic Metals** | | | | | | DS | |
| Arsenic | ☐ None | ☒ < 5.0 ppm | | to | | ☒ TCLP | ☐ Total |
| Barium | ☐ None | ☒ < 100.0 ppm | | to | | ☒ TCLP | ☐ Total |
| Cadmium | ☐ None | ☒ < 1.0 ppm | | to | | ☒ TCLP | ☐ Total |
| Chromium | ☐ None | ☒ < 5.0 ppm | | to | | ☒ TCLP | ☐ Total |
| Lead | ☐ None | ☒ < 5.0 ppm | | to | | ☒ TCLP | ☐ Total |
| Mercury | ☐ None | ☒ < 0.2 ppm | | to | | ☒ TCLP | ☐ Total |
| Selenium | ☒ None | < 1.0 ppm | | to | | ☒ TCLP | ☐ Total |
| Silver | ☐ None | ☒ < 5.0 ppm | | to | | ☒ TCLP | ☐ Total |
| **Toxicity Characteristic Organic Compounds** | | | | | | | |
| Benzene | ☒ None | ☐ < 0.5 ppm | | to | | ☐ TCLP | ☐ Total |
| Carbon tetrachloride | ☒ None | ☐ < 0.5 ppm | | to | | ☐ TCLP | ☐ Total |
| Chlorobenzene | ☒ None | ☐ < 100.0 ppm | | to | | ☐ TCLP | ☐ Total |
| Chloroform | ☒ None | ☐ < 6.0 ppm | | to | | ☐ TCLP | ☐ Total |
| Cresol | ☒ None | ☐ < 200.0 ppm | | to | | ☐ TCLP | ☐ Total |
| 1,4-dichlorobenzene | ☒ None | ☐ < 7.5 ppm | | to | | ☐ TCLP | ☐ Total |
| 1,2-Dichloroethane | ☒ None | ☐ < 0.5 ppm | | to | | ☐ TCLP | ☐ Total |
| 1,1-Dichloroethylene | ☒ None | ☐ < 0.7 ppm | | to | | ☐ TCLP | ☐ Total |
| 2,4-Dinitrotoluene | ☒ None | ☐ < 0.13 ppm | | to | | ☐ TCLP | ☐ Total |
| Hexachlorobenzene | ☒ None | ☐ < 0.13 ppm | | to | | ☐ TCLP | ☐ Total |
| Hexachlorobutadiene | ☒ None | ☐ < 0.5 ppm | | to | | ☐ TCLP | ☐ Total |
| Hexachloroethane | ☒ None | ☐ < 3.0 ppm | | to | | ☐ TCLP | ☐ Total |
| Methyl ethyl ketone | ☒ None | ☐ < 200.0 ppm | | to | | ☐ TCLP | ☐ Total |
| Nitrobenzene | ☒ None | ☐ < 2.0 ppm | | to | | ☐ TCLP | ☐ Total |
| Pentachlorophenol | ☒ None | ☐ < 100.0 ppm | | to | | ☐ TCLP | ☐ Total |
| Pyridine | ☒ None | ☐ < 5.0 ppm | | to | | ☐ TCLP | ☐ Total |
| Perchloroethylene or tetrachloroethylene | ☒ None | ☐ < 0.7 ppm | | to | | ☐ TCLP | ☐ Total |
| Trichloroethylene | ☒ None | ☐ < 0.5 ppm | | to | | ☐ TCLP | ☐ Total |
| 2,4,5-Trichlorophenol | ☒ None | ☐ < 400.0 ppm | | to | | ☐ TCLP | ☐ Total |
| 2,4,6-Trichlorophenol | ☒ None | ☐ < 2.0 ppm | | to | | ☐ TCLP | ☐ Total |
| Vinyl chloride | ☒ None | ☐ < 0.2 ppm | | to | | ☐ TCLP | ☐ Total |

**Additional Chemical Constituents and Contaminants (for hazardous constituents, see AR 10-3, Appendix A)**
List all other constituents (including inerts) not identified above and attach any applicable analyses.

| Name of constituent | Cas no.(optional) | Minimum | Maximum | Unit (ppm or % only) |
|---|---|---|---|---|
| Water | | 99 | to 100 | % |
| | | | to | |
| | | | to | |
| | | | to | |
| | | | to | |
| | | | to | |
| | | | to | |
| | | | to | |
| | | | to | |

## Section 2- Radiological Characteristics

*For help in completing this section of the form, call 5-WAST or 5-4000.*

| | Range minimum | | Range maximum | Unit (Ci/g or Ci/l) |
|---|---|---|---|---|
| **General** | | | | |
| ☐ Alpha | | to | | |
| ☐ Beta | | to | | |
| ☐ Gamma | | to | | |
| **TRU radionuclides** | | | | |
| ☐ None present | | | | |
| ☐ Am-241 | | to | | |
| ☐ Am-243 | | to | | |
| ☐ Cf-249 | | to | | |
| ☐ Cf-251 | | to | | |
| ☐ Cm-243 | | to | | |
| ☐ Cm-245 | | to | | |
| ☐ Cm-247 | | to | | |
| ☐ Pu-238 | | to | | |
| ☐ Pu-239 | | to | | |
| ☐ Pu-240 | | to | | |
| ☐ Pu-242 | | to | | |
| **Fission products** | | | | |
| ☐ None present | | | | |
| ☐ Ba-140 | | to | | |
| ☐ Ce-144 | | to | | |
| ☐ Cs-134 | | to | | |
| ☐ Cs-137 | | to | | |
| ☐ I-129 | | to | | |
| ☐ I-133 | | to | | |
| ☐ Kr-85 | | to | | |
| ☐ Nb-95 | | to | | |
| ☐ Ru-106 | | to | | |
| ☐ Sb-125 | | to | | |
| ☐ Sr-90 | | to | | |
| ☐ Tc-99 | | to | | |
| ☐ Zr-93 | | to | | |
| ☐ Zr-95 | | to | | |
| **Activation products** | | | | |
| ☐ None present | | | | |
| ☐ As -74 | | to | | |
| ☐ Be-7 | | to | | |
| ☐ C-14 | | to | | |
| ☐ Co-56 | | to | | |
| ☐ Co-57 | | to | | |
| ☐ Co-58 | | to | | |
| ☒ Co-60 | 12.9 | to | 14.7 | nCi/L |
| ☐ Cr-51 | | to | | |
| ☐ Eu-152 | | to | | |
| ☐ Mn-52 | | to | | |
| ☐ Mn-54 | | to | | |
| ☐ Nb-94 | | to | | |
| ☐ Ni-59 | | to | | |
| ☐ Ni-63 | | to | | |
| ☐ Rb-83 | | to | | |
| ☐ Rb-84 | | to | | |
| ☐ Se-75 | | to | | |
| ☐ Sr-82 | | to | | |
| ☐ Sr-85 | | to | | |
| ☐ V-48 | | to | | |
| ☐ Y-88 | | to | | |
| ☐ Zn-65 | | to | | |
| ☐ Zr-88 | | to | | |

10/16 Hf Ce per [illegible]

| | Range minimum | | Range maximum | Unit (Ci/g or Ci/l) |
|---|---|---|---|---|
| **Other** | | | | |
| ☐ None present | | | | |
| ☐ Am-242 | | to | | |
| ☐ Bi-207 | | to | | |
| ☐ Bi-210 | | to | | |
| ☐ Cf-250 | | to | | |
| ☐ Cf-252 | | to | | |
| ☐ Cm-244 | | to | | |
| ☐ H-3 | | to | | |
| ☐ Pa-231 | | to | | |
| ☐ Pb-210 | | to | | |
| ☐ Po-210 | | to | | |
| ☐ Pu-236 | | to | | |
| ☐ Pu-241 | | to | | |
| ☐ Ra-226 | | to | | |
| ☐ Ra-228 | | to | | |
| ☐ Th-230 | | to | | |
| ☐ Th-232 | | to | | |
| ☐ U-232 | | to | | |
| ☐ U-233 | | to | | |
| ☐ U-234 | | to | | |
| ☐ U-235 | | to | | |
| ☐ U-236 | | to | | |
| ☐ U-238 | | to | | |
| **Add'l radionuclides** | | | | |
| ☐ No additional radionuclides present | | | | |
| $K^{40}$ | 47.2 | to | 62.2 | nCi/L |
| $Lu^{172}$ | 74.8 | to | 78.2 | nCi/L |
| $Hf^{175}$ | 22.7 | to | 25.9 | nCi/L |
| ~~$Xe^{127}$~~ | ~~7.3~~ | ~~to~~ | ~~8.5~~ | ~~nCi/L~~ |
| | | to | | |
| | | to | | |
| | | to | | |
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| | | to | | |
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| | | to | | |
| | | to | | |

**Contamination Type:** *Check as many as apply.*

☒ Volume Contamination

☒ Surface Contamination

## Section 3 - Wastewater Characteristics

*For help in completing this section of the form, call 7-4301.*

| Identify presence of contaminants | | | Minimum | | Maximum | Unit (ppm or % only) | Analytical method |
|---|---|---|---|---|---|---|---|
| Aluminum | ☐ None | ☐ < 5.0 ppm | _____ | to | _____ | _____ | ☐ TCLP ☐ Total |
| Boron | ☐ None | ☐ < 5.0 ppm | _____ | to | _____ | _____ | ☐ TCLP ☐ Total |
| Cobalt | ☐ None | ☐ < 1.0 ppm | _____ | to | _____ | _____ | ☐ TCLP ☐ Total |
| Copper | ☐ None | ☐ < 1.0 ppm | _____ | to | _____ | _____ | ☐ TCLP ☐ Total |
| Vanadium | ☐ None | ☐ < 0.10 ppm | _____ | to | _____ | _____ | ☐ TCLP ☐ Total |
| Zinc | ☐ None | ☐ < 95.4 ppm | _____ | to | _____ | _____ | ☐ TCLP ☐ Total |

**Maximum daily flow** when discharge occurs: _____ ☐ Gallon ☐ Liters

**Average daily flow** when discharge occurs: _____ ☐ Gallon ☐ Liters

Estimated number of days per year that discharge will occur: _____

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50-1: _____ ☐ Gallon ☐ Liters

**For TA-55 use only.** Wastewater will be discharged through one of the following:

☐ Acid line ☐ Caustic line ☐ Industrial waste line

## Section 4 - Additional Information

*If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:*

**WASTE GENERATOR CERTIFICATION:** *Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.*

| Signature | Date |
|---|---|
| [signature] | 10/8/96 |

# *CST-9 Radiochemistry Screening Results*
## *MRAL III TA-DS SDG# XXX*

***Date :*** *8/14/96* ***Analyst :*** ***DD***

***Gross Gamma Screening Results, 5 minute count time***

| Sample # | Result | Uncertainty | MDA | Units |
|---|---|---|---|---|
| 96ds322 | 143.18 | 0.40 | 0.95 | pCi/mL |
| 96ds327 | 1377.25 | 1.04 | 0.95 | pCi/mL |
| wtrqc | 8.66 | 0.25 | 0.95 | pCi/mL |

***Gross Alpha, Beta Screening Results, 5 minute count time***

| Sample # | Alpha | Uncertainty | MDA | Beta | Uncertainty | MDA | Units |
|---|---|---|---|---|---|---|---|
| 96ds322 | -0.12 | 0.12 | 2.02 | 81.96 | 3.68 | 4.86 | pCi/mL |
| 96ds327 | 23.23 | 2.36 | 2.02 | 1829.08 | 17.29 | 4.86 | pCi/mL |

1 sigma counting uncertainty

# CST-9 Radiochemistry Screening Results
## MRAL II TA-DS SDG# XXX

Date : 8/14/96 Analyst : DD

### Tritium Screening Results

| Sample # | Tritium | Uncertainty | MDA | Units |
|---|---|---|---|---|
| 96ds322 | 207.94 | 2.92 | 1.63 | pCi/ml |
| 96ds327 | 1187.66 | 7.00 | 1.63 | pCi/ml |

0 sigma counting uncertainty

S-¬ple description
96ds327 diluted 100mlsmp/500ml di 8/14/96 DD

Spectrum Filename: 00010015.SPC

Acquisition information
Start time 14-Aug-96 07:50:56
Live time 500
Real time 599
Dead time 16.59%
Detector/Geometry IDs 0 & 0

Detector system
MCB 1

Calibration
Filename: ML3WAT.CLB
Created: 02-May-96 09:22:25 &
Amersham QCY.48, 200 lamda on 500ml in water, R6/25/43,
Feb 1, 1996, prep by GB, 4/30/96, pg 282, NB R6125.

Zero offset -11.394 keV; Gain .494 keV/channel

Library Files
Main analysis library: C:\USER\DUSTY1.LIB

Analysis parameters
Start channel 10 for an energy of -6.46keV
Stop channel 4048 for an energy of 1985.97keV
Peak rejection level 50.000%
Activity scaling factor 5.4010E+01/ 1.0000E+00 = 5.4010E+01
Detection limit method:
Currie limit
Additional random error: 1.0000000E+00
Additional systematic error: 1.0000000E+00
Background width: best method (based on spectrum).
Peak acceptance width = 1.0000000E+00

| Corrections | Status | Comments |
|---|---|---|
| Decay correct to date | NO | |
| Decay during acquisition | NO | |
| Peaked background correction | NO | |
| Absorption (Internal) | NO | |
| Geometry correction | NO | |
| Random summing | NO | |

Energy calibration normalized difference: .2879

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

| PEAK CHANNEL | CENTROID ENERGY | BACKGROUND COUNTS | NET AREA COUNTS | INTENSITY CTS/SEC | UNCERT 1 SIGMA % | FWHM keV | SUSPECTED NUCLIDE | |
|---|---|---|---|---|---|---|---|---|
| 39.47 | 8.09 | 0. | 7007. | 14.014 | 1.19 | 2.438 | - | s |
| 205.38 | 90.01 | 23422. | 1271. | 2.542 | 17.25 | 2.871 | - | D |
| 227.37 | 100.87 | 14232. | 2555. | 5.110 | 6.89 | 2.873 | - | D |
| 269.18 | 121.52 | 10773. | 1874. | 3.747 | 8.17 | 2.876 | - | D |
| 424.60 | 198.25 | 3245. | 176. | .352 | 46.41 | 2.888 | - | D |
| 471.17 | 221.24 | 5587. | 554. | 1.108 | 19.54 | 2.892 | - | D |
| 495.73 | 233.37 | 2869. | 545. | 1.090 | 14.55 | 2.894 | - | D |
| 571.13 | 270.59 | 4115. | 3195. | 6.391 | 3.35 | 2.901 | - | D |
| 587.95 | 278.90 | 2493. | 351. | .702 | 20.83 | 2.903 | - | D |
| 599.58 | 284.64 | 1679. | 194. | .389 | 30.66 | 2.904 | - | D |
| 663.47 | 316.18 | 3582. | 187. | .374 | 45.81 | 2.910 | - | D |
| 678.72 | 323.71 | 2154. | 716. | 1.431 | 9.91 | 2.912 | - | D |
| 824.26 | 395.56 | 1099. | 204. | .409 | 23.99 | 2.928 | - | D |
| 852.84 | 409.66 | 1243. | 424. | .848 | 26.40 | 2.216 | - | s |
| 907.06 | 436.43 | 218. | 52. | .105 | 48.00 | 1.198 | - | s |
| 1090.13 | 526.79 | 1003. | 457. | .914 | 18.67 | 2.407 | - | s |
| 1309.44 | 635.04 | 956. | 510. | 1.019 | 21.19 | 2.233 | - | |
| 1351.12 | 655.61 | 255. | 127. | .254 | 25.71 | 1.293 | - | s |
| 1525.01 | 741.43 | 430. | 182. | .363 | 21.74 | 2.276 | - | |
| 1604.14 | 780.48 | 294. | 143. | .286 | 29.77 | .797 | - | s |
| 1675.97 | 815.93 | 1030. | 154. | .308 | 30.57 | 3.055 | - | D |
| 1905.42 | 929.15 | 411. | 474. | .947 | 15.13 | 2.423 | - | s |
| 2054.80 | 1002.86 | 381. | 440. | .879 | 15.48 | 2.187 | - | s |
| 2096.01 | 1023.19 | 192. | 155. | .311 | 24.07 | .828 | - | s |
| 2139.91 | 1044.85 | 405. | 247. | .494 | 29.50 | 1.033 | - | s |
| 91.67 | 1119.73 | 272. | 562. | 1.123 | 10.71 | 2.594 | - | s |
| 2340.30 | 1143.72 | 269. | 818. | 1.636 | 9.34 | 2.770 | - | s |
| 2430.73 | 1188.33 | 1302. | 168. | .337 | 31.28 | 3.217 | - | D |
| 2498.35 | 1221.70 | 544. | 245. | .491 | 14.87 | 3.233 | - | D |
| 2532.70 | 1238.64 | 188. | 57. | .114 | 36.41 | 3.242 | - | D |
| 2543.06 | 1243.75 | 106. | 34. | .067 | 46.51 | 3.245 | - | D |
| 2633.64 | 1288.44 | 49. | 73. | .145 | 22.00 | .730 | - | s |
| 2833.02 | 1386.79 | 51. | 81. | .162 | 26.33 | 1.292 | - | s |

s Peak fails shape tests.
D Peak area deconvoluted.

********** I D E N T I F I E D P E A K S U M M A R Y **********

| NUCLIDE | PEAK CHANNEL | CENTROID ENERGY | BACKGROUND COUNTS | NET AREA COUNTS | INTENSITY CTS/SEC | UNCERT 1 SIGMA % | FWHM keV |
|---|---|---|---|---|---|---|---|
| HF-172 | 71.60 | 23.96 | 362660. | 6050. | 12.100 | 14.14 | 2.863D |
| XE-127 | 80.43 | 28.32 | 364317. | 0. | .000 | .00 | 2.864D |
| XE-127 | 81.02 | 28.61 | 361915. | 1413. | 2.825 | 60.28 | 2.864D |
| XE-127 | 88.49 | 32.30 | 356388. | 4487. | 8.975 | 18.87 | 2.864D |
| PM-144 | 97.70 | 36.85 | 343353. | 14231. | 28.462 | 5.88 | 2.865D |
| PM-144 | 98.74 | 37.36 | 356971. | 0. | .000 | .00 | 2.865D |
| GD-149 | 105.91 | 40.90 | 342828. | 7132. | 14.264 | 11.67 | 2.865D |
| GD-149 | 107.20 | 41.54 | 348325. | 0. | .000 | .00 | 2.865D |
| PM-144 | 108.54 | 42.20 | 321934. | 24534. | 49.067 | 3.33 | 2.865D |
| GD-149 | 118.26 | 47.00 | 288426. | 31016. | 62.032 | 2.51 | 2.866D |
| GD-149 | 120.89 | 48.30 | 300176. | 7727. | 15.453 | 10.09 | 2.866D |
| LU-172 | 127.07 | 51.35 | 201643. | 78881. | 157.762 | .88 | 2.866D |
| LU-172 | 129.18 | 52.39 | 271328. | 0. | .000 | .00 | 2.867D |
| HF-175 | 130.35 | 52.97 | 266651. | 0. | .000 | .00 | 2.867D |
| HF-172 | 130.35 | 52.97 | 198727. | 0. | .000 | 123661.30 | 3.502D |
| HF-175 | 132.58 | 54.07 | 168256. | 88142. | 176.284 | .74 | 2.867D |
| HF-172 | 132.58 | 54.07 | 80792. | 0. | .000 | 22.80 | 2.010D |
| LU-172 | 143.17 | 59.30 | 88779. | 32447. | 64.894 | 1.41 | 2.867D |
| TA-182 | 143.21 | 59.32 | 121226. | 0. | .000 | .00 | 2.867D |
| HF-175 | 147.22 | 61.30 | 79008. | 1853. | 3.706 | 21.58 | 2.868D |
| HF-172 | 147.22 | 61.30 | 50411. | 0. | .000 | 61154.97 | 3.043D |
| IR-188 | 147.61 | 61.49 | 80861. | 0. | .000 | .00 | 2.868D |
| HF-175 | 150.46 | 62.90 | 45466. | 20131. | 40.261 | 1.66 | 2.868D |
| IR-188 | 150.66 | 63.00 | 65597. | 0. | .000 | .00 | 2.868D |
| HF-172 | 159.68 | 67.45 | 20750. | 7760. | 15.521 | 2.86 | 2.868D |
| TA-182 | 160.28 | 67.75 | 40696. | 0. | .000 | .00 | 2.868D |
| 188 | 167.47 | 71.30 | 2763. | 0. | .000 | .00 | .253D |
| LU-172 | 182.40 | 78.67 | 33809. | 6192. | 12.384 | 4.39 | 2.870D |
| HF-172 | 188.64 | 81.75 | 35690. | 1243. | 2.486 | 21.68 | 2.870D |
| TA-182 | 225.82 | 100.11 | 16046. | 1203. | 2.406 | 15.17 | 2.873D |
| HF-172 | 254.01 | 114.03 | 16927. | 1894. | 3.788 | 9.98 | 2.875D |
| HF-172 | 277.97 | 125.86 | 6540. | 3447. | 6.894 | 3.73 | 2.876D |
| XE-127 | 332.06 | 152.56 | 3416. | 907. | 1.814 | 17.37 | 3.650s |
| GD-149 | 326.06 | 149.60 | 3080. | 0. | .000 | .00 | 3.638D |
| IR-188 | 337.05 | 155.03 | 1638. | 0. | .000 | .00 | .000D |
| XE-127 | 371.63 | 172.10 | 9982. | 400. | .800 | 35.69 | 2.883D |
| LU-172 | 390.61 | 181.47 | 3563. | 3860. | 7.720 | 2.72 | 2.885D |
| XE-127 | 433.89 | 202.84 | 1561. | 897. | 1.794 | 7.07 | 2.889D |
| GD-149 | 625.00 | 297.19 | 864. | 33. | .066 | 218.88 | .000s |
| HF-175 | 717.66 | 342.93 | 2192. | 2528. | 5.056 | 6.78 | 2.285s |
| GD-149 | 724.89 | 346.50 | 1477. | 0. | .000 | .00 | .392D |
| XE-127 | 782.54 | 374.96 | 3277. | 329. | .657 | 25.25 | 2.923D |
| PM-144 | 988.81 | 476.78 | 1144. | 172. | .344 | 28.80 | 2.948D |
| BE-7 | 990.39 | 477.56 | 1199. | 54. | .108 | 91.95 | 2.948D |

CST-9 In-House Analysis

| Nuclide | Channel | Energy | Background | Net area | Cnts/sec | Uncert | FWHM |
|---|---|---|---|---|---|---|---|
| 188 | 991.48 | 478.10 | 1077. | 0. | .000 | .00 | .000D |
| [illegible] 144 | 1280.09 | 620.55 | 746. | 128. | .256 | 55.21 | .492s |
| IR-188 | 1305.51 | 633.10 | 861. | 0. | .000 | .00 | 2.304D |
| IR-188 | 1309.36 | 635.00 | 457. | 0. | .000 | .00 | 2.178D |
| PM-144 | 1433.95 | 696.49 | 1646. | 88. | .177 | 65.86 | 3.013D |
| LU-172 | 1435.51 | 697.26 | 1363. | 309. | .618 | 17.83 | 3.013D |
| GD-149 | 1538.73 | 748.20 | 1092. | 0. | .000 | .00 | 2.341D |
| GD-149 | 1620.60 | 788.60 | 242. | 0. | .000 | .00 | .551D |
| LU-172 | 1664.06 | 810.05 | 1182. | 1288. | 2.577 | 4.69 | 3.053D |
| LU-172 | 1847.74 | 900.69 | 2177. | 1842. | 3.684 | 4.27 | 3.088D |
| LU-172 | 1870.76 | 912.05 | 745. | 758. | 1.516 | 6.26 | 3.092D |
| LU-172 | 2238.79 | 1093.64 | 705. | 3064. | 6.127 | 2.18 | 3.171D |
| TA-182 | 2294.81 | 1121.28 | 272. | 0. | .000 | .00 | 2.594D |
| CO-60 | 2399.96 | 1173.16 | 218. | 843. | 1.685 | 5.85 | 3.183s |
| TA-182 | 2432.18 | 1189.05 | 313. | 0. | .000 | .00 | 2.531D |
| IR-188 | 2474.64 | 1210.00 | 70. | 0. | .000 | .00 | .430D |
| TA-182 | 2497.79 | 1221.42 | 155. | 0. | .000 | .00 | 2.200D |
| TA-182 | 2517.15 | 1230.97 | 180. | 0. | .000 | .00 | 1.885D |
| CO-60 | 2723.28 | 1332.66 | 117. | 632. | 1.265 | 6.43 | 2.720 |
| K-40 | 2983.28 | 1460.91 | 59. | 250. | .500 | 13.71 | .982s |

s Peak fails shape tests.
D Peak area deconvoluted.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

| NUCLIDE | AVERAGE ACTIVITY Becquerels | PEAK ENERGY keV | PEAK ACTIVITY Becquerels | CODE | MDA VALUE Becquerels | COMMENTS |
|---|---|---|---|---|---|---|
| [illegible] 0 | 1.01295E+03 | 1460.75 | 1.013E+03 | ?( | 5.1069E+01 | |
| CO-60 | 2.55538E+02 | 1332.51 | 2.555E+02 | ( | 7.1804E+00 | |
| | | 1173.23 | 3.098E+02 | + | 1.9703E+01 | |
| HF-172 | 0.00000E+00 | 54.07 | 0.000E+00 | ?( | 9.1735E+01 | Energy duplication |
| | | 23.96 | 2.124E+02 | + | 3.5065E+01 | |
| | | 52.97 | 0.000E+00 | % | 2.5960E+02 | Energy duplication |
| | | 125.86 | 2.495E+03 | + | 1.1901E+02 | |
| | | 61.30 | 0.000E+00 | % | 2.4879E+02 | Energy duplication |
| | | 67.45 | 8.652E+03 | + | 3.0967E+02 | |
| | | 81.75 | 1.729E+03 | + | 4.3960E+02 | |
| | | 114.03 | 6.364E+03 | + | 7.5824E+02 | |
| LU-172 | 1.41683E+03 | 1093.64 | 1.419E+03 | ( | 2.0237E+01 | |
| | | 900.69 | 2.008E+03 | + | 1.1371E+02 | |
| | | 181.47 | 2.060E+03 | + | 7.5645E+01 | |
| | | 52.39 | 0.000E+00 | - | 2.8035E+02 | |

| Nuclide | Ave activity | Energy | Activity | Code | Peak MDA | Comments |
|---|---|---|---|---|---|---|
| | | 810.05 | 2.356E+03 | + | 1.4949E+02 | |
| | | 912.05 | 1.626E+03 | + | 1.3684E+02 | |
| | | 78.67 | 4.542E+03 | + | 2.4133E+02 | |
| | | 51.35 | 4.627E+04 | + | 5.1105E+02 | |
| | | 697.26 | 1.385E+03 | ( | 2.7220E+02 | |
| | | 59.30 | 3.894E+04 | + | 6.8743E+02 | |
| TA-182 | 0.00000E+00 | 67.75 | 0.000E+00 | !( | 5.6031E+01 | |
| | | 1121.28 | 0.000E+00 | !( | 2.7493E+01 | |
| | | 1221.42 | 0.000E+00 | !( | 2.8267E+01 | |
| | | 1189.05 | 0.000E+00 | !( | 6.5597E+01 | |
| | | 59.32 | 0.000E+00 | !( | 2.2287E+02 | |
| | | 100.11 | 7.052E+02 | + | 1.2666E+02 | |
| | | 1230.97 | 0.000E+00 | !( | 7.2626E+01 | |
| HF-175 | 4.48995E+02 | 343.40 | 4.490E+02 | @( | 1.3678E+01 | |
| | | 54.07 | 9.314E+03 | + | 8.8020E+01 | Energy duplication |
| | | 52.97 | 0.000E+00 | - | 1.6165E+02 | Energy duplication |
| | | 61.30 | 7.118E+02 | + | 1.7969E+02 | Energy duplication |
| | | 62.90 | 3.179E+04 | + | 6.6538E+02 | |
| XE-127 | 1.47954E+02 | 202.84 | 1.449E+02 | ( | 1.0500E+01 | |
| | | 28.61 | 0.000E+00 | % | 3.1885E+01 | |
| | | 172.10 | 1.561E+02 | ( | 6.4168E+01 | |
| | | 28.32 | 0.000E+00 | - | 5.7884E+01 | |
| | | 374.96 | 3.039E+02 | + | 9.1357E+01 | |
| | | 32.30 | 6.917E+02 | + | 1.5233E+02 | |
| | | 145.22 | 1.968E+03 | & | 2.3465E+02 | |
| IR-188 | 0.00000E+00 | 63.00 | 0.000E+00 | !( | 6.8645E+01 | |
| | | 155.03 | 0.000E+00 | ?( | 1.8540E+01 | |
| | | 61.49 | 0.000E+00 | !( | 1.3513E+02 | |
| | | 633.10 | 0.000E+00 | !( | 5.2448E+01 | |
| | | 478.10 | 0.000E+00 | ?( | 6.5133E+01 | |
| | | 71.30 | 0.000E+00 | ?( | 4.4859E+01 | |
| | | 1210.00 | 0.000E+00 | ?( | 7.6436E+01 | |
| | | 635.00 | 0.000E+00 | !( | 1.4257E+02 | |
| PM-144 | 0.00000E+00 | 696.49 | 0.000E+00 | % | 1.7267E+01 | |
| | | 618.01 | 0.000E+00 | % | 1.1367E+01 | |
| | | 476.78 | 7.892E+01 | | 2.7353E+01 | |
| | | 37.36 | 0.000E+00 | ! | 6.7010E+01 | |
| | | 36.85 | 1.798E+03 | | 1.2430E+02 | |
| | | 42.20 | 6.901E+03 | | 2.7235E+02 | |
| GD-149 | 0.00000E+00 | 41.54 | 0.000E+00 | !( | 7.7730E+01 | |
| | | 149.60 | 0.000E+00 | &( | 1.9811E+01 | |
| | | 40.90 | 1.046E+03 | + | 1.4270E+02 | |

| Nuclide | Ave activity | Energy | Activity | Code | Peak MDA | Comments |
|---|---|---|---|---|---|---|
| | | 298.50 | 0.000E+00 | % | 3.0576E+01 | |
| | | 346.50 | 0.000E+00 | ?( | 5.4536E+01 | |
| | | 47.00 | 1.031E+04 | + | 3.0894E+02 | |
| | | 748.20 | 0.000E+00 | &( | 2.3063E+02 | |
| | | 788.60 | 0.000E+00 | ?( | 1.3174E+02 | |
| | | 48.30 | 1.153E+04 | + | 1.3616E+03 | |
| BE-7 | 0.00000E+00 | 477.56 | 0.000E+00 | % | 1.0903E+02 | |

( - This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

| NUCLIDE | | TIME OF COUNT ACTIVITY pCi/L | UNCERTAINTY 1 SIGMA COUNTING pCi/L | TOTAL pCi/L | |
|---|---|---|---|---|---|
| I 0 | # | 5.4709E+04 | 7499.53 | 7594.10 | 54.7 ± 7.5 nCi/L |
| CO 60 | | 1.3802E+04 | 887.44 | 937.23 | 13.8 ± 0.9 nCi/L |
| HF-172 | < | 4.95E+03 | | | |
| LU-172 | | 7.6523E+04 | 1670.73 | 2363.09 | 76.5 ± 1.7 nCi/L |
| TA-182 | < | 3.03E+03 | | | |
| HF-175 | | 2.4250E+04 | 1644.17 | 1727.36 | 24.3 ± 1.6 nCi/L |
| XE-127 | | 7.9910E+03 | 564.77 | 591.12 | 7.9 ± 0.6 nCi/L |
| IR-188 | < | 3.71E+03 | | | |
| PM-144 | < | 9.33E+02 | | | |
| GD-149 | < | 4.20E+03 | | | |
| BE-7 | < | 5.89E+03 | | | |

177.20 nCi/L for 100 ml sample
corrected to 500 ml sample
= 886.0 nCi/L

\# All peaks for activity calculation had bad shape.

S U M M A R Y

TOTAL ACTIVITY ( -6.5 to 1986.0 keV) 1.7727530E+05 pCi/L

The library has energies which are not separable.

Analyzed by: _____
G. Brooks

Reviewed by: _____
Supervisor

100
Results for Sample 200021947 04-Oct-1996 10:39 Page 1

Analytical Chemistry Report
Warning: Sample data not yet approved for release

Sample ID: 200021947 Group: ESH-19 QA: Y Priority: 2
Submission ID: 100017441 Program: XF613000 Acct: N Logged: 29-Aug-1996
User sample ID: 96DS330
Sample Type: AH CONTAMINATED SOLUTION
Requester: D. STEPHENS MS: K498 Phone: 5-0792

Sample Description: CONTAM. WATER
Radioactive Elements: N
Radiation: N
Hazards: N
Special Handling: N

WALK-IN CUSTOMER: N

Methods Requested: PSSUR-L

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Analytical Operation: PSSUR-L Task ID: 300068760
Date Completed: 04-Oct-1996 09:12 Replicates: 1 Version: 1

| Component | Result | Units | Component | Result | Units |
|---|---|---|---|---|---|
| SILVER | 0.003 | ug/ml | ARSENIC | 0.03 | ug/ml |
| BARIUM | 3.04 | ug/ml | BERYLLIUM | <0.001 | ug/ml |
| CADMIUM | 0.02 | ug/ml | CHROMIUM | 0.11 | ug/ml |
| MERCURY | 0.02 | ug/ml | NICKEL | 0.30 | ug/ml |
| LEAD | 0.20 | ug/ml | ANTIMONY | <0.001 | ug/ml |
| SELENIUM | <0.007 | ug/ml | THALLIUM | <0.001 | ug/ml |

Notebook reference: ANC75PG204

Analyst: LAG/TMY

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100
Results for Sample 200021948 04-Oct-1996 10:39 Page 1

Analytical Chemistry Report
Warning: Sample data not yet approved for release

Sample ID: 200021948 Group: ESH-19 QA: Y Priority: 2
Submission ID: 00017442 Program: XF613000 Acct: N Logged: 29-Aug-1996
User sample ID: 96DS331
Sample Type: AH CONTAMINATED SOLUTION
Requester: D. STEPHENS MS: K498 Phone: 5-0792

Sample Description: CONTAM. H2O
Radioactive Elements: N
Radiation: N
Hazards: N
Special Handling: N

WALK-IN CUSTOMER: N

Methods Requested: PSSUR-L

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Analytical Operation: PSSUR-L Task ID: 300068758
Date Completed: 04-Oct-1996 09:12 Replicates: 1 Version: 1

| Component | Result | Units | Component | Result | Units |
|---|---|---|---|---|---|
| SILVER | 0.005 | ug/ml | ARSENIC | 0.02 | ug/ml |
| BARIUM | 5.81 | ug/ml | BERYLLIUM | 0.001 | ug/ml |
| CADMIUM | 0.01 | ug/ml | CHROMIUM | 0.12 | ug/ml |
| MERCURY | 0.02 | ug/ml | NICKEL | 0.24 | ug/ml |
| LEAD | 0.28 | ug/ml | ANTIMONY | 0.003 | ug/ml |
| SELENIUM | 0.05 | ug/ml | THALLIUM | <0.001 | ug/ml |

Notebook reference: ANC75PG204

Analyst: LAG/TMY

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## CST-12 ORGANIC ANALYSIS GROUP
## SUMMARY OF ANALYTICAL RESULTS FOR VOLATILES

**TO:** **Dustie Stephens** **DATE:** August 27, 1996
**FROM:** Laura C. Ortega, CST-12 Organic Analysis Section

**MATRIX:** WATER **REQUEST NUMBER: 23732**

**Results Summary**
Attached is a tabulation of samples submitted for volatiles analysis and a summary of their analytical results (target compounds found and their concentrations; see Table 1). In addition, sample 96.06826 contained tentatively identified non-target compounds, and these results are included on a separate table. The samples, collected on August 13, 1996, were analyzed on August 18, 1996.

**Method Summary**
Samples were analyzed using EPA Method 8260. In summary, a measured volume of sample, usually 5 mL, was analyzed using the purge and trap method combined with capillary column GC/MS. A Delta Perspective PTA-30 Autosampler and a Tekmar 3000 Purge and Trap Concentrator were interfaced to a Hewlett-Packard 5890 Gas Chromatograph / 5971 Mass Selective Detector to perform the analyses. The analytical column used was a J&W Scientific 75 m by 0.53 mm ID, 3 micron film, DB624 capillary column.

**Anomalies And Analysis Notes**
Below is a summary of required QA/QC parameters as outlined in EPA SW-846 and LANL SOPs and a summary of any anomalies which occurred during the analyses.

Calibration QC were within criteria for all analyses.

Surrogate recoveries were ***not*** within criteria for all analyses. The Method Blank had surrogate Toluene-d8 out of criteria, low. The blank was analyzed twice and the same results occurred. Due to time constraints it was not analyzed a third time.

Internal standard responses were within criteria for all analyses.

Matrix spike and matrix spike duplicate were analyzed as part of the analytical batch which included the samples from this work request. All spike recoveries and relative percent differences were within criteria. A copy of the MS/MSD recovery form is included with this report.

Holding times were met for all sample analyses.

If you have any questions regarding this data, please call Laura Ortega at 665-7407.

LCO 8/27/96

## CST-12 ORGANIC ANALYSIS GROUP
## SUMMARY OF ANALYTICAL RESULTS FOR VOLATILES

**Table 1.** Summary of results of sample analyses for volatiles.

**REQUEST NUMBER: 23732**

| SAMPLE ID | TARGET COMPOUNDS FOUND | AMOUNT (ug/L) | LOQ (ug/L) | TICs |
|---|---|---|---|---|
| B96.07125 | Acetone | 8 J | 20 | Y |
| S96.06824 | None | | | N |
| S96.06826 | Acetone | 9 JB | 20 | Y |
| | o,m,p-Xylene(mixed) | 8 | 5 | |
| | n-Propylbenzene | 9 | 5 | |
| | 1,3,5-Trimethylbenzene | 25 | 5 | |
| | 1,2,4-Trimethylbenzene | 30 | 5 | |
| | 4-Isopropyltoluene | 3 J | 5 | |

Sample IDs beginning with the letter S are samples; those beginning with the letter B are blanks.

**LOQ:** Limit of quantitation. LOQs normally range between 5 and 20ug/L depending on the compound, unless otherwise noted.

**TICs:** Tentatively identified compounds. Y = TICs were found. N = TICs were not found.

**J:** This data qualifier indicates that the compound was detected, but the reported result is less than the LOQ and is an estimated value.

**B:** This data qualifier indicates that the reported compound was found in the associated method blank as well as in the sample.

1E

# VOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

**VBLK01**

Lab Name: LANL Contract: _____

Project No. RN23732 Site: _____ Location: _____ Group: CST-12

Matrix: (soil/water) WATER Lab Sample ID: B9607125

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: F081610.D

Level: (low/med) _____ Date Received: 8/16/96

% Moisture: not dec. 0 Date Analyzed: 8/16/96

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. 91-20-3 | Naphthalene | 16.51 | 7 | J |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| 8. | | | | |
| 9. | | | | |
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| 24. | | | | |
| 25. | | | | |
| 26. | | | | |
| 27. | | | | |
| 28. | | | | |
| 29. | | | | |
| 30. | | | | |

1E

# VOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

S9606826

Lab Name: LANL Contract:

Project No. RN23732 Site: Location: Group: CST-12

Matrix: (soil/water) WATER Lab Sample ID: S9606826

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: F081613.D

Level: (low/med) Date Received: 8/16/96

% Moisture: not dec. 0 Date Analyzed: 8/16/96

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 5 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. | Benzene, -ethyl- -methyl- | 13.11 | 100 | J |
| 2. 1120-21-4 | Undecane | 14.56 | 7000 | J |
| 3. 112-40-3 | Dodecane | 15.75 | 3900 | J |
| 4. 629-50-5 | Tridecane | 16.83 | 3800 | J |
| 5. 629-59-4 | Tetradecane | 17.80 | 73 | J |
| 6. | | | | |
| 7. | | | | |
| 8. | | | | |
| 9. | | | | |
| 10. | | | | |
| 11. | | | | |
| 12. | | | | |
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| 19. | | | | |
| 20. | | | | |
| 21. | | | | |
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| 23. | | | | |
| 24. | | | | |
| 25. | | | | |
| 26. | | | | |
| 27. | | | | |
| 28. | | | | |
| 29. | | | | |
| 30. | | | | |

UNCL 4/22/96

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: LANL Contract: _____

Project No. RN23596 Site: _____ Location: _____ Group: CST-12

Matrix Spike - Sample No.: S9605674

| COMPOUND | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC # | QC. LIMITS REC. |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 50 | 0 | 59 | 118 | (61-145) |
| Benzene | 50 | 0 | 53 | 106 | (76-127) |
| Trichloroethene | 50 | 0 | 52 | 104 | (71-120) |
| Toluene | 50 | 0 | 50 | 100 | (76-125) |
| Chlorobenzene | 50 | 0 | 49 | 98 | (75-130) |

| COMPOUND | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC # | % RPD # | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 50 | 54 | 108 | 9 | 14 | (61-145) |
| Benzene | 50 | 49 | 98 | 8 | 11 | (76-127) |
| Trichloroethene | 50 | 50 | 100 | 4 | 14 | (71-120) |
| Toluene | 50 | 48 | 96 | 4 | 13 | (76-125) |
| Chlorobenzene | 50 | 46 | 92 | 6 | 13 | (75-130) |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

Comments: _____

Uncl 9/23/96

# LOS ALAMOS NATIONAL LABORATORY
# CST-12 ORGANIC ANALYSIS GROUP
# VOLATILE ANALYSIS ANOMALY REPORTING FORM

Reported By: LCORTEZA

Date Reported: 8/21/96

Request Number: 23732

**Type of Anomaly (circle appropriate choices or describe):**

| | | |
|---|---|---|
| Surrogate recovery | Retention time shift | Missed holding time |
| Internal standard response | Calibration QC | Sample matrix effect |
| Other (describe): | | |

**Description:** Include sample numbers, dates, etc., as appropriate.

THE METHOD BLANK'S SURROGATE TOLUENE-d8 WAS OUT OF CRITERIA.

**Corrective actions taken and disposition of affected data:** Include dates taken or a schedule. If problem is ongoing, address actions taken/to be taken to prevent recurrence.

THE METHOD BLANK WAS ANALYZED TWICE AND THE SAME RESULTS OCCURRED. DUE TO TIME CONSTRAINTS IT WAS NOT ANALYZED A THIRD TIME.

Corrective actions taken by: [signature]

Date: 8/21/96

# LOS ALAMOS NATIONAL LABORATORY
# CST-12 ORGANIC ANALYSIS GROUP

## DATA REVIEW CERTIFICATION

Request Number: 23732 Analysis: VOLATILES BY EPA 8260

The data contained in the enclosed report has been reviewed and approved by the people listed below:

| | | |
|---|---|---|
| LAURA C. ORTEGA | | 8/22/96 |
| Analyst Name (print) | Analyst Signature | Date |
| Leah D. Bustos | | 26 August 96 |
| Data Reviewer Name (print) | Data Reviewer Signature | Date |

REPORT NUMBER: 41405

********** CST ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: JA on 27-Aug-1996

REQUEST NUMBER: 23732 MATRIX: W ANALYST: LAURA ORTEGA PROGRAM CODE: XF61 NOTEBOOK: F082015 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 96.06824 Date Collected: 8/13/96 Date Received: 8/14/96 Date Extracted: 8/16/96 Date Analyzed: 8/16/96

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS323 | 96.06824 | 67641 | < 20. | | UG/L | 8/27/96 | | Acetone |
| 96DS323 | 96.06824 | 71432 | < 5. | | UG/L | 8/27/96 | | Benzene |
| 96DS323 | 96.06824 | 108861 | < 5. | | UG/L | 8/27/96 | | Bromobenzene |
| 96DS323 | 96.06824 | 74975 | < 5. | | UG/L | 8/27/96 | | Bromochloromethane |
| 96DS323 | 96.06824 | 75274 | < 5. | | UG/L | 8/27/96 | | Bromodichloromethane |
| 96DS323 | 96.06824 | 75252 | < 5. | | UG/L | 8/27/96 | | Bromoform |
| 96DS323 | 96.06824 | 74839 | < 10. | | UG/L | 8/27/96 | | Bromomethane |
| 96DS323 | 96.06824 | 78933 | < 20. | | UG/L | 8/27/96 | | 2-Butanone |
| 96DS323 | 96.06824 | 104518 | < 5. | | UG/L | 8/27/96 | | n-Butylbenzene |
| 96DS323 | 96.06824 | 135988 | < 5. | | UG/L | 8/27/96 | | sec-Butylbenzene |
| 96DS323 | 96.06824 | 98066 | < 5. | | UG/L | 8/27/96 | | tert-Butylbenzene |
| 96DS323 | 96.06824 | 75150 | < 5. | | UG/L | 8/27/96 | | Carbon disulfide |
| 96DS323 | 96.06824 | 56235 | < 5. | | UG/L | 8/27/96 | | Carbon tetrachloride |
| 96DS323 | 96.06824 | 108907 | < 5. | | UG/L | 8/27/96 | | Chlorobenzene |
| 96DS323 | 96.06824 | 124481 | < 5. | | UG/L | 8/27/96 | | Chlorodibromomethane |
| 96DS323 | 96.06824 | 75003 | < 10. | | UG/L | 8/27/96 | | Chloroethane |
| 96DS323 | 96.06824 | 67663 | < 5. | | UG/L | 8/27/96 | | Chloroform |
| 96DS323 | 96.06824 | 74873 | < 10. | | UG/L | 8/27/96 | | Chloromethane |
| 96DS323 | 96.06824 | 95498 | < 5. | | UG/L | 8/27/96 | | o-Chlorotoluene |
| 96DS323 | 96.06824 | 106434 | < 5. | | UG/L | 8/27/96 | | p-Chlorotoluene |
| 96DS323 | 96.06824 | 96128 | < 10. | | UG/L | 8/27/96 | | 1,2-Dibromo-3-chloropropane |
| 96DS323 | 96.06824 | 74953 | < 5. | | UG/L | 8/27/96 | | Dibromomethane |
| 96DS323 | 96.06824 | 95501 | < 5. | | UG/L | 8/27/96 | | o-Dichlorobenzene (1,2) |
| 96DS323 | 96.06824 | 541731 | < 5. | | UG/L | 8/27/96 | | m-Dichlorobenzene (1,3) |
| 96DS323 | 96.06824 | 106467 | < 5. | | UG/L | 8/27/96 | | p-Dichlorobenzene (1,4) |
| 96DS323 | 96.06824 | 75718 | < 10. | | UG/L | 8/27/96 | | Dichlorodifluoromethane |

********** CST ANALYTICAL REPORT **********

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS323 | 96.06824 | 75343 | < 5. | | UG/L | 8/27/96 | | 1,1-Dichloroethane |
| 96DS323 | 96.06824 | 107062 | < 5. | | UG/L | 8/27/96 | | 1,2-Dichloroethane |
| 96DS323 | 96.06824 | 75354 | < 5. | | UG/L | 8/27/96 | | 1,1-Dichloroethene |
| 96DS323 | 96.06824 | 156605 | < 5. | | UG/L | 8/27/96 | | trans-1,2-Dichloroethene |
| 96DS323 | 96.06824 | 156592 | < 5. | | UG/L | 8/27/96 | | cis-1,2-Dichloroethylene |
| 96DS323 | 96.06824 | 78875 | < 5. | | UG/L | 8/27/96 | | 1,2-Dichloropropane |
| 96DS323 | 96.06824 | 142289 | < 5. | | UG/L | 8/27/96 | | 1,3-Dichloropropane |
| 96DS323 | 96.06824 | 594207 | < 5. | | UG/L | 8/27/96 | | 2,2-Dichloropropane |
| 96DS323 | 96.06824 | 563586 | < 5. | | UG/L | 8/27/96 | | 1,1-Dichloropropene |
| 96DS323 | 96.06824 | 10061015 | < 5. | | UG/L | 8/27/96 | | cis-1,3-Dichloropropene |
| 96DS323 | 96.06824 | 10061026 | < 5. | | UG/L | 8/27/96 | | trans-1,3-Dichloropropene |
| 96DS323 | 96.06824 | 100414 | < 5. | | UG/L | 8/27/96 | | Ethylbenzene |
| 96DS323 | 96.06824 | 106934 | < 5. | | UG/L | 8/27/96 | | Ethylene dibromide |
| 96DS323 | 96.06824 | 591786 | < 20. | | UG/L | 8/27/96 | | 2-Hexanone |
| 96DS323 | 96.06824 | 98828 | < 5. | | UG/L | 8/27/96 | | Isopropylbenzene |
| 96DS323 | 96.06824 | 99876 | < 5. | | UG/L | 8/27/96 | | 4-Isopropyltoluene |
| 96DS323 | 96.06824 | 74884 | < 5. | | UG/L | 8/27/96 | | Methyl iodide |
| 96DS323 | 96.06824 | 108101 | < 20. | | UG/L | 8/27/96 | | 4-Methyl-2-pentanone |
| 96DS323 | 96.06824 | 75092 | < 5. | | UG/L | 8/27/96 | | Methylene chloride |
| 96DS323 | 96.06824 | 103651 | < 5. | | UG/L | 8/27/96 | | Propylbenzene |
| 96DS323 | 96.06824 | 100425 | < 5. | | UG/L | 8/27/96 | | Styrene |
| 96DS323 | 96.06824 | 630206 | < 5. | | UG/L | 8/27/96 | | 1,1,1,2-Tetrachloroethane |
| 96DS323 | 96.06824 | 79345 | < 5. | | UG/L | 8/27/96 | | 1,1,2,2-Tetrachloroethane |
| 96DS323 | 96.06824 | 127184 | < 5. | | UG/L | 8/27/96 | | Tetrachloroethylene |
| 96DS323 | 96.06824 | 108883 | < 5. | | UG/L | 8/27/96 | | Toluene |
| 96DS323 | 96.06824 | 76131 | < 5. | | UG/L | 8/27/96 | | 1,1,2-Trichloro-1,2,2-trifluoroethane |
| 96DS323 | 96.06824 | 71556 | < 5. | | UG/L | 8/27/96 | | 1,1,1-Trichloroethane |
| 96DS323 | 96.06824 | 79005 | < 5. | | UG/L | 8/27/96 | | 1,1,2-Trichloroethane |
| 96DS323 | 96.06824 | 79016 | < 5. | | UG/L | 8/27/96 | | Trichloroethene |
| 96DS323 | 96.06824 | 75694 | < 5. | | UG/L | 8/27/96 | | Trichlorofluoromethane |
| 96DS323 | 96.06824 | 96184 | < 5. | | UG/L | 8/27/96 | | 1,2,3-Trichloropropane |
| 96DS323 | 96.06824 | 95636 | < 5. | | UG/L | 8/27/96 | | 1,2,4-Trimethylbenzene |
| 96DS323 | 96.06824 | 108678 | < 5. | | UG/L | 8/27/96 | | 1,3,5-Trimethylbenzene |
| 96DS323 | 96.06824 | 75014 | < 10. | | UG/L | 8/27/96 | | Vinyl chloride |
| 96DS323 | 96.06824 | 1330207 | < 5. | | UG/L | 8/27/96 | | Mixed-Xylenes (o ± m ± p) |

Tentatively Identified Compounds in Customer Sample # 96.06824

none

********** CST ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: JA on 27-Aug-1996

REQUEST NUMBER: 23732 MATRIX: W ANALYST: LAURA ORTEGA PROGRAM CODE: XF61 NOTEBOOK: F082015 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 96.06826 Date Collected: 8/13/96 Date Received: 8/14/96 Date Extracted: 8/16/96 Date Analyzed: 8/16/96

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS328 | 96.06826 | 67641 | < 20. | | UG/L | 8/27/96 | | Acetone |
| 96DS328 | 96.06826 | 71432 | < 5. | | UG/L | 8/27/96 | | Benzene |
| 96DS328 | 96.06826 | 108861 | < 5. | | UG/L | 8/27/96 | | Bromobenzene |
| 96DS328 | 96.06826 | 74975 | < 5. | | UG/L | 8/27/96 | | Bromochloromethane |
| 96DS328 | 96.06826 | 75274 | < 5. | | UG/L | 8/27/96 | | Bromodichloromethane |
| 96DS328 | 96.06826 | 75252 | < 5. | | UG/L | 8/27/96 | | Bromoform |
| 96DS328 | 96.06826 | 74839 | < 10. | | UG/L | 8/27/96 | | Bromomethane |
| 96DS328 | 96.06826 | 78933 | < 20. | | UG/L | 8/27/96 | | 2-Butanone |
| 96DS328 | 96.06826 | 104518 | < 5. | | UG/L | 8/27/96 | | n-Butylbenzene |
| 96DS328 | 96.06826 | 135988 | < 5. | | UG/L | 8/27/96 | | sec-Butylbenzene |
| 96DS328 | 96.06826 | 98066 | < 5. | | UG/L | 8/27/96 | | tert-Butylbenzene |
| 96DS328 | 96.06826 | 75150 | < 5. | | UG/L | 8/27/96 | | Carbon disulfide |
| 96DS328 | 96.06826 | 56235 | < 5. | | UG/L | 8/27/96 | | Carbon tetrachloride |
| 96DS328 | 96.06826 | 108907 | < 5. | | UG/L | 8/27/96 | | Chlorobenzene |
| 96DS328 | 96.06826 | 124481 | < 5. | | UG/L | 8/27/96 | | Chlorodibromomethane |
| 96DS328 | 96.06826 | 75003 | < 10. | | UG/L | 8/27/96 | | Chloroethane |
| 96DS328 | 96.06826 | 67663 | < 5. | | UG/L | 8/27/96 | | Chloroform |
| 96DS328 | 96.06826 | 74873 | < 10. | | UG/L | 8/27/96 | | Chloromethane |
| 96DS328 | 96.06826 | 95498 | < 5. | | UG/L | 8/27/96 | | o-Chlorotoluene |
| 96DS328 | 96.06826 | 106434 | < 5. | | UG/L | 8/27/96 | | p-Chlorotoluene |
| 96DS328 | 96.06826 | 96128 | < 10. | | UG/L | 8/27/96 | | 1,2-Dibromo-3-chloropropane |
| 96DS328 | 96.06826 | 74953 | < 5. | | UG/L | 8/27/96 | | Dibromomethane |
| 96DS328 | 96.06826 | 95501 | < 5. | | UG/L | 8/27/96 | | o-Dichlorobenzene (1,2) |
| 96DS328 | 96.06826 | 541731 | < 5. | | UG/L | 8/27/96 | | m-Dichlorobenzene (1,3) |
| 96DS328 | 96.06826 | 106467 | < 5. | | UG/L | 8/27/96 | | p-Dichlorobenzene (1,4) |
| 96DS328 | 96.06826 | 75718 | < 10. | | UG/L | 8/27/96 | | Dichlorodifluoromethane |

********** CST ANALYTICAL REPORT **********

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS328 | 96.06826 | 75343 | < 5. | | UG/L | 8/27/96 | | 1,1-Dichloroethane |
| 96DS328 | 96.06826 | 107062 | < 5. | | UG/L | 8/27/96 | | 1,2-Dichloroethane |
| 96DS328 | 96.06826 | 75354 | < 5. | | UG/L | 8/27/96 | | 1,1-Dichloroethene |
| 96DS328 | 96.06826 | 156605 | < 5. | | UG/L | 8/27/96 | | trans-1,2-Dichloroethene |
| 96DS328 | 96.06826 | 156592 | < 5. | | UG/L | 8/27/96 | | cis-1,2-Dichloroethylene |
| 96DS328 | 96.06826 | 78875 | < 5. | | UG/L | 8/27/96 | | 1,2-Dichloropropane |
| 96DS328 | 96.06826 | 142289 | < 5. | | UG/L | 8/27/96 | | 1,3-Dichloropropane |
| 96DS328 | 96.06826 | 594207 | < 5. | | UG/L | 8/27/96 | | 2,2-Dichloropropane |
| 96DS328 | 96.06826 | 563586 | < 5. | | UG/L | 8/27/96 | | 1,1-Dichloropropene |
| 96DS328 | 96.06826 | 10061015 | < 5. | | UG/L | 8/27/96 | | cis-1,3-Dichloropropene |
| 96DS328 | 96.06826 | 10061026 | < 5. | | UG/L | 8/27/96 | | trans-1,3-Dichloropropene |
| 96DS328 | 96.06826 | 100414 | < 5. | | UG/L | 8/27/96 | | Ethylbenzene |
| 96DS328 | 96.06826 | 106934 | < 5. | | UG/L | 8/27/96 | | Ethylene dibromide |
| 96DS328 | 96.06826 | 591786 | < 20. | | UG/L | 8/27/96 | | 2-Hexanone |
| 96DS328 | 96.06826 | 98828 | < 5. | | UG/L | 8/27/96 | | Isopropylbenzene |
| 96DS328 | 96.06826 | 99876 | < 5. | | UG/L | 8/27/96 | | 4-Isopropyltoluene |
| 96DS328 | 96.06826 | 74884 | < 5. | | UG/L | 8/27/96 | | Methyl iodide |
| 96DS328 | 96.06826 | 108101 | < 20. | | UG/L | 8/27/96 | | 4-Methyl-2-pentanone |
| 96DS328 | 96.06826 | 75092 | < 5. | | UG/L | 8/27/96 | | Methylene chloride |
| 96DS328 | 96.06826 | 103651 | 9. | 2.7 | UG/L | 8/27/96 | | Propylbenzene |
| 96DS328 | 96.06826 | 100425 | < 5. | | UG/L | 8/27/96 | | Styrene |
| 96DS328 | 96.06826 | 630206 | < 5. | | UG/L | 8/27/96 | | 1,1,1,2-Tetrachloroethane |
| 96DS328 | 96.06826 | 79345 | < 5. | | UG/L | 8/27/96 | | 1,1,2,2-Tetrachloroethane |
| 96DS328 | 96.06826 | 127184 | < 5. | | UG/L | 8/27/96 | | Tetrachloroethylene |
| 96DS328 | 96.06826 | 108883 | < 5. | | UG/L | 8/27/96 | | Toluene |
| 96DS328 | 96.06826 | 76131 | < 5. | | UG/L | 8/27/96 | | 1,1,2-Trichloro-1,2,2-trifluoroethane |
| 96DS328 | 96.06826 | 71556 | < 5. | | UG/L | 8/27/96 | | 1,1,1-Trichloroethane |
| 96DS328 | 96.06826 | 79005 | < 5. | | UG/L | 8/27/96 | | 1,1,2-Trichloroethane |
| 96DS328 | 96.06826 | 79016 | < 5. | | UG/L | 8/27/96 | | Trichloroethene |
| 96DS328 | 96.06826 | 75694 | < 5. | | UG/L | 8/27/96 | | Trichlorofluoromethane |
| 96DS328 | 96.06826 | 96184 | < 5. | | UG/L | 8/27/96 | | 1,2,3-Trichloropropane |
| 96DS328 | 96.06826 | 95636 | 30. | 9. | UG/L | 8/27/96 | | 1,2,4-Trimethylbenzene |
| 96DS328 | 96.06826 | 108678 | 25. | 7.5 | UG/L | 8/27/96 | | 1,3,5-Trimethylbenzene |
| 96DS328 | 96.06826 | 75014 | < 10. | | UG/L | 8/27/96 | | Vinyl chloride |
| 96DS328 | 96.06826 | 1330207 | 8. | 2.4 | UG/L | 8/27/96 | | Mixed-Xylenes (o ± m ± p) |

Tentatively Identified Compounds in Customer Sample # 96.06826

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|---|
| 96DS328 | 96.06826 | 150 | TI | 100. | | UG/L | 8/27/96 | | Benzenes, 3C-Substituted |
| 96DS328 | 96.06826 | 112403 | TI | 3900. | | UG/L | 8/27/96 | | n-Dodecane |
| 96DS328 | 96.06826 | 629594 | TI | 73. | | UG/L | 8/27/96 | | n-Tetradecane |
| 96DS328 | 96.06826 | 629505 | TI | 3800. | | UG/L | 8/27/96 | | n-Tridecane |
| 96DS328 | 96.06826 | 1120214 | TI | 7000. | | UG/L | 8/27/96 | | n-Undecane |

********** EM-9 QUALITY ASSURANCE REPORT **********

EPA VOLATILES Prepared by: JA on 27-Aug-1996

REQUEST NUMBER: 23732 MATRIX: W ANALYST: LAURA ORTEGA PROGRAM CODE: XF61 NOTEBOOK: F082015 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH.

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within CST

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results, Sample # 96.07125 Date Collected: 8/14/96 Date Received: 8/14/96 Date Extracted: 8/16/96 Date Analyzed: 8/16/96

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | QC VALUE | QC UNCERTAINTY | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 00.20226 | 96.07125 | 67641 | < 20. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Acetone |
| 00.20226 | 96.07125 | 71432 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Benzene |
| 00.20226 | 96.07125 | 108861 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Bromobenzene |
| 00.20226 | 96.07125 | 74975 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Bromochloromethane |
| 00.20226 | 96.07125 | 75274 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Bromodichloromethane |
| 00.20226 | 96.07125 | 75252 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Bromoform |
| 00.20226 | 96.07125 | 74839 | < 10. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Bromomethane |
| 00.20226 | 96.07125 | 78933 | < 20. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 2-Butanone |
| 00.20226 | 96.07125 | 104518 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | n-Butylbenzene |
| 00.20226 | 96.07125 | 135988 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | sec-Butylbenzene |
| 00.20226 | 96.07125 | 98066 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | tert-Butylbenzene |
| 00.20226 | 96.07125 | 75150 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Carbon disulfide |
| 00.20226 | 96.07125 | 56235 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Carbon tetrachloride |
| 00.20226 | 96.07125 | 108907 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Chlorobenzene |
| 00.20226 | 96.07125 | 124481 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Chlorodibromomethane |
| 00.20226 | 96.07125 | 75003 | < 10. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Chloroethane |
| 00.20226 | 96.07125 | 67663 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Chloroform |
| 00.20226 | 96.07125 | 74873 | < 10. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Chloromethane |
| 00.20226 | 96.07125 | 95498 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | o-Chlorotoluene |
| 00.20226 | 96.07125 | 106434 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | p-Chlorotoluene |
| 00.20226 | 96.07125 | 96128 | < 10. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,2-Dibromo-3-chloropropane |

********** EM-9 QUALITY ASSURANCE REPORT **********

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | QC VALUE | QC UNCERTAINTY | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 00.20226 | 96.07125 | 74953 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Dibromomethane |
| 00.20226 | 96.07125 | 95501 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | o-Dichlorobenzene (1,2) |
| 00.20226 | 96.07125 | 541731 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | m-Dichlorobenzene (1,3) |
| 00.20226 | 96.07125 | 106467 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | p-Dichlorobenzene (1,4) |
| 00.20226 | 96.07125 | 75718 | < 10. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Dichlorodifluoromethane |
| 00.20226 | 96.07125 | 75343 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1-Dichloroethane |
| 00.20226 | 96.07125 | 107062 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,2-Dichloroethane |
| 00.20226 | 96.07125 | 75354 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1-Dichloroethene |
| 00.20226 | 96.07125 | 156605 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | trans-1,2-Dichloroethene |
| 00.20226 | 96.07125 | 156592 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | cis-1,2-Dichloroethylene |
| 00.20226 | 96.07125 | 78875 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,2-Dichloropropane |
| 00.20226 | 96.07125 | 142289 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,3-Dichloropropane |
| 00.20226 | 96.07125 | 594207 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 2,2-Dichloropropane |
| 00.20226 | 96.07125 | 563586 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1-Dichloropropene |
| 00.20226 | 96.07125 | 10061015 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | cis-1,3-Dichloropropene |
| 00.20226 | 96.07125 | 10061026 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | trans-1,3-Dichloropropene |
| 00.20226 | 96.07125 | 100414 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Ethylbenzene |
| 00.20226 | 96.07125 | 106934 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Ethylene dibromide |
| 00.20226 | 96.07125 | 591786 | < 20. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 2-Hexanone |
| 00.20226 | 96.07125 | 98828 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Isopropylbenzene |
| 00.20226 | 96.07125 | 99876 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 4-Isopropyltoluene |
| 00.20226 | 96.07125 | 74884 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Methyl iodide |
| 00.20226 | 96.07125 | 108101 | < 20. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 4-Methyl-2-pentanone |
| 00.20226 | 96.07125 | 75092 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Methylene chloride |
| 00.20226 | 96.07125 | 103651 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Propylbenzene |
| 00.20226 | 96.07125 | 100425 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Styrene |
| 00.20226 | 96.07125 | 630206 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1,1,2-Tetrachloroethane |
| 00.20226 | 96.07125 | 79345 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1,2,2-Tetrachloroethane |
| 00.20226 | 96.07125 | 127184 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Tetrachloroethylene |
| 00.20226 | 96.07125 | 108883 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Toluene |
| 00.20226 | 96.07125 | 76131 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1,2-Trichloro-1,2,2-trifluoroet |
| 00.20226 | 96.07125 | 71556 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1,1-Trichloroethane |
| 00.20226 | 96.07125 | 79005 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1,2-Trichloroethane |
| 00.20226 | 96.07125 | 79016 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Trichloroethene |
| 00.20226 | 96.07125 | 75694 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Trichlorofluoromethane |
| 00.20226 | 96.07125 | 96184 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,2,3-Trichloropropane |

********** EM-9 QUALITY ASSURANCE REPORT **********

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | QC VALUE | QC UNCERTAINTY | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 00.20226 | 96.07125 | 95636 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,2,4-Trimethylbenzene |
| 00.20226 | 96.07125 | 108678 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,3,5-Trimethylbenzene |
| 00.20226 | 96.07125 | 75014 | < 10. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Vinyl chloride |
| 00.20226 | 96.07125 | 1330207 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Mixed-Xylenes (o ± m ± p) |

Blank Spike Results: none

Blank Spike Duplicate Results: none

REPORT NUMBER: 41405

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

Blind QC Results, Sample # 96.05690 Date Collected: 8/14/96 Date Received: 8/14/96 Date Extracted: 8/16/96 Date Analyzed: 8/16/96

| SAMPLE NUM | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | QC VALUE | QC UNCERTAINTY | COMPLETION DATE | COMMENT | COMPOUND-NAME |
|---|---|---|---|---|---|---|---|---|---|
| 96.05690 | 67641 | < 20. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Acetone |
| 96.05690 | 71432 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Benzene |
| 96.05690 | 108861 | 87. | 26.1 | UG/L | 92. | 4.9 | 8/27/96 | UNDER CONTROL | Bromobenzene |
| 96.05690 | 74975 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Bromochloromethane |
| 96.05690 | 75274 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Bromodichloromethane |
| 96.05690 | 75252 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Bromoform |
| 96.05690 | 74839 | < 10. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Bromomethane |
| 96.05690 | 78933 | < 20. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 2-Butanone |
| 96.05690 | 104518 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | n-Butylbenzene |
| 96.05690 | 135988 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | sec-Butylbenzene |
| 96.05690 | 98066 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | tert-Butylbenzene |
| 96.05690 | 75150 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Carbon disulfide |
| 96.05690 | 56235 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Carbon tetrachloride |
| 96.05690 | 108907 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Chlorobenzene |
| 96.05690 | 124481 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Chlorodibromomethane |
| 96.05690 | 75003 | < 10. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Chloroethane |
| 96.05690 | 67663 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Chloroform |
| 96.05690 | 74873 | < 10. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Chloromethane |
| 96.05690 | 95498 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | o-Chlorotoluene |
| 96.05690 | 106434 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | p-Chlorotoluene |
| 96.05690 | 96128 | < 10. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,2-Dibromo-3-chloropropane |
| 96.05690 | 74953 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Dibromomethane |
| 96.05690 | 95501 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | o-Dichlorobenzene (1,2) |
| 96.05690 | 541731 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | m-Dichlorobenzene (1,3) |
| 96.05690 | 106467 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | p-Dichlorobenzene (1,4) |
| 96.05690 | 75718 | < 10. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Dichlorodifluoromethane |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 96.05690 | 75343 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1-Dichloroethane |
| 96.05690 | 107062 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,2-Dichloroethane |
| 96.05690 | 75354 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1-Dichloroethene |
| 96.05690 | 156605 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | trans-1,2-Dichloroethene |
| 96.05690 | 156592 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | cis-1,2-Dichloroethylene |
| 96.05690 | 78875 | 52. | 15.6 | UG/L | 94. | 5. | 8/27/96 | WARNING 2-3 SIG | 1,2-Dichloropropane |
| 96.05690 | 142289 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,3-Dichloropropane |
| 96.05690 | 594207 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 2,2-Dichloropropane |
| 96.05690 | 563586 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1-Dichloropropene |
| 96.05690 | 10061015 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | cis-1,3-Dichloropropene |
| 96.05690 | 10061026 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | trans-1,3-Dichloropropene |
| 96.05690 | 100414 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Ethylbenzene |
| 96.05690 | 106934 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Ethylene dibromide |
| 96.05690 | 591786 | 100. | 30. | UG/L | 94. | 5. | 8/27/96 | UNDER CONTROL | 2-Hexanone |
| 96.05690 | 98828 | 85. | 25.5 | UG/L | 94. | 5. | 8/27/96 | UNDER CONTROL | Isopropylbenzene |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 96.05690 | 99876 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 4-Isopropyltoluene |
| 96.05690 | 74884 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Methyl iodide |
| 96.05690 | 108101 | < 20. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 4-Methyl-2-pentanone |
| 96.05690 | 75092 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Methylene chloride |
| 96.05690 | 103651 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Propylbenzene |
| 96.05690 | 100425 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Styrene |
| 96.05690 | 630206 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1,1,2-Tetrachloroethane |
| 96.05690 | 79345 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1,2,2-Tetrachloroethane |
| 96.05690 | 127184 | 72. | 21.6 | UG/L | 100. | 5.3 | 8/27/96 | UNDER CONTROL | Tetrachloroethylene |
| 96.05690 | 108883 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Toluene |
| 96.05690 | 76131 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1,2-Trichloro-1,2,2-trifluoroethane |
| 96.05690 | 71556 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1,1-Trichloroethane |
| 96.05690 | 79005 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,1,2-Trichloroethane |
| 96.05690 | 79016 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Trichloroethene |
| 96.05690 | 75694 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Trichlorofluoromethane |
| 96.05690 | 96184 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,2,3-Trichloropropane |
| 96.05690 | 95636 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,2,4-Trimethylbenzene |
| 96.05690 | 108678 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | 1,3,5-Trimethylbenzene |
| 96.05690 | 75014 | < 10. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Vinyl chloride |
| 96.05690 | 1330207 | < 5. | | UG/L | 0.0 | | 8/27/96 | UNDER CONTROL | Mixed-Xylenes (o ± m ± p) |

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA VOLATILES

Surrogate 1 = 1,2-Dichloroethane d4 (CAS # = 17060070)
Surrogate 2 = Toluene d8 (CAS # = 2037265)
Surrogate 3 = 4-Bromofluorobenzene (CAS # = 460004)
Surrogate 4 = 2-Chlorostyrene (CAS # = 2039874)
Surrogate 5 = Dibromofluoromethane (CAS # = 1868537)

| SAMPLE NUMBER | UNITS | Surrogate 1 | Surrogate 2 | Surrogate 3 | Surrogate 4 | Surrogate 5 | COMPLETION DATE | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|---|
| 96.05690 | % | 0.0 | 96. | 97. | | 101. | 27-Aug-1996 | |
| 96.06824 | % | 0.0 | 106. | 106. | | 99. | 27-Aug-1996 | |
| 96.06826 | % | 0.0 | 105. | 98. | | 97. | 27-Aug-1996 | |
| 96.07125 | % | 0.0 | 66. | 107. | | 103. | 27-Aug-1996 | B |
| EPA Limits: | | | | | | | | |
| Water | % | 76 - 114 | 88 - 110 | 86 - 115 | 86 - 115 | 86 - 118 | | |
| Soil | % | 70 - 121 | 81 - 117 | 74 - 121 | 74 - 121 | | | |

REPORT NUMBER: 41405

| Analyst | Reviewer | Team Leader | QA Officer |
|---|---|---|---|
| 8/28/96 | 8/28/96 | 8/08/96 | 8/28/96 |
| Date | Date | Date | Date |

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in
'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20
**********

Bernadette

# CST-12 SEMIVOLATILE ORGANIC ANALYSIS
# SUMMARY OF ANALYTICAL RESULTS

**TO:** Dustie Stephens **DATE:** August 27, 1996
**FROM:** Mike Handow *through* Anthony Lombardo CST-12 Organic Analysis 9/4/96

**MATRIX:** Water **REQUEST NUMBER: 23732**

## Results Summary

Attached is a tabulation of samples submitted for semivolatile analysis and their analytical results (Table 1.) Two samples were received for semivolatile analysis. Samples were collected on August 13, 1996. Sample extraction was started August 19, 1996. Samples were analyzed on August 21, 1996. All hold times were met.

## Method Summary

Samples were extracted by limited volume seperatory funnel shake out method. A measured volume of sample, usually 0.25 liter, is placed in a seperatory funnel. pH is adjusted to <2 (acid extraction), Methylene chloride is added and the sample is shook. Methylene chloride is then separated from the sample. This process is repeated with two more aliquots of methylene chloride.The sample pH is then adjusted to >11 (base-neutral extraction) and methylene chloride extraction is repeated. Sample extracts were then combined, dried and concentrated to 1.0 ml final volume. Appropriate surrogate standards were added prior to extraction. Analysis was performed by capillary column GC/MS methods. Extraction and analysis methods are consistent with EPA SW-846 methods 3510 and 8270. Analytical column used was a J&W Scientific DB5-MS 30M by 0.25 mm ID, 0.25 micron film or equivalent.

This extraction is performed in a glovebox.

## Anomalies And Analysis Notes

Below is a summary of QA/QC criteria as outlined in EPA SW-846 and LANL SOPs and a summary of any anomalies which occurred during the analyses.

Phthalates (i.e. Di-n-butylphthalate) are common laboratory contaminants and may be seen in blanks and samples. A blank may contain phthalates at five times the limit of quantitation and still be in criteria. The likelihood and severity of contamination is increased when working with samples in a glovebox.

Internal standard responses were in criteria for all analyses.
All other surrogate recoveries were in criteria.
All Calibration QC were within criteria for all analyses.

Blank matrix spike and matrix spike duplicate were analyzed as part of this work request. A copy of the MS/MSD recovery form is included with this report.

If you have any questions regarding this data, please call Anthony Lombardo at 665-7410.

CST-12 SEMIVOLATILE ORGANIC ANALYSIS
SUMMARY OF ANALYTICAL RESULTS

Table 1. Summary of results of sample analyses for semivolatiles.

REQUEST NUMBER: 23732

| SAMPLE ID | TARGET COMPOUNDS FOUND | AMOUNT (ug/L) | LOQ (ug/L) | TICs |
|---|---|---|---|---|
| B96.07127 | Di-n-butylphthalate | 9 J | 40 | Y |
| S96.06825 | NONE | | 40 | Y |
| S96.06827 | Napthalene | 11 J | 40 | Y |
| | Di-n-butylphthalate | 68 B | 40 | |
| | bis-2-Ethylhexylphthalate | 8 J | 40 | |

Sample ID beginning with a B is a blank. Sample ID beginning with a S is a sample.

LOQ: Limit of quantitation. LOQs normally range between 10 and 50ug/L depending on the compound, unless otherwise noted.
TICs: Tentatively identified compounds. Y = TICs were found. N = TICs were not found.

J: Compound is present in the sample, but at a concentration that is less than LOQ. This concentration should be considered an estimate.
B: This compound was seen in the method blank as well as the sample. Concentration is considered significant at ten times the blank amount for phthalate esters and five times blank amount for the remaining compounds.
D: Sample was diluted.

# LOS ALAMOS NATIONAL LABORATORY
# CST-12 ORGANIC ANALYSIS GROUP

## DATA REVIEW CERTIFICATION

Request Number: 23732 Analysis: Semivolatile SW-846 8270

The data contained in the enclosed report has been reviewed and approved by the people listed below:

| | | |
|---|---|---|
| Mike Ramos | Michael Ramos | 8/23/96 |
| Analyst Name (print) | Analyst Signature | Date |
| A Lombardo | A. Lombardo | 9/4/96 |
| Data Reviewer Name (print) | Data Reviewer Signature | Date |

REPORT NUMBER: 41497

********** CST ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: JA on 5-Sep-1996

REQUEST NUMBER: 23732 MATRIX: W ANALYST: ANTHONY LOMBARDO PROGRAM CODE: XF61 NOTEBOOK: K080909 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 96.06825 Date Collected: 8/13/96 Date Received: 8/14/96 Date Extracted: 8/19/96 Date Analyzed: 8/21/96

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS324 | 96.06825 | 83329 | < 40. | | UG/L | 9/05/96 | | Acenaphthene |
| 96DS324 | 96.06825 | 208968 | < 40. | | UG/L | 9/05/96 | | Acenaphthylene |
| 96DS324 | 96.06825 | 62533 | < 40. | | UG/L | 9/05/96 | | Aniline |
| 96DS324 | 96.06825 | 120127 | < 40. | | UG/L | 9/05/96 | | Anthracene |
| 96DS324 | 96.06825 | 103333 | < 40. | | UG/L | 9/05/96 | | Azobenzene |
| 96DS324 | 96.06825 | 92875 | < 200. | | UG/L | 9/05/96 | | m-Benzidine |
| 96DS324 | 96.06825 | 56553 | < 40. | | UG/L | 9/05/96 | | Benzo[a]anthracene |
| 96DS324 | 96.06825 | 50328 | < 40. | | UG/L | 9/05/96 | | Benzo[a]pyrene |
| 96DS324 | 96.06825 | 205992 | < 40. | | UG/L | 9/05/96 | | Benzo[b]fluoranthene |
| 96DS324 | 96.06825 | 191242 | < 40. | | UG/L | 9/05/96 | | Benzo[g,h,i]perylene |
| 96DS324 | 96.06825 | 207089 | < 40. | | UG/L | 9/05/96 | | Benzo[k]fluoranthene |
| 96DS324 | 96.06825 | 65850 | < 200. | | UG/L | 9/05/96 | | Benzoic acid |
| 96DS324 | 96.06825 | 100516 | < 40. | | UG/L | 9/05/96 | | Benzyl alcohol |
| 96DS324 | 96.06825 | 111911 | < 40. | | UG/L | 9/05/96 | | Bis(2-chloroethoxy)methane |
| 96DS324 | 96.06825 | 111444 | < 40. | | UG/L | 9/05/96 | | Bis(2-chloroethyl)ether |
| 96DS324 | 96.06825 | 108601 | < 40. | | UG/L | 9/05/96 | | Bis(2-chloroisopropyl)ether |
| 96DS324 | 96.06825 | 117817 | < 40. | | UG/L | 9/05/96 | | Bis(2-ethylhexyl)phthalate |
| 96DS324 | 96.06825 | 101553 | < 40. | | UG/L | 9/05/96 | | 4-Bromophenylphenyl ether |
| 96DS324 | 96.06825 | 85687 | < 40. | | UG/L | 9/05/96 | | Butyl benzyl phthalate |
| 96DS324 | 96.06825 | 59507 | < 40. | | UG/L | 9/05/96 | | 4-Chloro-3-methylphenol |
| 96DS324 | 96.06825 | 106478 | < 40. | | UG/L | 9/05/96 | | 4-Chloroaniline |
| 96DS324 | 96.06825 | 91587 | < 40. | | UG/L | 9/05/96 | | 2-Chloronaphthalene |
| 96DS324 | 96.06825 | 95578 | < 40. | | UG/L | 9/05/96 | | o-Chlorophenol |
| 96DS324 | 96.06825 | 7005723 | < 40. | | UG/L | 9/05/96 | | 4-Chlorophenylphenyl ether |
| 96DS324 | 96.06825 | 218019 | < 40. | | UG/L | 9/05/96 | | Chrysene |
| 96DS32' | 96.06825 | 84742 | < 40. | | UG/L | 9/05/96 | | Di-n-butyl phthalate |

********** CST ANALYTICAL REPORT **********

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS324 | 96.06825 | 117840 | < 40. | | UG/L | 9/05/96 | | Di-n-octyl phthalate |
| 96DS324 | 96.06825 | 53703 | < 40. | | UG/L | 9/05/96 | | Dibenzo[a,h]anthracene |
| 96DS324 | 96.06825 | 132649 | < 40. | | UG/L | 9/05/96 | | Dibenzofuran |
| 96DS324 | 96.06825 | 95501 | < 40. | | UG/L | 9/05/96 | | o-Dichlorobenzene (1,2) |
| 96DS324 | 96.06825 | 541731 | < 40. | | UG/L | 9/05/96 | | m-Dichlorobenzene (1,3) |
| 96DS324 | 96.06825 | 106467 | < 40. | | UG/L | 9/05/96 | | p-Dichlorobenzene (1,4) |
| 96DS324 | 96.06825 | 91941 | < 80. | | UG/L | 9/05/96 | | 3,3'-Dichlorobenzidine |
| 96DS324 | 96.06825 | 120832 | < 40. | | UG/L | 9/05/96 | | 2,4-Dichlorophenol |
| 96DS324 | 96.06825 | 84662 | < 40. | | UG/L | 9/05/96 | | Diethyl phthalate |
| 96DS324 | 96.06825 | 131113 | < 40. | | UG/L | 9/05/96 | | Dimethyl phthalate |
| 96DS324 | 96.06825 | 105679 | < 40. | | UG/L | 9/05/96 | | 2,4-Dimethylphenol |
| 96DS324 | 96.06825 | 51285 | < 200. | | UG/L | 9/05/96 | | 2,4-Dinitrophenol |
| 96DS324 | 96.06825 | 121142 | < 40. | | UG/L | 9/05/96 | | 2,4-Dinitrotoluene |
| 96DS324 | 96.06825 | 606202 | < 40. | | UG/L | 9/05/96 | | 2,6-Dinitrotoluene |
| 96DS324 | 96.06825 | 206440 | < 40. | | UG/L | 9/05/96 | | Fluoranthene |
| 96DS324 | 96.06825 | 86737 | < 40. | | UG/L | 9/05/96 | | Fluorene |
| 96DS324 | 96.06825 | 118741 | < 40. | | UG/L | 9/05/96 | | Hexachlorobenzene |
| 96DS324 | 96.06825 | 87683 | < 200. | | UG/L | 9/05/96 | | Hexachlorobutadiene |
| 96DS324 | 96.06825 | 77474 | < 40. | | UG/L | 9/05/96 | | Hexachlorocyclopentadiene |
| 96DS324 | 96.06825 | 67721 | < 40. | | UG/L | 9/05/96 | | Hexachloroethane |
| 96DS324 | 96.06825 | 193395 | < 40. | | UG/L | 9/05/96 | | Indeno[1,2,3-cd]pyrene |
| 96DS324 | 96.06825 | 78591 | < 40. | | UG/L | 9/05/96 | | Isophorone |
| 96DS324 | 96.06825 | 534521 | < 200. | | UG/L | 9/05/96 | | 2-Methyl-4,6-dinitrophenol |
| 96DS324 | 96.06825 | 91576 | < 40. | | UG/L | 9/05/96 | | 2-Methylnaphthalene |
| 96DS324 | 96.06825 | 95487 | < 40. | | UG/L | 9/05/96 | | 2-Methylphenol |
| 96DS324 | 96.06825 | 106445 | < 40. | | UG/L | 9/05/96 | | 4-Methylphenol |
| 96DS324 | 96.06825 | 91203 | < 40. | | UG/L | 9/05/96 | | Naphthalene |
| 96DS324 | 96.06825 | 88744 | < 80. | | UG/L | 9/05/96 | | 2-Nitroaniline |
| 96DS324 | 96.06825 | 99092 | < 80. | | UG/L | 9/05/96 | | 3-Nitroaniline |
| 96DS324 | 96.06825 | 100016 | < 80. | | UG/L | 9/05/96 | | 4-Nitroaniline |
| 96DS324 | 96.06825 | 98953 | < 40. | | UG/L | 9/05/96 | | Nitrobenzene |
| 96DS324 | 96.06825 | 88755 | < 40. | | UG/L | 9/05/96 | | 2-Nitrophenol |
| 96DS324 | 96.06825 | 100027 | < 200. | | UG/L | 9/05/96 | | 4-Nitrophenol |
| 96DS324 | 96.06825 | 621647 | < 40. | | UG/L | 9/05/96 | | N-Nitrosodi-n-propylamine |
| 96DS324 | 96.06825 | 62759 | < 40. | | UG/L | 9/05/96 | | N-Nitrosodimethylamine |
| 96DS324 | 96.06825 | 86306 | < 40. | | UG/L | 9/05/96 | | N-Nitrosodiphenylamine |

********** CST ANALYTICAL REPORT **********

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS324 | 96.06825 | 87865 | < 200. | | UG/L | 9/05/96 | | Pentachlorophenol |
| 96DS324 | 96.06825 | 85018 | < 40. | | UG/L | 9/05/96 | | Phenanthrene |
| 96DS324 | 96.06825 | 108952 | < 40. | | UG/L | 9/05/96 | | Phenol |
| 96DS324 | 96.06825 | 109068 | < 40. | | UG/L | 9/05/96 | | 2-Picoline |
| 96DS324 | 96.06825 | 129000 | < 40. | | UG/L | 9/05/96 | | Pyrene |
| 96DS324 | 96.06825 | 110861 | < 40. | | UG/L | 9/05/96 | | Pyridine |
| 96DS324 | 96.06825 | 120821 | < 40. | | UG/L | 9/05/96 | | 1,2,4-Trichlorobenzene |
| 96DS324 | 96.06825 | 95954 | < 40. | | UG/L | 9/05/96 | | 2,4,5-Trichlorophenol |
| 96DS324 | 96.06825 | 88062 | < 40. | | UG/L | 9/05/96 | | 2,4,6-Trichlorophenol |

Tentatively Identified Compounds in Customer Sample # 96.06825

none

********** CST ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: JA on 5-Sep-1996

REQUEST NUMBER: 23732 MATRIX: W ANALYST: ANTHONY LOMBARDO PROGRAM CODE: XF61 NOTEBOOK: K080909 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 96.06827 Date Collected: 8/13/96 Date Received: 8/14/96 Date Extracted: 8/19/96 Date Analyzed: 8/21/96

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS329 | 96.06827 | 83329 | < 40. | | UG/L | 9/05/96 | | Acenaphthene |
| 96DS329 | 96.06827 | 208968 | < 40. | | UG/L | 9/05/96 | | Acenaphthylene |
| 96DS329 | 96.06827 | 62533 | < 40. | | UG/L | 9/05/96 | | Aniline |
| 96DS329 | 96.06827 | 120127 | < 40. | | UG/L | 9/05/96 | | Anthracene |
| 96DS329 | 96.06827 | 103333 | < 40. | | UG/L | 9/05/96 | | Azobenzene |
| 96DS329 | 96.06827 | 92875 | < 200. | | UG/L | 9/05/96 | | m-Benzidine |
| 96DS329 | 96.06827 | 56553 | < 40. | | UG/L | 9/05/96 | | Benzo[a]anthracene |
| 96DS329 | 96.06827 | 50328 | < 40. | | UG/L | 9/05/96 | | Benzo[a]pyrene |
| 96DS329 | 96.06827 | 205992 | < 40. | | UG/L | 9/05/96 | | Benzo[b]fluoranthene |
| 96DS329 | 96.06827 | 191242 | < 40. | | UG/L | 9/05/96 | | Benzo[g,h,i]perylene |
| 96DS329 | 96.06827 | 207089 | < 40. | | UG/L | 9/05/96 | | Benzo[k]fluoranthene |
| 96DS329 | 96.06827 | 65850 | < 200. | | UG/L | 9/05/96 | | Benzoic acid |
| 96DS329 | 96.06827 | 100516 | < 40. | | UG/L | 9/05/96 | | Benzyl alcohol |
| 96DS329 | 96.06827 | 111911 | < 40. | | UG/L | 9/05/96 | | Bis(2-chloroethoxy)methane |
| 96DS329 | 96.06827 | 111444 | < 40. | | UG/L | 9/05/96 | | Bis(2-chloroethyl)ether |
| 96DS329 | 96.06827 | 108601 | < 40. | | UG/L | 9/05/96 | | Bis(2-chloroisopropyl)ether |
| 96DS329 | 96.06827 | 117817 | < 40. | | UG/L | 9/05/96 | | Bis(2-ethylhexyl)phthalate |
| 96DS329 | 96.06827 | 101553 | < 40. | | UG/L | 9/05/96 | | 4-Bromophenylphenyl ether |
| 96DS329 | 96.06827 | 85687 | < 40. | | UG/L | 9/05/96 | | Butyl benzyl phthalate |
| 96DS329 | 96.06827 | 59507 | < 40. | | UG/L | 9/05/96 | | 4-Chloro-3-methylphenol |
| 96DS329 | 96.06827 | 106478 | < 40. | | UG/L | 9/05/96 | | 4-Chloroaniline |
| 96DS329 | 96.06827 | 91587 | < 40. | | UG/L | 9/05/96 | | 2-Chloronaphthalene |
| 96DS329 | 96.06827 | 95578 | < 40. | | UG/L | 9/05/96 | | o-Chlorophenol |
| 96DS329 | 96.06827 | 7005723 | < 40. | | UG/L | 9/05/96 | | 4-Chlorophenylphenyl ether |
| 96DS329 | 96.06827 | 218019 | < 40. | | UG/L | 9/05/96 | | Chrysene |
| 96DS329 | 96.06827 | 84742 | 68. | 20.4 | UG/L | 9/05/96 | | Di-n-butyl phthalate |

********** CST ANALYTICAL REPORT **********

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS329 | 96.06827 | 117840 | < 40. | | UG/L | 9/05/96 | | Di-n-octyl phthalate |
| 96DS329 | 96.06827 | 53703 | < 40. | | UG/L | 9/05/96 | | Dibenzo[a,h]anthracene |
| 96DS329 | 96.06827 | 132649 | < 40. | | UG/L | 9/05/96 | | Dibenzofuran |
| 96DS329 | 96.06827 | 95501 | < 40. | | UG/L | 9/05/96 | | o-Dichlorobenzene (1,2) |
| 96DS329 | 96.06827 | 541731 | < 40. | | UG/L | 9/05/96 | | m-Dichlorobenzene (1,3) |
| 96DS329 | 96.06827 | 106467 | < 40. | | UG/L | 9/05/96 | | p-Dichlorobenzene (1,4) |
| 96DS329 | 96.06827 | 91941 | < 80. | | UG/L | 9/05/96 | | 3,3'-Dichlorobenzidine |
| 96DS329 | 96.06827 | 120832 | < 40. | | UG/L | 9/05/96 | | 2,4-Dichlorophenol |
| 96DS329 | 96.06827 | 84662 | < 40. | | UG/L | 9/05/96 | | Diethyl phthalate |
| 96DS329 | 96.06827 | 131113 | < 40. | | UG/L | 9/05/96 | | Dimethyl phthalate |
| 96DS329 | 96.06827 | 105679 | < 40. | | UG/L | 9/05/96 | | 2,4-Dimethylphenol |
| 96DS329 | 96.06827 | 51285 | < 200. | | UG/L | 9/05/96 | | 2,4-Dinitrophenol |
| 96DS329 | 96.06827 | 121142 | < 40. | | UG/L | 9/05/96 | | 2,4-Dinitrotoluene |
| 96DS329 | 96.06827 | 606202 | < 40. | | UG/L | 9/05/96 | | 2,6-Dinitrotoluene |
| 96DS329 | 96.06827 | 206440 | < 40. | | UG/L | 9/05/96 | | Fluoranthene |
| 96DS329 | 96.06827 | 86737 | < 40. | | UG/L | 9/05/96 | | Fluorene |
| 96DS329 | 96.06827 | 118741 | < 40. | | UG/L | 9/05/96 | | Hexachlorobenzene |
| 96DS329 | 96.06827 | 87683 | < 200. | | UG/L | 9/05/96 | | Hexachlorobutadiene |
| 96DS329 | 96.06827 | 77474 | < 40. | | UG/L | 9/05/96 | | Hexachlorocyclopentadiene |
| 96DS329 | 96.06827 | 67721 | < 40. | | UG/L | 9/05/96 | | Hexachloroethane |
| 96DS329 | 96.06827 | 193395 | < 40. | | UG/L | 9/05/96 | | Indeno[1,2,3-cd]pyrene |
| 96DS329 | 96.06827 | 78591 | < 40. | | UG/L | 9/05/96 | | Isophorone |
| 96DS329 | 96.06827 | 534521 | < 200. | | UG/L | 9/05/96 | | 2-Methyl-4,6-dinitrophenol |
| 96DS329 | 96.06827 | 91576 | < 40. | | UG/L | 9/05/96 | | 2-Methylnaphthalene |
| 96DS329 | 96.06827 | 95487 | < 40. | | UG/L | 9/05/96 | | 2-Methylphenol |
| 96DS329 | 96.06827 | 106445 | < 40. | | UG/L | 9/05/96 | | 4-Methylphenol |
| 96DS329 | 96.06827 | 91203 | < 40. | | UG/L | 9/05/96 | | Naphthalene |
| 96DS329 | 96.06827 | 88744 | < 80. | | UG/L | 9/05/96 | | 2-Nitroaniline |
| 96DS329 | 96.06827 | 99092 | < 80. | | UG/L | 9/05/96 | | 3-Nitroaniline |
| 96DS329 | 96.06827 | 100016 | < 80. | | UG/L | 9/05/96 | | 4-Nitroaniline |
| 96DS329 | 96.06827 | 98953 | < 40. | | UG/L | 9/05/96 | | Nitrobenzene |
| 96DS329 | 96.06827 | 88755 | < 40. | | UG/L | 9/05/96 | | 2-Nitrophenol |
| 96DS329 | 96.06827 | 100027 | < 200. | | UG/L | 9/05/96 | | 4-Nitrophenol |
| 96DS329 | 96.06827 | 621647 | < 40. | | UG/L | 9/05/96 | | N-Nitrosodi-n-propylamine |
| 96DS329 | 96.06827 | 62759 | < 40. | | UG/L | 9/05/96 | | N-Nitrosodimethylamine |
| 96DS329 | 96.06827 | 86306 | < 40. | | UG/L | 9/05/96 | | N-Nitrosodiphenylamine |

REPORT NUMBER: 41497

********** CST ANALYTICAL REPORT **********

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|
| 96DS329 | 96.06827 | 87865 | < 200. | | UG/L | 9/05/96 | | Pentachlorophenol |
| 96DS329 | 96.06827 | 85018 | < 40. | | UG/L | 9/05/96 | | Phenanthrene |
| 96DS329 | 96.06827 | 108952 | < 40. | | UG/L | 9/05/96 | | Phenol |
| 96DS329 | 96.06827 | 109068 | < 40. | | UG/L | 9/05/96 | | 2-Picoline |
| 96DS329 | 96.06827 | 129000 | < 40. | | UG/L | 9/05/96 | | Pyrene |
| 96DS329 | 96.06827 | 110861 | < 40. | | UG/L | 9/05/96 | | Pyridine |
| 96DS329 | 96.06827 | 120821 | < 40. | | UG/L | 9/05/96 | | 1,2,4-Trichlorobenzene |
| 96DS329 | 96.06827 | 95954 | < 40. | | UG/L | 9/05/96 | | 2,4,5-Trichlorophenol |
| 96DS329 | 96.06827 | 88062 | < 40. | | UG/L | 9/05/96 | | 2,4,6-Trichlorophenol |

Tentatively Identified Compounds in Customer Sample # 96.06827

none

********** EM-9 QUALITY ASSURANCE REPORT **********

EPA SEMIVOLATILES Prepared by: JA on 5-Sep-1996

REQUEST NUMBER: 23732 MATRIX: W ANALYST: ANTHONY LOMBARDO PROGRAM CODE: XF61 NOTEBOOK: K080909 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within CST

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results, Sample # 96.07127 Date Collected: 8/14/96 Date Received: 8/14/96 Date Extracted: 8/20/96 Date Analyzed: 8/21/96

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | QC VALUE | QC UNCERTAINTY | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 00.20226 | 96.07127 | 83329 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Acenaphthene |
| 00.20226 | 96.07127 | 208968 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Acenaphthylene |
| 00.20226 | 96.07127 | 62533 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Aniline |
| 00.20226 | 96.07127 | 120127 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Anthracene |
| 00.20226 | 96.07127 | 103333 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Azobenzene |
| 00.20226 | 96.07127 | 92875 | < 200. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | m-Benzidine |
| 00.20226 | 96.07127 | 56553 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Benzo[a]anthracene |
| 00.20226 | 96.07127 | 50328 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Benzo[a]pyrene |
| 00.20226 | 96.07127 | 205992 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Benzo[b]fluoranthene |
| 00.20226 | 96.07127 | 191242 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Benzo[g,h,i]perylene |
| 00.20226 | 96.07127 | 207089 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Benzo[k]fluoranthene |
| 00.20226 | 96.07127 | 65850 | < 200. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Benzoic acid |
| 00.20226 | 96.07127 | 100516 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Benzyl alcohol |
| 00.20226 | 96.07127 | 111911 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Bis(2-chloroethoxy)methane |
| 00.20226 | 96.07127 | 111444 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Bis(2-chloroethyl)ether |
| 00.20226 | 96.07127 | 108601 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Bis(2-chloroisopropyl)ether |
| 00.20226 | 96.07127 | 117817 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Bis(2-ethylhexyl)phthalate |
| 00.20226 | 96.07127 | 101553 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 4-Bromophenylphenyl ether |
| 00.20226 | 96.07127 | 85687 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Butyl benzyl phthalate |
| 00.20226 | 96.07127 | 59507 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 4-Chloro-3-methylphenol |
| 00.20226 | 96.07127 | 106478 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 4-Chloroaniline |

********** EM-9 QUALITY ASSURANCE REPORT **********

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | QC VALUE | QC UNCERTAINTY | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 00.20226 | 96.07127 | 91587 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 2-Chloronaphthalene |
| 00.20226 | 96.07127 | 95578 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | o-Chlorophenol |
| 00.20226 | 96.07127 | 7005723 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 4-Chlorophenylphenyl ether |
| 00.20226 | 96.07127 | 218019 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Chrysene |
| 00.20226 | 96.07127 | 84742 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Di-n-butyl phthalate |
| 00.20226 | 96.07127 | 117840 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Di-n-octyl phthalate |
| 00.20226 | 96.07127 | 53703 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Dibenzo[a,h]anthracene |
| 00.20226 | 96.07127 | 132649 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Dibenzofuran |
| 00.20226 | 96.07127 | 95501 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | o-Dichlorobenzene (1,2) |
| 00.20226 | 96.07127 | 541731 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | m-Dichlorobenzene (1,3) |
| 00.20226 | 96.07127 | 106467 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | p-Dichlorobenzene (1,4) |
| 00.20226 | 96.07127 | 91941 | < 80. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 3,3'-Dichlorobenzidine |
| 00.20226 | 96.07127 | 120832 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 2,4-Dichlorophenol |
| 00.20226 | 96.07127 | 84662 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Diethyl phthalate |
| 00.20226 | 96.07127 | 131113 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Dimethyl phthalate |
| 00.20226 | 96.07127 | 105679 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 2,4-Dimethylphenol |
| 00.20226 | 96.07127 | 51285 | < 200. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 2,4-Dinitrophenol |
| 00.20226 | 96.07127 | 121142 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 2,4-Dinitrotoluene |
| 00.20226 | 96.07127 | 606202 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 2,6-Dinitrotoluene |
| 00.20226 | 96.07127 | 206440 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Fluoranthene |
| 00.20226 | 96.07127 | 86737 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Fluorene |
| 00.20226 | 96.07127 | 118741 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Hexachlorobenzene |
| 00.20226 | 96.07127 | 87683 | < 200. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Hexachlorobutadiene |
| 00.20226 | 96.07127 | 77474 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Hexachlorocyclopentadiene |
| 00.20226 | 96.07127 | 67721 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Hexachloroethane |
| 00.20226 | 96.07127 | 193395 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Indeno[1,2,3-cd]pyrene |
| 00.20226 | 96.07127 | 78591 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Isophorone |
| 00.20226 | 96.07127 | 534521 | < 200. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 2-Methyl-4,6-dinitrophenol |
| 00.20226 | 96.07127 | 91576 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 2-Methylnaphthalene |
| 00.20226 | 96.07127 | 95487 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 2-Methylphenol |
| 00.20226 | 96.07127 | 106445 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 4-Methylphenol |
| 00.20226 | 96.07127 | 91203 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Naphthalene |
| 00.20226 | 96.07127 | 88744 | < 80. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 2-Nitroaniline |
| 00.20226 | 96.07127 | 99092 | < 80. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 3-Nitroaniline |
| 00.20226 | 96.07127 | 100016 | < 80. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 4-Nitroaniline |
| 00.20226 | 96.07127 | 98953 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Nitrobenzene |

********** EM-9 QUALITY ASSURANCE REPORT **********

| CUSTOMER NUMBER | SAMPLE NUMBER | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | QC VALUE | QC UNCERTAINTY | COMPLETION DATE | COMMENT | COMPOUND NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 00.20226 | 96.07127 | 88755 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 2-Nitrophenol |
| 00.20226 | 96.07127 | 100027 | < 200. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 4-Nitrophenol |
| 00.20226 | 96.07127 | 621647 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | N-Nitrosodi-n-propylamine |
| 00.20226 | 96.07127 | 62759 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | N-Nitrosodimethylamine |
| 00.20226 | 96.07127 | 86306 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | N-Nitrosodiphenylamine |
| 00.20226 | 96.07127 | 87865 | < 200. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Pentachlorophenol |
| 00.20226 | 96.07127 | 85018 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Phenanthrene |
| 00.20226 | 96.07127 | 108952 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Phenol |
| 00.20226 | 96.07127 | 129000 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | Pyrene |
| 00.20226 | 96.07127 | 120821 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 1,2,4-Trichlorobenzene |
| 00.20226 | 96.07127 | 95954 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 2,4,5-Trichlorophenol |
| 00.20226 | 96.07127 | 88062 | < 40. | | UG/L | 0.0 | | 9/05/96 | UNDER CONTROL | 2,4,6-Trichlorophenol |

Blank Spike Results: none

Blank Spike Duplicate Results: none

REPORT NUMBER: 41497

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

Blind QC Results, Sample # 96.05692 Date Collected: 8/14/96 Date Received: 8/14/96 Date Extracted: 8/20/96 Date Analyzed: 8/21/96

| SAMPLE NUM | ANALYSIS | ANALYTICAL RESULT | ANALYTICAL UNCERTAINTY | UNITS | QC VALUE | QC UNCERTAINTY | COMPLETION DATE | COMMENT | COMPOUND-NAME |
|---|---|---|---|---|---|---|---|---|---|
| 96.05692 | 83329 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Acenaphthene |
| 96.05692 | 208968 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Acenaphthylene |
| 96.05692 | 62533 | 85. | 25.5 | UG/L | 168. | 8.7 | 8/20/96 | OUT OF CONTROL | Aniline |
| 96.05692 | 120127 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Anthracene |
| 96.05692 | 103333 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Azobenzene |
| 96.05692 | 92875 | < 200. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | m-Benzidine |
| 96.05692 | 56553 | < 40. | | UG/L | 103. | 5.4 | 8/20/96 | UNDER CONTROL | Benzo[a]anthracene |
| 96.05692 | 50328 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Benzo[a]pyrene |
| 96.05692 | 205992 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Benzo[b]fluoranthene |
| 96.05692 | 191242 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Benzo[g,h,i]perylene |
| 96.05692 | 207089 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Benzo[k]fluoranthene |
| 96.05692 | 65850 | < 200. | | UG/L | 170. | 8.8 | 8/20/96 | UNDER CONTROL | Benzoic acid |
| 96.05692 | 100516 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Benzyl alcohol |
| 96.05692 | 111911 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Bis(2-chloroethoxy)methane |
| 96.05692 | 111444 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Bis(2-chloroethyl)ether |
| 96.05692 | 108601 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Bis(2-chloroisopropyl)ether |
| 96.05692 | 117817 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Bis(2-ethylhexyl)phthalate |
| 96.05692 | 101553 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 4-Bromophenylphenyl ether |
| 96.05692 | 85687 | 71. | 21.3 | UG/L | 115. | 6. | 8/20/96 | UNDER CONTROL | Butyl benzyl phthalate |
| 96.05692 | 59507 | 59. | 17.7 | UG/L | 101. | 5.3 | 8/20/96 | WARNING 2-3 SIG | 4-Chloro-3-methylphenol |
| 96.05692 | 106478 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 4-Chloroaniline |
| 96.05692 | 91587 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 2-Chloronaphthalene |
| 96.05692 | 95578 | 94. | 28.2 | UG/L | 166. | 8.7 | 8/20/96 | WARNING 2-3 SIG | o-Chlorophenol |
| 96.05692 | 7005723 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 4-Chlorophenylphenyl ether |
| 96.05692 | 218019 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Chrysene |
| 96.05692 | 84742 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Di-n-butyl phthalate |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 96.05692 | 117840 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Di-n-octyl phthalate |
| 96.05692 | 53703 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Dibenzo[a,h]anthracene |
| 96.05692 | 132649 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Dibenzofuran |
| 96.05692 | 95501 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | o-Dichlorobenzene (1,2) |
| 96.05692 | 541731 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | m-Dichlorobenzene (1,3) |
| 96.05692 | 106467 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | p-Dichlorobenzene (1,4) |
| 96.05692 | 91941 | < 80. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 3,3'-Dichlorobenzidine |
| 96.05692 | 120832 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 2,4-Dichlorophenol |
| 96.05692 | 84662 | 110. | 33. | UG/L | 147. | 7.7 | 8/20/96 | UNDER CONTROL | Diethyl phthalate |
| 96.05692 | 131113 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Dimethyl phthalate |
| 96.05692 | 105679 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 2,4-Dimethylphenol |
| 96.05692 | 51285 | < 200. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 2,4-Dinitrophenol |
| 96.05692 | 121142 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 2,4-Dinitrotoluene |
| 96.05692 | 606202 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 2,6-Dinitrotoluene |
| 96.05692 | 206440 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Fluoranthene |
| 96.05692 | 86737 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Fluorene |
| 96.05692 | 118741 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Hexachlorobenzene |
| 96.05692 | 87683 | < 200. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Hexachlorobutadiene |
| 96.05692 | 77474 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Hexachlorocyclopentadiene |
| 96.05692 | 67721 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Hexachloroethane |
| 96.05692 | 193395 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Indeno[1,2,3-cd]pyrene |
| 96.05692 | 78591 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Isophorone |
| 96.05692 | 534521 | < 200. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 2-Methyl-4,6-dinitrophenol |
| 96.05692 | 91576 | 58. | 17.4 | UG/L | 103. | 5.4 | 8/20/96 | WARNING 2-3 SIG | 2-Methylnaphthalene |
| 96.05692 | 95487 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 2-Methylphenol |
| 96.05692 | 106445 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 4-Methylphenol |
| 96.05692 | 91203 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Naphthalene |
| 96.05692 | 88744 | < 80. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 2-Nitroaniline |
| 96.05692 | 99092 | < 80. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 3-Nitroaniline |
| 96.05692 | 100016 | < 80. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 4-Nitroaniline |
| 96.05692 | 98953 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Nitrobenzene |
| 96.05692 | 88755 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 2-Nitrophenol |
| 96.05692 | 100027 | < 200. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 4-Nitrophenol |
| 96.05692 | 621647 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | N-Nitrosodi-n-propylamine |
| 96.05692 | 62759 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | N-Nitrosodimethylamine |
| 96.05692 | 86306 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | N-Nitrosodiphenylamine |
| 96.05692 | 87865 | < 200. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Pentachlorophenol |
| 96.05692 | 85018 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Phenanthrene |
| 96.05692 | 108952 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Phenol |
| 96.05692 | 109068 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 2-Picoline |
| 96.05692 | 129000 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Pyrene |
| 96.05692 | 110861 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | Pyridine |
| 96.05692 | 120821 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 1,2,4-Trichlorobenzene |
| 96.05692 | 95954 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 2,4,5-Trichlorophenol |
| 96.056[illegible] | 88062 | < 40. | | UG/L | 0.0 | | 8/20/96 | UNDER CONTROL | 2,4,6-Trichlorophe[illegible] |

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA SEMIVOLATILES

Surrogate 1 = 2-Fluorophenol (CAS # = 367124)
Surrogate 2 = Phenol-d5 (CAS # = 4165622)
Surrogate 3 = Nitrobenzene-d5 (CAS # = 4165600)
Surrogate 4 = 2-Fluorobiphenyl (CAS # = 321608)
Surrogate 5 = 2,4,6-Tribromophenol (CAS # = 118796)
Surrogate 6 = p-Terphenyl-d14 (CAS # = 26140603)
Surrogate 7 = 4-Chloroaniline (CAS # = 106478)

| SAMPLE NUMBER | UNITS | Surrogate 1 | Surrogate 2 | Surrogate 3 | Surrogate 4 | Surrogate 5 | Surrogate 6 | Surrogate 7 | COMPLETION DATE |
|---|---|---|---|---|---|---|---|---|---|
| 96.05692 | % | 37. | 30. | 63. | 65. | 66. | 69. | | 20-Aug-1996 |
| 96.06825 | % | 29. | 25. | 51. | 56. | 58. | 59. | | 5-Sep-1996 |
| 96.06827 | % | 26. | 21. | 42. | 44. | 46. | 46. | | 5-Sep-1996 |
| 96.07127 | % | 33. | 27. | 56. | 59. | 60. | 62. | | 5-Sep-1996 |
| EPA Limits: | | | | | | | | | |
| Water | % | 21 - 100 | 10 - 94 | 35 - 114 | 43 - 116 | 10 - 123 | 33 - 141 | 34 - 120 | |
| Soil | % | 25 - 121 | 24 - 113 | 23 - 120 | 30 - 115 | 19 - 122 | 18 - 137 | | |

REPORT NUMBER: 41497

| Mike Rank | | | mag |
|---|---|---|---|
| Analyst | Reviewer | Team Leader | QA Officer |
| 9/5/96 | | | 9/5/96 |
| Date | Date | Date | Date |

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20

# LOS ALAMOS NATIONAL LABORATORY
# WASTE PROFILE SYSTEM
**WPF #: 25025**



Generator : **RYDER, RICHARD D AOTFM** MS : **H814**
WMC : **PESENTI, BERNADETTE LTA53FM** MS : **H814**
FROM : **EM-SWO** MS : **J595/5-4000**

## WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 25025 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to EM-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 25025
**YES** _____ **NO** ✓
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
**YES** _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
**YES** _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

No longer at LANL

**Extension Certification**

I am producing or will produce the same type of waste as indicated in WPF# 25025

*Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.*

**Extension->** Signed _____ Date _____

**Void Approval**

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 25025

**Void->** Signed _____ Date _____

*NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED*

***TO: EM-SWO*** ***MS: J595*** ***PHONE: 5-4000***

# LOS ALAMOS NATIONAL LABORATORY
## WASTE PROFILE SYSTEM
**WPF #: 25025**



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Generator : | RYDER, RICHARD D | MS : | H814 | PH : | 72936 | Z#: | 084353 |
| WMC : | PESENTI, BERNADETTE | MS : | H814 | PH : | 76995 | Z#: | 099231 |
| CSR : | ART, KELLIE | MS : | J595 | PH : | 75909 | Z#: | 112794 |
| Status : | ACTIVE | Activation Date : | 16-OCT-96 | Expiration Date: | 16-OCT-97 | | |
| Group : | AOTFM | TA : | 53 | Bldg : | 000000 | Room: | 0 |

RMMA : **RADIOACTIVE MATERIALS MANAGEMENT AREA (RMMA)**
Waste Accumu : N/A
Method of Char : **ANALYSIS ATTACHED**

Waste Type : **PROCESS WASTE/SPENT CHEMICAL**
Waste Classes: **ON-GOING GENERATION**
**RADIOACTIVE**
Assoc Docum: N/A

Waste Category: **NOT APPLICABLE**

Waste Sources : **RESEARCH AND DEVELOPMENT**

Waste Matrix : **AQUEOUS LIQUID**

Matrix Type : **HOMOGENEOUS**

Waste/Proc Desc : ANALYSIS ATTACHED. SAMPLE NUMBERS: 96DS327, 96DS328, 96DS329, 96DS330, 96DS331 10-07-96 DS TA-53 HOLDING RAD WATER TANK - WNR SAMPLES TAKEN 8/14/96

Ignitability : **NOT IGNITABLE**

Corrosivity : **4.1 - 6.0**

Reactivity : **NON REACTIVE**

Boiling Point : **GREATER THAN 95 DEGREES F.**

Toxicity Characteristic Metals :

| Contaminant | LTR | Min | Max | Unit | Method |
|---|---|---|---|---|---|
| **ARSENIC** | Y | | | | **TOTA** |
| **BARIUM** | Y | | | | **TOTA** |
| **CADMIUM** | Y | | | | **TOTA** |
| **CHROMIUM** | Y | | | | **TOTA** |
| **LEAD** | Y | | | | **TOTA** |
| **MERCURY** | Y | | | | **TOTA** |
| **SILVER** | Y | | | | **TOTA** |

Toxicity Characteristic Organic Compounds: N/A

Additional Chemical Constituents and Contaminants :

| Constituent | CAS NO | MIN | MAX | UOM |
|---|---|---|---|---|
| **WATER** | | **99** | **100** | **%** |

Radiological Characteristics:

| Radionuclide | Min | Max | Unit |
|---|---|---|---|
| **CO60** | 1.290E-08 | 1.470E-08 | **CIL** |

| | | | |
|---|---|---|---|
| **K40** | 4.720E-08 | 6.220E-08 | CIL |
| **LU172** | 7.480E-08 | 7.820E-08 | CIL |
| **HF175** | 2.270E-08 | 2.590E-08 | CIL |

Rad Contamination Type : **SURFACE CONTAMINATION**
**VOLUME CONTAMINATION**

Waste Water Contaminants : N/A

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category : **Low Level Rad**

RCRA Category : **Non-hazardous Waste**

Misc. Category : N/A

Waste Classification : **LOW LEVEL RADIOACTIVE WASTE**

EPA Hazardous Waste Code : N/A