



HEARTLAND ENVIRONMENTAL SERVICES, INC.

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(314) 278-8232

REGION II VOA DATA VALIDATION
NAVAL WEAPONS STATION - COLTSNECK
ROY F. WESTON CASE 9103L829

Coltsneck ID R.F. Weston ID Coltsneck ID R.F. Weston ID

Water Samples (all)

| | | | |
|-------------|----------------|-------------|-----------------|
| 04-004-W001 | 9103L829-010 | 04-003-W001 | 9103L829-012 |
| 04-003-W001 | 9103L829-012MS | 04-003-W001 | 91031829-012MSD |
| 04-002-W001 | 9103L829-014 | 04-001-W001 | 9103L829-016 |
| 04-001-W101 | 9103L829-017 | 04-001-D201 | 9103L829-020 |
| 10-001-W001 | 9103L829-024 | 10-002-W001 | 9103L829-025 |
| 10-003-W001 | 9103L829-026 | 10-003-W301 | 9103L829-027 |
| 26-002-S202 | 9103L829-028 | | |

Soil Samples (all)

| | | | |
|-------------|----------------|-------------|-----------------|
| 04-004-D001 | 9103L829-011 | 04-003-D001 | 9103L829-013 |
| 04-003-D001 | 9103L829-013MS | 04-003-D001 | 9103L829-013MSD |
| 04-002-D001 | 9103L829-015 | 04-001-D001 | 9103L829-018 |
| 04-001-D101 | 9103L829-019 | 10-001-D001 | 9103L829-021 |
| 10-002-D001 | 9103L829-022 | 10-003-D001 | 9103L829-023 |

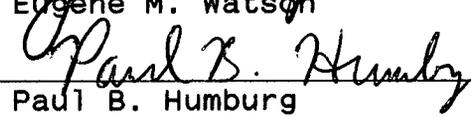
PREPARED BY:


Eugene M. Watson

DATE:

9-4-91

VERIFIED BY:


Paul B. Humburg

DATE:

9/5/91

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DATA ASSESSMENT AND NARRATIVE

General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, GC/MS performance, tuning results, calibration results and internal standard areas. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the U.S. EPA CLP and Region II SOP No. HW-6, Revision 7. All comments made within this report should be considered when examining the analytical results (Form I's).

Holding Times

All of the samples met the U. S. EPA CLP holding times of ten (10) days from VTSR.

Method Blanks

The four (4) method blanks that were analyzed exhibited contamination for various TCLs. All sample results are compared to the associated method blank results.

Specific Findings:

1. For samples 04-004-W001, 04-003-W001, 04-002-W001, 04-001-W001, 04-001-W101, 04-001-d201, 10-001-W001, and 10-002-W001, the method blank 91LVW037-MB1 exhibited contamination for methylene chloride, acetone and carbon disulfide. The sample results for methylene chloride and acetone are greater than the CRQL and less than 10X the blank value. Qualify the sample results as "U". The sample results for carbon disulfide are less than the CRQL and less than 10X the blank value. Reject the sample results and report the CRQL.
2. For samples 10-003-W001, 10-003-W301, and 26-002-S202, the method blank 91LVK049-MB1 exhibited contamination for methylene chloride and acetone. Samples 10-003-W001 and 10-003-W301 contained results for methylene chloride less than the CRQL and less than 10X the blank value. The sample results for methylene chloride are rejected and the CRQL is reported. In addition, the results for acetone are greater than the CRQL and greater than 10X the blank value. Reject the "B" qualifier and report the sample results. For sample 26-002-S202, the methylene chloride result is less than the CRQL and less than 10X the blank value. Reject the sample result and report the CRQL. In addition, the sample result for acetone is greater than the CRQL and less than 10X the blank value. Qualify the sample result as "U".



DATA ASSESSMENT AND NARRATIVE

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Method Blanks (continued)

3. Method blank 91LVB256-MB1 exhibited contamination for methylene chloride and acetone. Samples 04-004-D001 and 04-002-D001 contained results for methylene chloride and acetone that were greater than the CRQL and greater than 10X the blank value. Reject the "B" qualifiers and report the sample results. For samples 04-001-D001, 04-001-D101, and 10-002-D001, the results for methylene chloride are greater than the CRQL and greater than the CRQL. Reject the "B" qualifiers and report the sample results. In addition, the sample results for acetone are greater than the CRQL and less than 10X the blank value. Qualify the sample results for acetone "U".
4. Method blank 91LVB257-MB1 exhibited contamination for methylene chloride and acetone. Samples 04-004-D001RE, 04-003-D001, and 10-003-D001 contained results for methylene chloride that were greater than the CRQL and less than 10X the blank value. Qualify the sample results for methylene chloride "U". In addition, the sample results for acetone were greater than the CRQL and greater than 10X the blank value. Reject the "B" qualifier and report the sample value for acetone. For sample 10-001-D001, the sample result for methylene chloride and acetone were greater than the CRQL and less than 10X the blank value. Qualify all sample results for methylene chloride and acetone "U".

Tuning

All of the BFB tunes in the initial and continuing calibrations met the criteria of the SOW and the Organic Functional Guidelines.

Calibrations - Relative Response Factors (RRFs)

The RRFs from some of the calibrations in this data package were not acceptable for 2-butanone. All other compounds exhibited acceptable response factors.

Specific Findings:

5. The initial calibration on 03/07/91 on instrument 1050W contained the following compound with a RRF less than 0.05. No qualifications are needed since samples were not analyzed after this initial calibration.
 - a) 2-butanone

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DATA ASSESSMENT AND NARRATIVE

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Calibrations - Relative Response Factors (RRFs) (continued)

6. For samples 04-004-W001, 04-003-W001, 04-003-W001MS, 04-003-W001MSD, 04-002-W001, 04-001-W001, 04-001-W101, 04-001-D201, 10-001-W001, 10-002-W001, and VBLKLVW037-MB1, the continuing calibration on 03/14/91 on instrument 1050W contained the following compounds with RRFs less than 0.05. Qualify all positive results as estimated (J) and reject all non detects (R).
- a) 2-butanone

Calibrations - %RSDs and %Ds

The calibrations presented in this data package were acceptable. However, the laboratory did encounter some problems with certain compounds.

Specific Findings:

7. For samples 04-004-W001, 04-003-W001, 04-003-W001MS, 04-003-W001MSD, 04-002-W001, 04-001-W001, 04-001-W101, 04-001-D201, 10-001-W001, 10-002-W001, and VBLKLVW037-MB1, the continuing calibration on 03/14/91 on instrument 1050W contained the following compounds with %Ds that were greater than 25% D, but less than 50% D. Qualify all positive results as estimated (J).
- a) chloromethane
8. For the initial calibration on 1050W on 03/07/91, the following compounds had %RSDs greater than 30%. However, no qualifications are needed since samples were not analyzed after the initial calibration.
- a) acetone
9. For the initial calibration on 5100B on 03/11/91, the following compounds had %RSDs greater than 30%. However, no qualifications are needed since samples were not analyzed after the initial calibration.
- a) acetone
10. For samples 04-004-D001RE, 04-003-D001, 10-001-D001, 10-003-D001, and VBLKLVB257-MB1, the continuing calibration on 03/11/91 on instrument 5100B contained the following compounds with %Ds that were greater than 25% D, but less than 50% D. Qualify all positive results as estimated (J).
- a) 4-methyl-2-pentanone
 - b) 2-hexanone
 - c) 1,1,2,2-tetrachloroethane
 - d) carbon tetrachloride



DATA ASSESSMENT AND NARRATIVE

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Calibrations - %RSDs and %Ds (continued)

11. For samples 04-004-D001, 10-002-D001, 04-002-D001, 04-001-D001, 04-001-D101, and VBLKLV256-MB1, the continuing calibration on instrument 5100B on 03/11/91 contained the following compounds that were greater than 25% D, but less than 50% D. Qualify all positive results as estimated (J).
 - a) bromomethane
 - b) acetone
 - c) 1,1,1-trichloroethane
 - d) carbon tetrachloride

12. For samples 04-003-D001MS, 04-003-D001MSD, and VBLKLV258-MB1, the continuing calibration on instrument 5100B on 03/13/91 contained the following compounds that were greater than 25% D, but less than 50% D. Qualify all positive results as estimated (J).
 - a) 1,1,1-trichloroethane
 - b) carbon tetrachloride
 - c) 4-methyl-2-pentanone
 - d) 2-hexanone
 - e) 1,1,2,2-tetrachloroethane

Surrogates

The surrogate recoveries for three (3) of the sample analyses fell outside the established QA/QC criteria limits. All results associated with these samples will be qualified.

Specific Findings:

13. For samples 04-004-D001, 04-004-D001RE, and 04-003-D001MSD, one or more surrogates exhibited recoveries that were outside the QA/QC limits. Qualify all positive results as estimated (J) and all non detect results as estimated (UJ).

Internal Standards

The EICP areas for the internal standards for two (2) samples were outside the QA/QC control limits. All sample results associated with these internal standard EICP areas will be qualified when applicable.

Specific Findings:

14. For sample 04-004-D001RE, the EICP area for all of the internal standards were below the lower control limits. However, no qualifications will be made since the original analysis of this sample will be used for reporting purposes.



DATA ASSESSMENT AND NARRATIVE

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Internal Standards (continued)

15. For sample 04-003-D001MS, the EICP area for chlorobenzene-d5 was below the lower control limit. However, all of the spike recoveries were acceptable, so no qualifications are needed.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS/MSD recoveries and RPDs were acceptable. No qualifications are needed.

Compound Identification/Quantitation

No qualifications are needed.

System Performance and Overall Assessment

The GC/MS system performance for the calibrations and the analysis was acceptable. The data package was thorough and complete. Please refer to the Summary of Data Qualifications for a tabulated summary of the data assessment and narrative.



GLOSSARY OF DATA QUALIFIERS

QUALIFICATION CODES

U = Not detected

J = Estimated value

UJ = Reported quantitation limit is qualified as estimated

R = Result is rejected and unusable

NJ = Presumptive evidence for the presence of the material at an estimated value

Heartland ESI specific findings will be noted in numerical form on the Form Is in this data validation report. These specific finding footnotes will reflect the conclusions found in the data validation process that resulted in the qualification of the data.



SUMMARY OF DATA QUALIFICATIONS

| <u>SAMPLE ID</u> | <u>ANALYTE ID</u> | <u>DL</u> | <u>QL</u> | <u>SPECIFIC FINDINGS</u> |
|--|---|---------------------|--------------------|--------------------------|
| 04-004-W001,04-003-W001 04-002-W001,04-001-W001 04-001-W101,04-001-D201 10-001-W001 | methylene chloride acetone carbon disulfide | +B +B +BJ | U U CRQL | 1 |
| 10-003-W001,10-003-W301 | methylene chloride acetone | +BJ +B | CRQL + | 2 |
| 26-002-S202 | methylene chloride acetone | +BJ +B | CRQL U | 2 |
| 04-004-D001,04-002-D001 | methylene chloride acetone | +B +B | + + | 3 |
| 04-001-D001,04-001-D101 10-002-D001 | methylene chloride acetone | +B +B | + U | 3 |
| 04-001-D001RE 04-003-D001,10-003-D001 | methylene chloride acetone | +B +B | U + | 4 |
| 10-001-D001 | methylene chloride acetone | +B +B | U U | 4 4 |
| 04-004-W001,04-003-W001 04-003-W001MS, 04-003-W001MSD, 04-002-W001,04-001-W001, 04-001-W101,04-001-D201, 10-001-W001,10-002-W001, VBLKLVW037-MB1 | 2-butanone | +/- | J/R | 6 |

* DL denotes the Form I qualifier supplied by the laboratory
 QL denotes the qualifier used by Heartland ESI
 + in the DL column denotes a positive result
 - in the DL column denotes a non detect result



SUMMARY OF DATA QUALIFICATIONS

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| <u>SAMPLE ID</u> | <u>ANALYTE ID</u> | <u>DL</u> | <u>QL</u> | <u>SPECIFIC FINDINGS</u> |
|--|---|-----------|-----------|--------------------------|
| 04-004-W001,04-003-W001 04-003-W001MS, 04-003-W001MSD, 04-002-W001,04-001-W001, 04-001-W101,04-001-D201, 10-001-W001,10-002-W001, VBLKLVW037-MB1 | chloromethane | + | J | 7 |
| 04-004-D001RE, 04-003-D001,10-001-D001, 10-003-D001, VBLKLVB257-MB1 | 4-methyl- 2-pentanone 2-hexanone 1,1,2,2-tetrachloroethane carbon tetrachloride | + | J | 10 |
| 04-004-D001,10-002-D001 04-002-D001,04-001-D001 04-001-D101, VBLKLVB258-MB1 | bromomethane acetone 1,1,1-trichloroethane carbon tetrachloride | + | J | 11 |
| 04-003-D001MS, 04-003-D001MSD, VBLKLVB258-MB1 | 1,1,1-tri- chloroethane carbon tetrachloride 4-methyl-2-pentanone 2-hexanone 1,1,2,2-tetrachloroethane | + | J | 12 |
| 04-004-D001, 04-004-D001RE, 04-003-D001MSD | all analytes | +/- | J/UJ | 13 |

* DL denotes the Form I qualifier supplied by the laboratory
 QL denotes the qualifier used by Heartland ESI
 + in the DL column denotes a positive result
 - in the DL column denotes a non detect result

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TOTAL REVIEW

CLP DATA ASSESSMENT

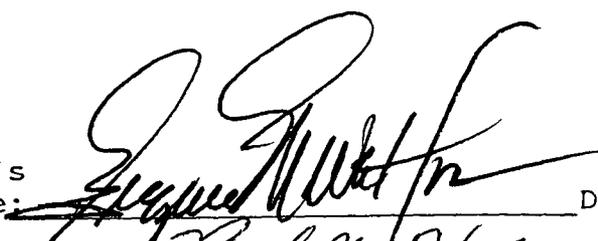
Functional Guidelines for Evaluating Organics Analysis

Case No. 9103L829 SDG No. --- LABORATORY LIONVILLE SITE COLTSNECK

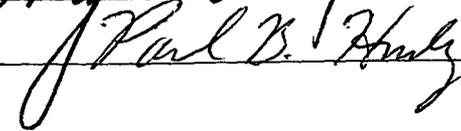
DATA ASSESSMENT:

The current functional guidelines for evaluating organic data have been applied.

All data are valid and acceptable except those analytes which have been qualified with a "J" (estimated), "U" (non-detects), "R" (unusable), or "NJ" (presumptive evidence for the presence of the material at an estimated value). All action is detailed on the attached sheets.

Reviewer's
Signature: 

Date: 9/3/91

Verified By: 

Date: 9/5/91

0000038

1A
VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

04-004-W001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L829-010

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W031408

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. Date Analyzed: 03/14/91

Column: (pack/cap) PACX Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| CAS NO. | COMPOUND | (ug/L or ug/Kg) <u>ug/L</u> | |
|------------|----------------------------|-----------------------------|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 8 | U |
| 67-64-1 | Acetone | 51 | U |
| 75-15-0 | Carbon Disulfide | 2.5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-3 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

00011

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1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

04-004-W001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L829-010

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W031408

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec.

Date Analyzed: 03/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) ug/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

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1A
VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

04-004-D001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT Lab Sample ID: 9103L829-011

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B031110

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. 40 Date Analyzed: 03/11/91

Column: (pack/cap) CAP Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| CAS NO. | COMPOUND | | |
|------------|----------------------------|----|---|
| 74-87-3 | Chloromethane | 17 | U |
| 74-83-9 | Bromomethane | 17 | U |
| 75-01-4 | Vinyl Chloride | 17 | U |
| 75-00-3 | Chloroethane | 17 | U |
| 75-09-2 | Methylene Chloride | 63 | B |
| 67-64-1 | Acetone | 46 | B |
| 75-15-0 | Carbon Disulfide | 8 | U |
| 75-35-4 | 1,1-Dichloroethene | 8 | U |
| 75-34-3 | 1,1-Dichloroethane | 8 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 8 | U |
| 67-66-3 | Chloroform | 8 | U |
| 107-06-2 | 1,2-Dichloroethane | 8 | U |
| 78-93-3 | 2-Butanone | 17 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 8 | U |
| 56-23-5 | Carbon Tetrachloride | 8 | U |
| 108-05-4 | Vinyl Acetate | 17 | U |
| 75-27-4 | Bromodichloromethane | 8 | U |
| 78-87-5 | 1,2-Dichloropropane | 8 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 8 | U |
| 79-01-6 | Trichloroethene | 8 | U |
| 124-48-1 | Dibromochloromethane | 8 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 8 | U |
| 71-43-2 | Benzene | 8 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 8 | U |
| 75-25-2 | Bromoform | 8 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 17 | U |
| 591-78-6 | 2-Hexanone | 17 | U |
| 127-18-4 | Tetrachloroethene | 8 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 8 | U |
| 108-88-3 | Toluene | 8 | U |
| 108-90-7 | Chlorobenzene | 8 | U |
| 100-41-4 | Ethylbenzene | 8 | U |
| 100-42-5 | Styrene | 8 | U |
| 1330-20-7 | Xylene (total) | 8 | U |

U2 13
 ↓ ↓
 F 13
 F 13
 U2 13
 ↓ ↓

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CLIENT SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

04-004-D001

Lab Name: Roy F. Weston, Inc. Work Ord r: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT

Lab Sample ID: 9103L829-011

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: B031110

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec. 40

Date Analyzed: 03/11/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|-------|------------|-----|
| 1. | ACETIC ACID | 16.78 | 10 | JEB |

1A
VOLATILE ORGANICS ANALYSIS SHEET

0000060 CLIENT SAMPLE NO.

04-004-D001RE

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT

Lab Sample ID: 9103L829-011

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: B031205

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec. 40

Date Analyzed: 03/12/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/Kg</u> | |
|------------|----------------------------|--|---|
| 74-87-3 | Chloromethane | 17 | U |
| 74-83-9 | Bromomethane | 17 | U |
| 75-01-4 | Vinyl Chloride | 17 | U |
| 75-00-3 | Chloroethane | 17 | U |
| 75-09-2 | Methylene Chloride | 95 | B |
| 67-64-1 | Acetone | 77 | B |
| 75-15-0 | Carbon Disulfide | 8 | U |
| 75-35-4 | 1,1-Dichloroethene | 8 | U |
| 75-34-3 | 1,1-Dichloroethane | 8 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 8 | U |
| 67-66-3 | Chloroform | 8 | U |
| 107-06-2 | 1,2-Dichloroethane | 8 | U |
| 78-93-3 | 2-Butanone | 17 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 8 | U |
| 56-23-5 | Carbon Tetrachloride | 8 | U |
| 108-05-4 | Vinyl Acetate | 17 | U |
| 75-27-4 | Bromodichloromethane | 8 | U |
| 78-87-5 | 1,2-Dichloropropane | 8 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 8 | U |
| 79-01-6 | Trichloroethene | 8 | U |
| 124-48-1 | Dibromochloromethane | 8 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 8 | U |
| 71-43-2 | Benzene | 8 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 8 | U |
| 75-25-2 | Bromoform | 8 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 17 | U |
| 591-78-6 | 2-Hexanone | 17 | U |
| 127-18-4 | Tetrachloroethene | 8 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 8 | U |
| 108-88-3 | Toluene | 8 | U |
| 108-90-7 | Chlorobenzene | 8 | U |
| 100-41-4 | Ethylbenzene | 8 | U |
| 100-42-5 | Styrene | 8 | U |
| 1330-20-7 | Xylene (total) | 8 | U |

0000061 CLIENT SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

04-004-D001RE

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT Lab Sample ID: 9103L829-011

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B031205

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. 40 Date Analyzed: 03/12/91

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 1 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|-------|------------|----|
| 1. | ACETIC ACID | 16.78 | 10 | SB |

1A
VOLATILE ORGANICS ANALYSIS SHEET

04-003-W001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L829-012

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W031409

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. _____ Date Analyzed: 03/14/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/L</u> | |
|------------|----------------------------|---|------|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 27 | BU |
| 67-64-1 | Acetone | 74 | BU |
| 75-15-0 | Carbon Disulfide | 5 | BU |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U R6 |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

0000072

1E

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

04-003-W001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L829-012

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W031409

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec.

Date Analyzed: 03/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) ug/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

0000083

CLIENT SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

04-003-D001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT Lab Sample ID: 9103L829-013

Sample wt/vol: 5.10 (g/mL) G Lab File ID: B031206

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. 34 Date Analyzed: 03/12/91

Column: (pack/cap) CAP Dilution Factor: 0.980

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

Number TICs found: 1

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|-------|--------------|----------------|
| 1. | ACETIC ACID | 16.70 | 8 | VBK |

0000093

CLIENT SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS SHEET

04-002-W001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L829-014

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W031412

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec. _____

Date Analyzed: 03/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg). ug/L

| CAS NO. | COMPOUND | CONCENTRATION UNITS: | |
|------------|----------------------------|----------------------|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 25 | U |
| 67-64-1 | Acetone | 37 | U |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

Handwritten notes: 'U' marks, '5', '6', and arrows pointing to specific rows in the table.

0000094

CLIENT SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

04-002-W001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L829-014

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W031412

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec.

Date Analyzed: 03/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

0000104

1A
VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

04-002-D001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT

Lab Sample ID: 9103L829-C15

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: B031113

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec. 50

Date Analyzed: 03/11/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/Kg

| | | | |
|------------|---------------------------------|-----|--------------|
| 74-87-3 | -----Chloromethane | 20 | U |
| 74-83-9 | -----Bromomethane | 20 | U |
| 75-01-4 | -----Vinyl Chloride | 20 | U |
| 75-00-3 | -----Chloroethane | 20 | U |
| 75-09-2 | -----Methylene Chloride | 100 | U |
| 67-64-1 | -----Acetone | 69 | U |
| 75-15-0 | -----Carbon Disulfide | 2 | J |
| 75-35-4 | -----1,1-Dichloroethene | 10 | U |
| 75-34-3 | -----1,1-Dichloroethane | 10 | U |
| 540-59-0 | -----1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | -----Chloroform | 10 | U |
| 107-06-2 | -----1,2-Dichloroethane | 10 | U |
| 78-93-3 | -----2-Butanone | 20 | U |
| 71-55-6 | -----1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | -----Carbon Tetrachloride | 10 | U |
| 108-05-4 | -----Vinyl Acetate | 20 | U |
| 75-27-4 | -----Bromodichloromethane | 10 | U |
| 78-87-5 | -----1,2-Dichloropropane | 10 | U |
| 10061-01-5 | -----cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | -----Trichloroethene | 10 | U |
| 124-48-1 | -----Dibromochloromethane | 10 | U |
| 79-00-5 | -----1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | -----Benzene | 10 | U |
| 10061-02-6 | -----Trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | -----Bromoform | 10 | U |
| 108-10-1 | -----4-Methyl-2-pentanone | 20 | U |
| 591-78-6 | -----2-Hexanone | 20 | U |
| 127-18-4 | -----Tetrachloroethene | 10 | U |
| 79-34-5 | -----1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | -----Toluene | 10 | U |
| 108-90-7 | -----Chlorobenzene | 10 | U |
| 100-41-4 | -----Ethylbenzene | 10 | U |
| 100-42-5 | -----Styrene | 10 | U |
| 1330-20-7 | -----Xylene (total) | 10 | U |

U
U

0000105

CLIENT SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

04-002-D001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT

Lab Sample ID: 9103L829-015

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: B031113

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec. 50

Date Analyzed: 03/11/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST.. CONC. | Q |
|------------|---------------|----|-------------|---|
| 1.. | | | | |

0000115

1A

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

04-001-W001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L829-016

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W031413

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. Date Analyzed: 03/14/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L | |
|------------|----------------------------|---|----|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 30 | BU |
| 67-64-1 | Acetone | 32 | BU |
| 75-15-0 | Carbon Disulfide | 15 | BU |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

0000116

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

04-001-W001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L829-J16

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W031413

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec.

Date Analyzed: 03/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

0000126

CLIENT SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS SHEETLab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

04-001-W101

Client: NAVAL WEAPONS/COLTSNECKMatrix: WATERLab Sample ID: 9103L829-017Sample wt/vol: 5.00 (g/mL) MLLab File ID: W031414Level: (low/med) LOWDate Received: 03/06/91

% Moisture: not dec. _____

Date Analyzed: 03/14/91Column: (pack/cap) PACKDilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: | |
|------------|----------------------------|----------------------|-------------|
| | | (ug/L or ug/Kg) | <u>ug/L</u> |
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 29 | U |
| 67-64-1 | Acetone | 39 | U |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

0000127

CLIENT SAMPLE NO.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

04-001-W101

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID. 9103L829-017

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W031414

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec. _____

Date Analyzed: 03/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

1A
VOLATILE ORGANICS ANALYSIS SHEET

0000137

CLIENT SAMPLE NO.

04-001-D001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT Lab Sample ID: 9103L829-018

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B031114

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. 24 Date Analyzed: 03/11/91

Column: (pack/cap) CAP Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/Kg

| CAS NO. | COMPOUND | (ug/L or ug/Kg) | <u>ug/Kg</u> |
|------------|----------------------------|-----------------|--------------|
| 74-87-3 | Chloromethane | 13 | U |
| 74-83-9 | Bromomethane | 13 | U |
| 75-01-4 | Vinyl Chloride | 13 | U |
| 75-00-3 | Chloroethane | 13 | U |
| 75-09-2 | Methylene Chloride | 84 | U |
| 67-64-1 | Acetone | 15 | U |
| 75-15-0 | Carbon Disulfide | 6 | U |
| 75-35-4 | 1,1-Dichloroethene | 6 | U |
| 75-34-3 | 1,1-Dichloroethane | 6 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 6 | U |
| 67-66-3 | Chloroform | 6 | U |
| 107-06-2 | 1,2-Dichloroethane | 6 | U |
| 78-93-3 | 2-Butanone | 13 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 6 | U |
| 56-23-5 | Carbon Tetrachloride | 6 | U |
| 108-05-4 | Vinyl Acetate | 13 | U |
| 75-27-4 | Bromodichloromethane | 6 | U |
| 78-87-5 | 1,2-Dichloropropane | 6 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 6 | U |
| 79-01-6 | Trichloroethene | 6 | U |
| 124-48-1 | Dibromochloromethane | 6 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 6 | U |
| 71-43-2 | Benzene | 6 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2 | Bromoform | 6 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 13 | U |
| 591-78-6 | 2-Hexanone | 13 | U |
| 127-18-4 | Tetrachloroethene | 6 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3 | Toluene | 6 | U |
| 108-90-7 | Chlorobenzene | 6 | U |
| 100-41-4 | Ethylbenzene | 6 | U |
| 100-42-5 | Styrene | 6 | U |
| 1330-20-7 | Xylene (total) | 6 | U |

3
U 3

0000138

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

04-001-D001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT Lab Sample ID: 9103L829-018

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B031114

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. 24 Date Analyzed: 03/11/91

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

0000146

1A

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

04-001-D101

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT Lab Sample ID: 9103L829-019

Sample wt/vol: 5.10 (g/mL) G Lab File ID: B031115

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. 21 Date Analyzed: 03/11/91

Column: (pack/cap) CAP Dilution Factor: 0.980

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/Kg

| CAS NO. | COMPOUND | (ug/L or ug/Kg) | ug/Kg |
|------------|----------------------------|-----------------|-------|
| 74-87-3 | Chloromethane | 12 | U |
| 74-83-9 | Bromomethane | 12 | U |
| 75-01-4 | Vinyl Chloride | 12 | U |
| 75-00-3 | Chloroethane | 12 | U |
| 75-09-2 | Methylene Chloride | 68 | U |
| 67-64-1 | Acetone | 18 | U |
| 75-15-0 | Carbon Disulfide | 6 | U |
| 75-35-4 | 1,1-Dichloroethene | 6 | U |
| 75-34-3 | 1,1-Dichloroethane | 6 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 6 | U |
| 67-66-3 | Chloroform | 6 | U |
| 107-06-2 | 1,2-Dichloroethane | 6 | U |
| 78-93-3 | 2-Butanone | 12 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 6 | U |
| 56-23-5 | Carbon Tetrachloride | 6 | U |
| 108-05-4 | Vinyl Acetate | 12 | U |
| 75-27-4 | Bromodichloromethane | 6 | U |
| 78-87-5 | 1,2-Dichloropropane | 6 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 6 | U |
| 79-01-6 | Trichloroethene | 6 | U |
| 124-48-1 | Dibromochloromethane | 6 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 6 | U |
| 71-43-2 | Benzene | 6 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2 | Bromoform | 6 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 12 | U |
| 591-78-6 | 2-Hexanone | 12 | U |
| 127-18-4 | Tetrachloroethene | 6 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3 | Toluene | 6 | U |
| 108-90-7 | Chlorobenzene | 6 | U |
| 100-41-4 | Ethylbenzene | 6 | U |
| 100-42-5 | Styrene | 6 | U |
| 1330-20-7 | Xylene (total) | 6 | U |

33

0000147

1E

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

04-001-D101

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000Client: NAVAL WEAPONS/COLTSNECKMatrix: SEDIMENTLab Sample ID: 9103L829-019Sample wt/vol: 5.10 (g/mL) GLab File ID: B031115Level: (low/med) LOWDate Received: 03/06/91% Moisture: not dec. 21Date Analyzed: 03/11/91Column: (pack/cap) CAPDilution Factor: 0.980Number TICs found: 1

CONCENTRATION UNITS:

(ug/L or ug/Kg) ug/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|-------|------------|----|
| 1. | ACETIC ACID | 16.68 | 8 | JB |

1A
VOLATILE ORGANICS ANALYSIS SHEET

0000157 CLIENT SAMPLE NO.

04-001-D201

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L829-J20

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W031415

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec. _____

Date Analyzed: 03/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/L

| | | | |
|------------|----------------------------|----|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 25 | U |
| 67-64-1 | Acetone | 40 | U |
| 75-15-0 | Carbon Disulfide | 15 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 4 | J |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

Handwritten notes: 'NB' with arrows pointing to rows 75-15-0 and 78-93-3, and 'R6' with an arrow pointing to row 78-93-3.

0000158 CLIENT SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

04-001-D201

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L829-020

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W031415

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. Date Analyzed: 03/14/91

Column: (pack/cap) PACK Dilution Factor: 1.00

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

0000170

1A

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

10-001-D001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT Lab Sample ID: 9103L829-021

Sample wt/vol: 5.10 (g/mL) G Lab File ID: B031207

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. 19 Date Analyzed: 03/12/91

Column: (pack/cap) CAP Dilution Factor: 0.980

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/Kg

| | | | |
|------------|----------------------------|----|---|
| 74-87-3 | Chloromethane | 12 | U |
| 74-83-9 | Bromomethane | 12 | U |
| 75-01-4 | Vinyl Chloride | 12 | U |
| 75-00-3 | Chloroethane | 12 | U |
| 75-09-2 | Methylene Chloride | 74 | U |
| 67-64-1 | Acetone | 29 | U |
| 75-15-0 | Carbon Disulfide | 6 | U |
| 75-35-4 | 1,1-Dichloroethene | 6 | U |
| 75-34-3 | 1,1-Dichloroethane | 6 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 6 | U |
| 67-66-3 | Chloroform | 6 | U |
| 107-06-2 | 1,2-Dichloroethane | 6 | U |
| 78-93-3 | 2-Butanone | 12 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 6 | U |
| 56-23-5 | Carbon Tetrachloride | 6 | U |
| 108-05-4 | Vinyl Acetate | 12 | U |
| 75-27-4 | Bromodichloromethane | 6 | U |
| 78-87-5 | 1,2-Dichloropropane | 6 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 6 | U |
| 79-01-6 | Trichloroethene | 6 | U |
| 124-48-1 | Dibromochloromethane | 6 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 6 | U |
| 71-43-2 | Benzene | 6 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2 | Bromoform | 6 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 12 | U |
| 591-78-6 | 2-Hexanone | 12 | U |
| 127-18-4 | Tetrachloroethene | 6 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3 | Toluene | 6 | U |
| 108-90-7 | Chlorobenzene | 6 | U |
| 100-41-4 | Ethylbenzene | 6 | U |
| 100-42-5 | Styrene | 6 | U |
| 1330-20-7 | Xylene (total) | 6 | U |

Handwritten notes: 'U' and '4' next to the table entries.

0000171

1E

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

10-001-D001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT

Lab Sample ID: 9103L829-021

Sample wt/vol: 5.10 (g/mL) G

Lab File ID: B031207

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: ~ not dec. 19

Date Analyzed: 03/12/91

Column: (pack/cap) CAP

Dilution Factor: 0.980

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

1A
VOLATILE ORGANICS ANALYSIS SHEET

0000179 CLIENT SAMPLE NO.

10-002-D001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT Lab Sample ID: 9103L829-022

Sample wt/vol: 5.10 (g/mL) G Lab File ID: B031111

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. 21 Date Analyzed: 03/11/91

Column: (pack/cap) CAP Dilution Factor: 0.980

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/Kg</u> | |
|------------|----------------------------|--|---|
| 74-87-3 | Chloromethane | 12 | U |
| 74-83-9 | Bromomethane | 12 | U |
| 75-01-4 | Vinyl Chloride | 12 | U |
| 75-00-3 | Chloroethane | 12 | U |
| 75-09-2 | Methylene Chloride | 56 | U |
| 67-64-1 | Acetone | 15 | U |
| 75-15-0 | Carbon Disulfide | 6 | U |
| 75-35-4 | 1,1-Dichloroethene | 6 | U |
| 75-34-3 | 1,1-Dichloroethane | 6 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 6 | U |
| 67-66-3 | Chloroform | 6 | U |
| 107-06-2 | 1,2-Dichloroethane | 6 | U |
| 78-93-3 | 2-Butanone | 12 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 6 | U |
| 56-23-5 | Carbon Tetrachloride | 6 | U |
| 108-05-4 | Vinyl Acetate | 12 | U |
| 75-27-4 | Bromodichloromethane | 6 | U |
| 78-87-5 | 1,2-Dichloropropane | 6 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 6 | U |
| 79-01-6 | Trichloroethene | 6 | U |
| 124-48-1 | Dibromochloromethane | 6 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 6 | U |
| 71-43-2 | Benzene | 6 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2 | Bromoform | 6 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 12 | U |
| 591-78-6 | 2-Hexanone | 12 | U |
| 127-18-4 | Tetrachloroethene | 6 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3 | Toluene | 6 | U |
| 108-90-7 | Chlorobenzene | 6 | U |
| 100-41-4 | Ethylbenzene | 6 | U |
| 100-42-5 | Styrene | 6 | U |
| 1330-20-7 | Xylene (total) | 6 | U |

33

0000180

1E

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

10-002-D001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT

Lab Sample ID: 9103L829-022

Sample wt/vol: 5.10 (g/mL) G

Lab File ID: B031111

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec. 21

Date Analyzed: 03/11/91

Column: (pack/cap) CAP

Dilution Factor: 0.980

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

0000188

CLIENT SAMPLE NO.

1A

VOLATILE ORGANICS ANALYSIS SHEET

10-003-D001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000Client: NAVAL WEAPONS/COLTSNECKMatrix: SEDIMENTLab Sample ID: 9103L829-023Sample wt/vol: 5.10 (g/mL) GLab File ID: B031208Level: (low/med) LOWDate Received: 03/06/91% Moisture: not dec. 22Date Analyzed: 03/12/91Column: (pack/cap) CAPDilution Factor: 0.980

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| | | | |
|------------|----------------------------|----|---|
| 74-87-3 | Chloromethane | 13 | U |
| 74-83-9 | Bromomethane | 13 | U |
| 75-01-4 | Vinyl Chloride | 13 | U |
| 75-00-3 | Chloroethane | 13 | U |
| 75-09-2 | Methylene Chloride | 69 | U |
| 67-64-1 | Acetone | 79 | U |
| 75-15-0 | Carbon Disulfide | 6 | U |
| 75-35-4 | 1,1-Dichloroethene | 6 | U |
| 75-34-3 | 1,1-Dichloroethane | 6 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 6 | U |
| 67-66-3 | Chloroform | 6 | U |
| 107-06-2 | 1,2-Dichloroethane | 6 | U |
| 78-93-3 | 2-Butanone | 13 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 6 | U |
| 56-23-5 | Carbon Tetrachloride | 6 | U |
| 108-05-4 | Vinyl Acetate | 13 | U |
| 75-27-4 | Bromodichloromethane | 6 | U |
| 78-87-5 | 1,2-Dichloropropane | 6 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 6 | U |
| 79-01-6 | Trichloroethene | 6 | U |
| 124-48-1 | Dibromochloromethane | 6 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 6 | U |
| 71-43-2 | Benzene | 6 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2 | Bromoform | 6 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 13 | U |
| 591-78-6 | 2-Hexanone | 13 | U |
| 127-18-4 | Tetrachloroethene | 6 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3 | Toluene | 6 | U |
| 108-90-7 | Chlorobenzene | 6 | U |
| 100-41-4 | Ethylbenzene | 6 | U |
| 100-42-5 | Styrene | 6 | U |
| 1330-20-7 | Xylene (total) | 6 | U |

0000189

CLIENT SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

10-003-D001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: SEDIMENT

Lab Sample ID: 9103L829-023

Sample wt/vol: 5.10 (g/mL) G

Lab File ID: B031208

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec. 22

Date Analyzed: 03/12/91

Column: (pack/cap) CAP

Dilution Factor: 0.980

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/Kg) ug/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC: | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

0000197

1A

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

10-001-W001

Client: NAVAL WEAPONS/COLTSNECKMatrix: WATERLab Sample ID: 9103L029-024Sample wt/vol: 5.00 (g/mL) MLLab File ID: W031416Level: (low/med) LOWDate Received: 03/06/91

% Moisture: not dec. _____

Date Analyzed: 03/14/91Column: (pack/cap) PACKDilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/L</u> | |
|------------|----------------------------|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 28 | U |
| 67-64-1 | Acetone | 11 | U |
| 75-15-0 | Carbon Disulfide | 15 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

0000198

CLIENT SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

10-001-W001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L829-024

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W031416

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec. _____

Date Analyzed: 03/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1: | | | | |

0000208

1A

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

10-002-W001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000Client: NAVAL WEAPONS/COLTSNECKMatrix: WATERLab Sample ID: 9103L829-025Sample wt/vol: 5.00 (g/mL) MLLab File ID: W031417Level: (low/med) LOWDate Received: 03/06/91

% Moisture: not dec. _____

Date Analyzed: 03/14/91Column: (pack/cap) PACKDilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) ug/L

| CAS NO. | COMPOUND | (ug/L or ug/Kg) | ug/L |
|------------|----------------------------|-----------------|------|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 27 | U |
| 67-64-1 | Acetone | 33 | U |
| 75-15-0 | Carbon Disulfide | 15 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

0000209

1E

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

10-002-W001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L829-025

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W031417

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. Date Analyzed: 03/14/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

Number TICs found: 0

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

1A
VOLATILE ORGANICS ANALYSIS SHEET

0000219 CLIENT SAMPLE NO.

10-003-W001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L829-026

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK3F08

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec. _____

Date Analyzed: 03/15/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/L</u> | |
|------------|----------------------------|---|-----|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 25 | U ✓ |
| 67-64-1 | Acetone | 140 | U ✓ |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

0000220 CLIENT SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

10-003-W001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L829-026

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK3F08

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec.

Date Analyzed: 03/15/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

1A
VOLATILE ORGANICS ANALYSIS SHEET

0000226 CLIENT SAMPLE NO.

10-003-W301

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L829-027

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: AK3F09

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. Date Analyzed: 03/15/91

Column: (pack/cap) CAP Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/L</u> | |
|------------|----------------------------|---|-----|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | U ✓ |
| 67-64-1 | Acetone | 120 | U ✓ |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

2
↓

0000227 CLIENT SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

10-003-W301

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L829-027

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: AK3F09

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. _____ Date Analyzed: 03/15/91

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

1A
VOLATILE ORGANICS ANALYSIS SHEET

0000234 CLIENT SAMPLE NO.

26-002-S202

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L829-028

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: AK3F10

Level: (low/med) LOW Date Received: 03/06/91

% Moisture: not dec. _____ Date Analyzed: 03/15/91

Column: (pack/cap) CAP Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/L

| | | | |
|------------|----------------------------|-----|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 4.5 | U |
| 67-64-1 | Acetone | 64 | U |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 4 | J |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

0000235

CLIENT SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

26-002-S202

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L829-028

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK3F10

Level: (low/med) LOW

Date Received: 03/06/91

% Moisture: not dec.

Date Analyzed: 03/15/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|----|------------|---|
| 1. | | | | |

DATA ASSESSMENT:

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples will be qualified as estimated, "J". The non-detects sample quantitation limits will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.

No Action

gmm
9-3-91

ATTACHMENT 1
SOP NO. HW-6

DATA ASSESSMENT:

2. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip field, rinse and water blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field blanks measure cross-contamination of samples during field operations. Water blanks measure potential contamination of the distilled water used used during decontamination of field equipment. If the concentration of the analyte is less than 5 times (10 times for the common contaminants), the analytes are qualified as non-detects, "U". The following analytes in the samples shown were qualified with "U" for these reasons:

A) Method blank contamination

7103LVW037-MBI

04-004-W001, CH₂Cl₂, Acetone - U
04-003-W001, CS₂ - CRQL
04-002-W001,
04-001-W001, 04-001-D201,
04-001-W101, 10-001-W001,
10-002-W001

91LVK044-MBI

10-003-W001, CH₂Cl₂ - CRQL
10-003-W301, Acetone - No Action
26-002-5202, CH₂Cl₂ - CRQL
Acetone - U

91LVB256-MBI

04-004-D001, CH₂Cl₂, Acetone -
No Action
04-002-D001,
04-001-D001, CH₂Cl₂ - No Action
04-001-D101, Acetone - U
10-002-D001

B) Field or rinse blank contamination

91LVB257-MBI 10-003-D001
04-004-D001RE, CH₂Cl₂ - U
04-003-D001, Acetone - No Action
10-001-D001 - CH₂Cl₂, Acetone - U

C) Water blank contamination

D) Trip blank contamination

00052

ATTACHMENT 1
SOP NO. HW-6

DATA ASSESSMENT:

3. SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure mass resolution, identification of compounds, and to some degree, the instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is bromofluorobenzene and for semi-volatiles is decafluorotriphenyl- phosphine.

If the mass calibration is in error, all associated data will be classified as unusable, "R".

No Action

gmm
9-3-91

DATA ASSESSMENT:

4. CALIBRATION:

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance in the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) RESPONSE FACTOR:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05 either in the initial or continuing calibration. A value < 0.05 indicates a serious detection and quantitation problem. Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be qualified as rejected, "R".

+ Int Cal - 3-7-91 - 1050W - No Samples -

2-Butanone < 0.05

+ Cont Cal 3-14-91 - 1050W - 04-004-W001, 04-003-W001, MS, MSD, 04-002-W001,
04-001-W001, 04-001-W101, 04-001-D201, 10-001-W001,
10-002-W001, 16LKLW037-MB1

8 pps (>25%-45%) Chloro methane.

+ Int Cal - 3-8-91 MSD-K - No Samples - No Action

+ Cont Cal 3-15-91 MSD-K - No Action

+ Int Cal 3-7-91 5100B - No Action

+ Cont Cal 3-11-91 5100B - No Action

+ Cont Cal 3-12-91 5100B - No Action

DATA ASSESSMENT:

5. CALIBRATION:

A) PERCENT RELATIVE STANDARD DEVIATION (%RSD) AND PERCENT DIFFERENCE (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be <30% and %D must be <25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If there is a gross deviation of %RSD and %D, the non-detects may be qualified as rejected, "R".

For the PCB/PESTICIDE fraction, %RSD for aldrin, endrin, DDT, and dibutylchloroendate must not exceed 10%. Percent D must be within 15% on the quantitation column and 20% on the confirmation column.

* Inst Cal 3-7-91 - 1050W - No Samples - Acetone 32.6% RSD.

* Cont Cal 3-14-91 - 1050W - 04-004-W001, 04-003-W001, MS, MSD, 04-002-W001, 04-001-W001, 04-001-W101, 04-001-D201, 10-001-W001, 10-002-W001, VBLKLVW037-MB1

2-Butanone - < 0.05.

* Inst Cal 3-8-91 MSD-K - no Aldrin

* Cont Cal 3-15-91 MSD-K - no Aldrin

* Inst Cal 3-7-91 - 5100B - No Samples - Acetone 31.2% RSD.

* Cont Cal 3-11-91 - 5100B - 04-004-D001, 10-002-D001, 04-002-D001, 04-001-D001, 04-001-D101, VBLKLVB256-MB1

5 pos (>25% - <50%) Bromo methane, acetone, 1,1,1-trichloroethane, Carbon tetrachloride.

* Cont Cal 3-12-91 - 5100B - 04-004-D001 KE, 04-003-D001, 10-001-D001, 10-002-D001, VBLKLVB257-MB1

5 pos (>25% - <50%) Carbon Tetrachloride, 4-Methyl-2-Pentanone, 2-hexanone, 1,1,2,2-Tetrachloro ethane

* Cont Cal 3-13-91 - 5100B - 04-003-D001MS, MSD, VBLKLVB258-MB1

5 pos (>25% - <50%) 1,1,1-Trichloro ethane, Carbon tetrachloride, 4-Methyl-2-Pentanone, 2-hexanone, 1,1,2,2-tetrachloro ethane.

DATA ASSESSMENT:

6. SURROGATES:

All samples are spiked with surrogate compounds prior to sample preparation in order to evaluate the laboratory performance and to estimate the efficiency of the analytical technique. If the measured surrogate concentration is outside of the contract specifications, qualifications were applied to the samples and analytes as shown below.

04-004-D001 and 04-004-D001PC - toluene-d8
out of QA/QC criteria high. Qualify
all results I/US.

04-003-D001MSD - 1,2-Dichloroethane-d4 out of
QA/QC high. - No Qualifications.

~~Sum
9-3-91~~

DATA ASSESSMENT:

7. INTERNAL STANDARDS PERFORMANCE:

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated calibration standard. The retention time of the internal standard must not vary more than ± 30 seconds from the associated calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are to be qualified as estimated, "J", and all non-detects as "UJ" or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction.

*Sample 04-004-D001CE - all int stds out of
QA/QC limits low - No Action - will use
the first analysis.*

*Sample 04-003-D001MS - chlorobenzene ds
out of QA/QC limits low - Sample
analysis and MSD analysis are OK -
no action required - all
recoveries for MS acceptable.*

DATA ASSESSMENT:

8. COMPOUND IDENTIFICATION:

A) VOLATILE AND SEMI-VOLATILE FRACTIONS:

TCL compounds are identified on the GC/MS by using the analytes relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary M/E lines within 20% of that in the standard compound. For the tentatively identified compounds, TIC, the ion spectra must match accurately. In the cases where there is not a perfect ion spectrum match, the laboratory may have provided false positive identifications.

B) PESTICIDE FRACTION:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10 ng/uL in the final sample extract.

No Action

[Signature]
9-3-91

DATA ASSESSMENT:

9. MATRIX SPIKE/SPIKE DUPLICATE, MS/MSD:

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for some additional qualification of the data.

No Action

[Signature]
9-3-91

DATA ASSESSMENT:

10. OTHER QC DATA OUT OF SPECIFICATION:

None

11. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT:

*System performance was fair -
See case narrative*

12. ~~CONTRACT PROBLEMS~~ ~~NON-COMPLIANCE:~~

~~*SMM*
9-3-91~~

13. This package contains re-extraction, re-analysis or dilution. Upon reviewing the QA results, the following form I(s) are identified to be used.

04-004-2001 instead of 04-004-2001K

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO. 91032829

LABORATORY RF WESTON - LIONVILLE

SDG NO. _____

DATA USER RF WESTON

SOW 2/88 CUP / REGION II

REVIEW COMPLETION DATE 9-3-91

NO. OF SAMPLES 11 WATER 0

SOIL _____ OTHER _____

REVIEWER ESD ESAT OTHER, CONTRACT/CONTRACTOR HEARTLAND ESI

| | VOA | BNA | PEST | OTHER |
|--|----------|-------|-------|-------|
| 1. HOLDING TIMES | <u>0</u> | _____ | _____ | _____ |
| 2. GC-MS TUNE/ GC PERFORMANCE | <u>0</u> | _____ | _____ | _____ |
| 3. INITIAL CALIBRATIONS | <u>0</u> | _____ | _____ | _____ |
| 4. CONTINUING CALIBRATIONS | <u>X</u> | _____ | _____ | _____ |
| 5. FIELD BLANKS ("F" = not applicable) | <u>F</u> | _____ | _____ | _____ |
| 6. LABORATORY BLANKS | <u>M</u> | _____ | _____ | _____ |
| 7. SURROGATES | <u>X</u> | _____ | _____ | _____ |
| 8. MATRIX SPIKE/DUPLICATES | <u>0</u> | _____ | _____ | _____ |
| 9. REGIONAL QC ("F" = not applicable) | <u>F</u> | _____ | _____ | _____ |
| 10. INTERNAL STANDARDS | <u>0</u> | _____ | _____ | _____ |
| 11. COMPOUND IDENTIFICATION | <u>0</u> | _____ | _____ | _____ |
| 12. COMPOUND QUANTITATION | <u>0</u> | _____ | _____ | _____ |
| 13. SYSTEM PERFORMANCE | <u>0</u> | _____ | _____ | _____ |
| 14. OVERALL ASSESSMENT | <u>M</u> | _____ | _____ | _____ |

O = No problems or minor problems that do not affect data usability.
 X = No more than about 5% of the data points are qualified as either estimated or unusable.
 M = More than about 5% of the data points are qualified as estimated.
 Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS: _____

AREAS OF CONCERN: _____

DEFLECTION SUMMARY FORM
(No. of Compounds/No. of Fractions (Samples))

SOP NO: HW-6
Date: February 1989

Type of Review: VOA COT/REGION II VALIDATION

Date: 9-3-91

Case #: 91032829

Project: COLTBNECK NAVAL WEAPONS STATION

Lab Name: R/WESTON - LIONVILLE

Reviewer's Initials: SMW

Number of Samples: 19

Analytes Rejected Due to Exceeding Review Criteria:

| | Surrogates | Holding Time | Calibration | Contamination | ID | Other | Total # Samples | Total # Rejected/ Total # in all Samples |
|------------|------------|--------------|-------------|---------------|----|-------|-----------------|---|
| Acids (15) | | | | | | | | |
| H/N (50) | | | | | | | | |
| VOA (35) | 0 | 0 | 10 | 0 | 0 | 0 | 19 | 10 / 665 |
| PEST (20) | | | | | | | | |
| ICTH (7) | | | | | | | | |
| TCDD (1) | | | | | | | | |

Analytes Estimated Due to Exceeding Review Criteria for:

| | | | | | | | | |
|------------|----|---|---|----|---|---|----|----------|
| Acids (15) | | | | | | | | |
| H/N (50) | | | | | | | | |
| VOA (35) | 35 | 0 | 0 | 46 | 0 | 0 | 19 | 81 / 665 |
| PEST (20) | | | | | | | | |
| ICTH (7) | | | | | | | | |
| TCDD (1) | | | | | | | | |

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 9103 L829
 LAB: R.F. WESTON - Lionville
 SITE: COLTSNECK NAVAL WEAPONS STATION

1.0 Data Completeness and Deliverables

YES NO N/A

1.1 Have any missing deliverables been received and added to the data package.

ACTION: Call lab for explanation / resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-compliance" section of reviewer narrative.

1.2 Was SMD CCS checklist included with package?

2.0 Cover Letter/Case Narrative

2.1 Is the Narrative or Cover Letter present?

2.2 Are Case Number and/or SAS number contained in the Narrative or Cover Letter?

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses, Part B for any ENA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA data?

ENA data?

Pesticide/PCB data?

ACTION: Complete corresponding parts of checklist.

YES NO N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples?

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data?

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be flagged as estimated (J).

ACTION: If both VOA vials for a sample have air bubbles, flag all positive results "J" and all non-detects "R".

2.0 Holding Times

2.1 Have any VOA holding times, determined from date of collection to date of analysis, been exceeded?

If unpreserved, aqueous aromatic volatiles must be analyzed within 7 days of collection and non-aromatic volatiles must be analyzed within 14 days. If preserved with hydrochloric acid and stored at 4°C, then both aromatic and non-aromatic volatiles must be analyzed within 14 days. If uncertain about preservation, contact the sampler to determine whether the samples were preserved.

A ten-day holding time for soil samples is recommended.

Table of Holding Time Violations

| Sample | Sample Matrix | Preserved ? | (See Traffic Report) | | Date Analyzed |
|--------|---------------|-------------|----------------------|-------------------|---------------|
| | | | Date Sampled | Date Lab Received | |
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |

EMM
 9-3-91

ACTION: If holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("U"), and document in the narrative that holding times were exceeded.

YES NO N/A

If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. The reviewer may determine that non-detect data are unusable ("R").

3.0 Surrogate Recovery (Form II)

3.1 Are the VOA Surrogate Recovery Summaries (Form II) present for each of the following matrices:

a. Low Water

b. Med Water

c. Low Soil

d. Med Soil

3.2 Are all the VOA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:

a. Low Water

b. Med Water

c. Low Soil

d. Med Soil

ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.

3.3 Were outliers marked correctly with an asterisk?

ACTION: Circle all outliers in red.

3.4 Was one or more VOA surrogate recovery outside of contract specifications for any sample or method blank?

If yes, were samples reanalyzed?

Were method blanks reanalyzed?

ACTION: If surrogate recoveries are > 10% but all do not meet SOW specifications:

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as estimated detection limits ("U").

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If any surrogate has a recovery of <10% :

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as unusable ("R").

Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and re-analyses. Check the internal standard areas.

3.5 Are there any transcription/calculation errors between raw data and Form II?

| YES | NO | N/A |
|-----|-------------------------------------|-----|
| | <input checked="" type="checkbox"/> | |

ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?

| | | |
|-------------------------------------|--|--|
| <input checked="" type="checkbox"/> | | |
|-------------------------------------|--|--|

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:

- a. Low Water
- b. Med Water
- c. Low Soil
- d. Med Soil

| | | |
|-------------------------------------|--|-------------------------------------|
| <input checked="" type="checkbox"/> | | |
| <input type="checkbox"/> | | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | | |
| <input type="checkbox"/> | | <input checked="" type="checkbox"/> |

ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

| | |
|--------------------|--------------------|
| <u>Water</u> | <u>Soils</u> |
| <u>0</u> out of 10 | <u>0</u> out of 10 |

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

| | |
|-------------------|-------------------|
| <u>Water</u> | <u>Soils</u> |
| <u>0</u> out of 5 | <u>0</u> out of 5 |

ACTION: If MS and MSD both have less than 10% recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for the MS/MSD analysis. Use professional judgement in applying this criterion to other samples in the package.

YES NO N/A

5.0 Blanks (Form IV)

5.1 Is the Method Blank Summary (Form IV) present?

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?

5.3 Has a VOA instrument blank been analyzed at least once every twelve hours for each GC/MS system used?

ACTION: If any method blank data are missing, call lab for explanation / resubmittal. If not available, reject all associated positive data ("R").

5.4 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.

Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor.

6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)?

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

Not identified or submitted.

NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

YES NO N/A

| | Sample conc > CRQL but < 10x blank | Sample conc < CRQL & is < 10x blank value | Sample conc > CRQL value & >10x blank value |
|---|---|--|---|
| Methylene chloride: Acetone Toluene 2-butanone | Flag sample result with a 'U'; cross out 'B' flag | Reject sample result and report CRQL; cross out 'B' flag | No qualification is needed |

| | Sample conc > CRQL but < 5x blank | Sample conc < CRQL & is < 5x blank value | Sample conc > CRQL value & > 5 blank value |
|-----------------------|---|--|--|
| Other Contaminants | Flag sample result with a 'U'; cross out 'B' flag | Reject sample result and report CRQL; cross out 'B' flag | No qualification is needed |

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample?

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

Not identified or submitted.

7.0 GC/MS Tuning and Mass Calibration (Form V)

7.1 Are the GC/MS Tuning and Mass Calibration Forms (Form V) present for Bromofluorobenzene (BFB)?

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift?

7.3 Has a tuning performance compound been analyzed for every twelve hours of sample analysis per instrument?

ACTION: If any tuning data are missing, take action specified in 3.2 above.

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

| | | | | YES | NO | N/A |
|------|------|----------------|----------------|-----|----|-----|
| DATE | TIME | INSTRUMENT | SAMPLE NUMBERS | | | |
| | | ENW | | | | |
| | | 9-3-91 | | | | |
| | | | | | | |

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundance criteria been met for each instrument used? YES NO N/A

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If tuning calibration is in error, flag all associated sample data as unusable ("R"). However, if expanded ion criteria are met (See 1988 Functional Guidelines), the data reviewer may accept data with appropriate qualifiers.

7.5 Are there any transcription / calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) YES NO N/A

7.6 Have the appropriate number of significant figures (two) been reported? (Check at least two values, but if errors are found check more values.) YES NO N/A

ACTION: If large errors exist, call lab for explanation / resubmittal, make necessary corrections and note errors under "Conclusions".

7.7 Are the spectra of the mass calibration compound acceptable? YES NO N/A

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

D Target Compound List (TCL) Analytes

8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate YES NO N/A

b. Matrix spikes and matrix spike duplicates YES NO N/A

c. Blanks YES NO N/A

- | | YES | NO | N/A |
|---|-------------------------------------|-----|-----|
| 8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following? | | | |
| a. Samples and/or fractions as appropriate | <input checked="" type="checkbox"/> | ___ | ___ |
| b. Matrix spikes and matrix spike duplicates (Mass spectra not required) | <input checked="" type="checkbox"/> | ___ | ___ |
| c. Blanks | <input checked="" type="checkbox"/> | ___ | ___ |

ACTION: If any data are missing, take action specified in 3.2 above.

8.3 Are the response factors shown in the Quant Report?

Quant ion

8.4 Is chromatographic performance acceptable with respect to:

 Baseline stability

 Resolution

 Peak shape

 Full-scale graph (attenuation)

 Other: _____

ACTION: Use professional judgement to determine the acceptability of the data.

8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If Lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".

8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?

8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?

8.8 Do sample and standard relative ion intensities agree within 20%?

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected, flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (at the calculated detection limit).

| | YES | NO | N/A |
|---|-------------------------------------|-------------------------------------|-----|
| <u>9.0 Tentatively Identified Compounds (TIC)</u> | | | |
| 9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "J" qualifier? | <input checked="" type="checkbox"/> | ___ | ___ |
| 9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following: | | | |
| a. Samples and/or fractions as appropriate | <input checked="" type="checkbox"/> | ___ | ___ |
| b. Blanks | <input checked="" type="checkbox"/> | ___ | ___ |
| ACTION: If any TIC data are missing, take action specified in 3.2 above. | | | |
| ACTION: Add "J" qualifier if missing and "N" qualifier to all <u>identified</u> TIC compounds on Form I, Part B. | | | |
| 9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene—a VOA TCL—and should not be reported as a TIC)? | ___ | <input checked="" type="checkbox"/> | ___ |
| ACTION: Flag with "R" any TCL compound listed as a TIC. | | | |
| 9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum? | <input checked="" type="checkbox"/> | ___ | ___ |
| 9.5 Do TIC and "best match" standard relative ion intensities agree within 20%? | <input checked="" type="checkbox"/> | ___ | ___ |
| ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate. | | | |
| <u>10.0 Compound Quantitation and Reported Detection Limits</u> | | | |
| 10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? | ___ | <input checked="" type="checkbox"/> | ___ |
| 10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? | <input checked="" type="checkbox"/> | ___ | ___ |

YES NO N/A

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.

11.0 Standards Data (GC/MS)

11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration?

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction?

ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.

12.2 Are response factors stable for volatiles over the concentration range of the calibration (RSD <30%)?

ACTION: Circle all outliers in red.

ACTION: When RSD >30%, non-detects may be qualified using professional judgement. Flag all positive results "J". When RSD >90%, flag all non-detects as unusable ("R"). (Region II policy.)

12.3 Do any compounds have an average RRF < 0.05?

ACTION: Circle all outliers in red.

ACTION: If any volatile compound has an average RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

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YES NO N/A

12.4 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least two values but if errors are found, check more.)

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile fraction?

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

~~_____~~
~~_____~~
~~_____~~

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ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation / resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

13.3 Do any continuing calibration standard compounds have a RRF < 0.05?

ACTION: Circle all outliers in red.

ACTION: If any volatile compound has a RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

13.4 Do any compounds have a % difference between initial and continuing calibration RRF > 25%?

ACTION: Circle all outliers in red and qualify associated sample data as outlined in the table below:

| % DIFFERENCE | | | YES | NO | N/A |
|---|---------------------------------------|---------------------------------------|-----|----|-----|
| 25-50 | 50-90 | >90 | | | |
| 'J' positive results, no action for non detects | 'J' positive results, 'U' non detects | 'J' positive results, "R" non detects | | | |

13.5 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.)

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

4.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits for each continuing calibration?

ACTION: List all the outliers below.

| Sample # | Internal Std | Area | Lower Limit | Upper Limit |
|---------------|--------------|-------|-------------|-------------|
| 04-004-DOORLE | BCM | 10861 | 12794 | 51176 |
| | DFB | 70851 | 86165 | 344658 |
| | CBZ | 52648 | 85732 | 342926 |
| 04-003-DOOIMS | CBZ | 59532 | 64107 | 256426 |

(Attach additional sheets if necessary.)

ACTION: If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard. If extremely low area counts are reported, or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard?

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

15.0 Field Duplicates

YES NO N/A

15.1 Were any field duplicates submitted for VOA analysis?

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

Not submitted or identified.