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RADIAN ANALYTICAL SERVICES
FPAS REPORT
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LCP
VP-LW 31,32,33
Work Order # 9709433

Client DOW CHEMICAL CO.
Facility PLAQUEMINE, LA
Client Code DOW PLAQ

Certified By *Shirley Carter*
Date 10/7/97

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WORK ORDER SUMMARY

Report RADIAN INTERNATIONAL
To P.O. Box 201088
Austin, TX 78720-1088
Attention HEIDI KRALL

Client Code DOW PLAQ
Client DOW CHEMICAL CO.
Facility PLAQUEMINE, LA
Work ID BIF TRIAL BURNS

Work Order # 2709433
Page 1
RCN 800117.5000

Prepared Radian International, LLC
By 14046 Summit Dr., Bldg. B
P. O. Box 201088
Austin, TX 78720-1088

CSC DPMAXWELL

Case # NA
SDG # NA
RAS # 70807ADPM

New York ELAP ID #: 10915

Project Sample ID/ Description	Lab Sample ID	Test Code(s)	Method Description
DOW-VP-LW-31-V21-MET	01A	DGMRSA00 ICTSW5MM SHARDG00	Microwave Digestion Metals by ICP Shared Digestion-Sb,Ag,Se
DOW-VP-LW-32-V19-MET	02A	DGMRSA00 ICTSW5MM SHARDG00	Microwave Digestion Metals by ICP Shared Digestion-Sb,Ag,Se
DOW-VP-LW-33-V20-MET	03A	DGMRSA00 ICTSW5MM SHARDG00	Microwave Digestion Metals by ICP Shared Digestion-Sb,Ag,Se
DOW-VP-LW-33-V20-MET	04A MS	DGMRSA00 ICTSW5MM SHARDG00	Microwave Digestion Metals by ICP Shared Digestion-Sb,Ag,Se
DOW-VP-LW-33-V20-MET	05A MSD	DGMRSA00 ICTSW5MM SHARDG00	Microwave Digestion Metals by ICP Shared Digestion-Sb,Ag,Se

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FLAG DEFINITIONS

Flag	Definition
< DL	Result less than stated Detection Limit and greater than or equal to zero.
NA	Analyte concentration not available for this analysis.
NC	RPD and/or % Recovery not calculated. See Narrative for explanation.
ND	Not detected. No instrument response for analyte or result less than zero.
NR	Not reported. Result greater than or equal to stated Detection Limit and less than specified Reporting Limit.
NS	Analyte not spiked.
B	Analyte detected in method blank at concentration greater than the Reporting Limit (and greater than zero).
C	Confirming data obtained using second GC column or GCMS.
E	Analyte concentration exceeded calibration range.
F	Interference or coelution suspected. See Narrative for explanation.
H	Presence of analyte previously confirmed by historical data.
I	Analyte identification suspect. See Narrative for explanation.
J	Result is less than stated Detection Limit but greater than or equal to specified Reporting Limit.
K	Peak did not meet method identification criteria. Analyte not detected on other GC column.
M	Result modified from previous Report. See Narrative for explanation.
P	Analyte not confirmed. Results from primary and secondary GC columns differ by greater than a factor of 3.
Q	QC result does not meet tolerance in Protocol Specification.
R	Result reported elsewhere.
S	Analyte concentration obtained using Method of Standard Additions (MSA).
T	Second column confirmational analysis not performed.
X	See Narrative for explanation.
Y	See Narrative for explanation.
Z	See Narrative for explanation.

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ANALYTICAL PROTOCOL SUMMARY

Work Order # 9709433

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Client DOW CHEMICAL CO.

Facility PLAQUEMINE, LA

Client Code DOW PLAQ

Method ICP Analysis by SW6010A

Project Sample ID/Description	Lab Sample ID	Test Code(s)	Extraction/Digestion Batch #	Analysis Batch #
DOW-VP-LW-31-V21-MET	9709433-01A	ICTSW5MM	IMDG971002070000	EM61E271003142701
DOW-VP-LW-32-V19-MET	9709433-02A	ICTSW5MM	IMDG971002070000	EM61E271003142701
DOW-VP-LW-33-V20-MET	9709433-03A	ICTSW5MM	IMDG971002070000	EM61E271003142701

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RESULTS SUMMARY

Work Order # 9709433

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Method ICP Analysis by SW6010A

Test Code ICTSW5MM

Project Sample ID:	DOW-VP-LW-31--		DOW-VP-LW-32--		DOW-VP-LW-33--		
	V21-MET		V19-MET		V20-MET		
Lab ID:	9709433-01A		9709433-02A		9709433-03A		
File ID:	61E21003-91		61E21003-92		61E21003-94		
Date Collected:	09/15/97		09/16/97		09/16/97		
Date Prepared:	10/02/97		10/02/97		10/02/97		
Date Analyzed:	10/03/97		10/03/97		10/03/97		
Dilution Factor:	1		1		1		
Matrix:	Water		Water		Water		
Units:	mg/L		mg/L		mg/L		
Report as:	received		received		received		
Column:							
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc. DL
Antimony	ND	0.828	ND	0.828	ND	0.828	
Arsenic	2.82	0.429	2.38	0.429	3.13	0.429	
Barium	0.0440	0.0338	0.0860	0.0338	0 J	0.0338	
Beryllium	ND	0.0388	ND	0.0388	ND	0.0388	
Cadmium	0.0140 J	0.0342	ND	0.0342	ND	0.0342	
Chromium	0.734 B	0.159	0.534 B	0.159	0.506 B	0.159	
Lead	0.668 B	0.267	0.748 B	0.267	0.822 B	0.267	
Nickel	ND	0.115	ND	0.115	ND	0.115	
Selenium	5.63 B	0.442	5.02 B	0.442	4.91 B	0.442	
Silver	ND	0.113	ND	0.113	ND	0.113	
Thallium	ND	0.425	ND	0.425	ND	0.425	

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DIGESTION TCH SUMMARY

Work Order # 9709433Digestion Batch # IMDG971002070000Page 5Method Microwave digestionExtraction Start Date/Time 10/02/97 07:00:00Analyst HDTest Code DGMRSA00

Extraction Stop Date/Time _____

Reviewer MSC

Sample	Project Sample ID	Lab Sample ID	Sample Size g	Cleanup Method
1	DOW-VP-LW-31-V21-MET	9709433-01A	0.50	
2	DOW-VP-LW-32-V19-MET	9709433-02A	0.50	
3	DOW-VP-LW-33-V20-MET	9709433-03A	0.50	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Quality Control	Project Sample ID	Lab Sample ID	Sample Size g	Cleanup Method
Blank		BLK974318	---	
Laboratory Control Sample		LCS977275	---	
Laboratory Control Sample Duplicate		LCSD977275	---	
Matrix Spike	DOW-VP-LW-33-V20-MET	9709433-04A	0.50	
Matrix Spike Duplicate	DOW-VP-LW-33-V20-MET	9709433-05A	0.50	

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ANALYSIS BATCH SUMMARY

Work Order # 9709433Analysis Batch # EM61E271003142701Page 6Method ICP Analysis by SW6010AAnalysis Start Date/Time 10/03/97 14:27:00Instrument 61E2Test Code ICTSW5MMAnalysis Stop Date/Time 10/03/97 18:17:00Analyst XBEInitial Calibration # NAReviewer DLC

Calibration Date _____

Sequence/Analysis Time	Project Sample ID	Lab Sample ID	Sample Type	Analysis File #
1 10/03/97		STD1-BLANK	Initial Calibration Standard 1	61E21003-1
2 10/03/97		S2	Initial Calibration Standard 1	61E21003-2
3 10/03/97		S5	Initial Calibration Standard 1	61E21003-3
4 10/03/97		S5	Initial Calibration Standard 1	61E21003-4
5 10/03/97		S3	Initial Calibration Standard 1	61E21003-5
6 10/03/97		S3	Initial Calibration Standard 1	61E21003-6
7 10/03/97		STD_2-W	Initial Calibration Verification	61E21003-7
8 10/03/97		STD_3-W	Initial Calibration Verification	61E21003-8
9 10/03/97		STD_5-W	Initial Calibration Verification	61E21003-9
10 10/03/97		CICSA-W	Interference Check Sample-Majors	61E21003-10
11 10/03/97		CICSAB-W	Interference Check Sample-Majors/Minors	61E21003-11
12 10/03/97		CCV-3-W	Continuing Calibration Verification	61E21003-12
13 10/03/97		CCV-2-W	Continuing Calibration Verification	61E21003-13
14 10/03/97		CCV-1-W	Continuing Calibration Verification	61E21003-14
15 10/03/97		CCB-W	Blank, Continuing Calibration	61E21003-15
16 10/03/97		BLK974317	Sample	61E21003-16
17 10/03/97		DCS977272	Sample	61E21003-17
18 10/03/97		RLCS	Sample	61E21003-18
19 10/03/97		LCS977273	Sample	61E21003-19
20 10/03/97		LCSD977273	Sample	61E21003-20
21 10/03/97		A971003101A	Sample	61E21003-21
22 10/03/97		A971003101A	Sample	61E21003-22
23 10/03/97		A971003101A	Sample	61E21003-23
24 10/03/97		A971003103A	Sample	61E21003-24
25 10/03/97		A971003104A	Sample	61E21003-25
26 10/03/97		A971003102A	Sample	61E21003-26
27 10/03/97		A970969001A	Sample	61E21003-27
28 10/03/97		A970969002A	Sample	61E21003-28
29 10/03/97		A970969003A	Sample	61E21003-29
30 10/03/97		A970969004A	Sample	61E21003-30

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ANALYSIS DATA SUMMARY (cont'd)

Work Order # 9709433

Analysis Batch # EM61E271003142701

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Method ICP Analysis by SW6010A

Analysis Start Date/Time 10/03/97 14:27:00

Instrument 61E2

Test Code ICTSW5MM

Analysis Stop Date/Time 10/03/97 18:17:00

Analyst XBE

Initial Calibration # NA

Reviewer DLC

Calibration Date

Sequence/Analysis Time	Project Sample ID	Lab Sample ID	Sample Type	Analysis File #
31 10/03/97		A970970201A	Sample	61E21003-31
32 10/03/97		A970970202A	Sample	61E21003-32
33 10/03/97		A970977901A	Sample	61E21003-33
34 10/03/97		A970978401A	Sample	61E21003-34
35 10/03/97		CICSA-W	Interference Check Sample-Majors	61E21003-35
36 10/03/97		CICSAB-W	Interference Check Sample-Majors/Minors	61E21003-36
37 10/03/97		CCV-3-W	Continuing Calibration Verification	61E21003-37
38 10/03/97		CCV-3-W	Continuing Calibration Verification	61E21003-38
39 10/03/97		CCV-2-W	Continuing Calibration Verification	61E21003-39
40 10/03/97		CCV-1-W	Continuing Calibration Verification	61E21003-40
41 10/03/97		ICB-W	Blank, Initial Calibration	61E21003-41
42 10/03/97		A970973201A	Sample	61E21003-42
43 10/03/97		A970973202A	Sample	61E21003-43
44 10/03/97		A970973203A	Sample	61E21003-44
45 10/03/97		A970973204A	Sample	61E21003-45
46 10/03/97		A970973205A	Sample	61E21003-46
47 10/03/97		A970973206A	Sample	61E21003-47
48 10/03/97		A970973207A	Sample	61E21003-48
49 10/03/97		A971004401A	Sample	61E21003-49
50 10/03/97		A970953501A	Sample	61E21003-50
51 10/03/97		A970953502A	Sample	61E21003-51
52 10/03/97		CICSA-W	Interference Check Sample-Majors	61E21003-52
53 10/03/97		CICSAB-W	Interference Check Sample-Majors/Minors	61E21003-53
54 10/03/97		CCV-3-W	Continuing Calibration Verification	61E21003-54
55 10/03/97		CCV-2-W	Continuing Calibration Verification	61E21003-55
56 10/03/97		CCV-1-W	Continuing Calibration Verification	61E21003-56
57 10/03/97		ICB-W	Blank, Initial Calibration	61E21003-57
58 10/03/97		CCB-W	Blank, Continuing Calibration	61E21003-58
59 10/03/97		TL_TI_STDS	Sample	61E21003-59
60 10/03/97		TL_TI_STDS	Sample	61E21003-60

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ANALYSIS BATCH SUMMARY (cont'd)

Work Order # 9709433Analysis Batch # EM61E271003142701Page 8Method ICP Analysis by SW6010AAnalysis Start Date/Time 10/03/97 14:27:00Instrument 61E2Test Code ICTSW5MMAnalysis Stop Date/Time 10/03/97 18:17:00Analyst XBEInitial Calibration # NAReviewer DLC

Calibration Date _____

Sequence/Analysis Time	Project Sample ID	Lab Sample ID	Sample Type	Analysis File #
61 10/03/97		STD1-BLANK	Initial Calibration Standard 1	61E21003-61
62 10/03/97		S2	Initial Calibration Standard 1	61E21003-62
63 10/03/97		S2	Initial Calibration Standard 1	61E21003-63
64 10/03/97		S2	Initial Calibration Standard 1	61E21003-64
65 10/03/97		S5	Initial Calibration Standard 1	61E21003-65
66 10/03/97		S3	Initial Calibration Standard 1	61E21003-66
67 10/03/97		STD_2-S	Initial Calibration Verification	61E21003-67
68 10/03/97		CICSA-S	Interference Check Sample-Majors	61E21003-68
69 10/03/97		CICSAB-S	Interference Check Sample-Majors/Minors	61E21003-69
70 10/03/97		CCV-2-S	Continuing Calibration Verification	61E21003-70
71 10/03/97		CCV-1-S	Continuing Calibration Verification	61E21003-71
72 10/03/97		CCB-S	Blank, Continuing Calibration	61E21003-72
73 10/03/97		BLK974318	Sample	61E21003-73
74 10/03/97		BLK974318	Blank, Method	61E21003-74
75 10/03/97		RLCS	Reporting Limit Check Standard	61E21003-75
76 10/03/97		LCS977275	Lab Control Sample	61E21003-76
77 10/03/97		LCSD977275	Lab Control Sample Duplicate	61E21003-77
78 10/03/97		A970943301A	Sample	61E21003-78
79 10/03/97		A970943302A	Sample	61E21003-79
80 10/03/97		A970943303A	Sample	61E21003-80
81 10/03/97		A970943303A	Sample	61E21003-81
82 10/03/97		A970943303A	Sample	61E21003-82
83 10/03/97		A970943304A	Sample	61E21003-83
84 10/03/97		A970943305A	Sample	61E21003-84
85 10/03/97		CICSA-S	Interference Check Sample-Majors	61E21003-85
86 10/03/97		CICSAB-S	Interference Check Sample-Majors/Minors	61E21003-86
87 10/03/97		CCV-2-S	Continuing Calibration Verification	61E21003-87
88 10/03/97		CCV-1-S	Continuing Calibration Verification	61E21003-88
89 10/03/97		ICB-S	Blank, Initial Calibration	61E21003-89
90 10/03/97		CCB-S	Blank, Continuing Calibration	61E21003-90

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ANALYSIS SUMMARY (cont'd)

Work Order # 9709433Analysis Batch # EM61E271003142701Page 2Method ICP Analysis by SW6010AAnalysis Start Date/Time 10/03/97 14:27:00Instrument 61E2Test Code ICTSW5MMAnalysis Stop Date/Time 10/03/97 18:17:00Analyst KBEInitial Calibration # NAReviewer DLC

Calibration Date _____

Sequence/Analysis Time	Project Sample ID	Lab Sample ID	Sample Type	Analysis File #
91 10/03/97	DOW-VP-LW-31-V21-MET	9709433-01A	Sample	61E21003-91
92 10/03/97	DOW-VP-LW-32-V19-MET	9709433-02A	Sample	61E21003-92
93 10/03/97	DOW-VP-LW-33-V20-MET	9709433-03A	Serial Dilutions	61E21003-93
94 10/03/97	DOW-VP-LW-33-V20-MET	9709433-03A	Sample	61E21003-94
95 10/03/97	DOW-VP-LW-33-V20-MET	9709433-03A	Analytical Spike	61E21003-95
96 10/03/97	DOW-VP-LW-33-V20-MET	9709433-04A	Matrix Spike	61E21003-96
97 10/03/97	DOW-VP-LW-33-V20-MET	9709433-05A	Matrix Spike Duplicate	61E21003-97
98 10/03/97		CICSA-S	Interference Check Sample-Majors	61E21003-98
99 10/03/97		CICSAB-S	Interference Check Sample-Majors/Minors	61E21003-99
100 10/03/97		CCV-2-S	Continuing Calibration Verification	61E21003-100
101 10/03/97		CCV-1-S	Continuing Calibration Verification	61E21003-101
102 10/03/97		ICB-S	Blank, Initial Calibration	61E21003-102
103 10/03/97		CCB-S	Blank, Continuing Calibration	61E21003-103

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RESULTS

Work Order # 9709433

Digestion Batch # IMDG971002070000Page 10Analysis Batch # EM61E271003142701Project Sample ID DOW-VP-LW-31-V21-METDate Collected 09/15/97Instrument 61E2Reporting Subset Matrix WLab Sample ID 9709433-01ADate Received 09/19/97Column Spikes Subset Report As receivedFile # 61E21003-91Date Prepared 10/02/97Analyst XBESpecs Subset % Moisture Method ICP Analysis by SW6010ADate Analyzed 10/03/97Reviewer DLCTest Code ICTSW5MM

Analyte	CAS #	Aliquot Mass/Volume <u>0.50</u> (mL) Extract/Digestate Volume <u>100</u> (mL) Dilution Factor <u>1</u>	Detection Limit mg/L	Reporting Limit mg/L
		Measured Concentration mg/L		
Antimony	7440-36-0	ND	0.828	0
Arsenic	7440-38-2	2.82	0.429	0
Barium	7440-39-3	0.0440	0.0338	0
Beryllium	7440-41-7	ND	0.0388	0
Cadmium	7440-43-9	0.0140 J	0.0342	0
Chromium	7440-47-3	0.734 B	0.159	0
Lead	7439-92-1	0.668 B	0.267	0
Nickel	7440-02-0	ND	0.115	0
Selenium	7782-49-2	5.63 B	0.442	0
Silver	7440-22-4	ND	0.113	0
Thallium	7440-28-0	ND	0.425	0

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R E S U L T S

Work Order # 9709433

 Digestion Batch # IMDG971002070000
 Analysis Batch # EM61E271003142701
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Project Sample ID DOW-VP-LW-32-V19-MET Date Collected 09/16/97 Instrument 61E2 Reporting Subset Matrix W
 Lab Sample ID 9709433-02A Date Received 09/19/97 Column Spikes Subset Report As received
 File # 61E21003-92 Date Prepared 10/02/97 Analyst XBE Specs Subset % Moisture
 Method ICP Analysis by SW6010A Date Analyzed 10/03/97 Reviewer DLC
 Test Code ICTSW5MM

Analyte	CAS #	Aliquot Mass/Volume <u>0.50</u> (mL) Extract/Digestate Volume <u>100</u> (mL) Dilution Factor <u>1</u>	Detection Limit mg/L	Reporting Limit mg/L
		Measured Concentration mg/L		
Antimony	7440-36-0	ND	0.828	0
Arsenic	7440-38-2	2.38	0.429	0
Barium	7440-39-3	0.0860	0.0338	0
Beryllium	7440-41-7	ND	0.0388	0
Cadmium	7440-43-9	ND	0.0342	0
Chromium	7440-47-3	0.534 B	0.159	0
Lead	7439-92-1	0.748 B	0.267	0
Nickel	7440-02-0	ND	0.115	0
Selenium	7782-49-2	5.02 B	0.442	0
Silver	7440-22-4	ND	0.113	0
Thallium	7440-28-0	ND	0.425	0

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RESULTS

Work Order # 9709433Digestion Batch # IMDG971002070000Page 12Analysis Batch # EM61E271003142701

Project Sample ID DOW-VP-LW-33-V20-MET Date Collected 09/16/97 Instrument 61E2 Reporting Subset Matrix W
 Lab Sample ID 9709433-03A Date Received 09/19/97 Column Spikes Subset Report As received
 File # 61E21003-94 Date Prepared 10/02/97 Analyst XBE Specs Subset % Moisture
 Method ICP Analysis by SW6010A Date Analyzed 10/03/97 Reviewer DLC
 Test Code ICTSW5MM

Analyte	CAS #	Aliquot Mass/Volume <u>0.50</u> (mL) Extract/Digestate Volume <u>100</u> (mL) Dilution Factor <u>1</u>	Detection Limit mg/L	Reporting Limit mg/L
		Measured Concentration mg/L		
Antimony	7440-36-0	ND	0.828	0
Arsenic	7440-38-2	3.13	0.429	0
Barium	7440-39-3	0 J	0.0338	0
Beryllium	7440-41-7	ND	0.0388	0
Cadmium	7440-43-9	ND	0.0342	0
Chromium	7440-47-3	0.506 B	0.159	0
Lead	7439-92-1	0.822 B	0.267	0
Nickel	7440-02-0	ND	0.115	0
Selenium	7782-49-2	4.91 B	0.442	0
Silver	7440-22-4	ND	0.113	0
Thallium	7440-28-0	ND	0.425	0

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LABORATORY BL INFORMATION

Work Order # 9709433

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Digestion Batch # _____

Analysis Batch # EM61E271003142701

Lab Sample ID CCB-S

Date Prepared _____

Instrument 61E2

Reporting Subset _____

Matrix W

File # 61E21003-103

Date Analyzed 10/03/97

Column _____

Spikes Subset _____

Method ICP Analysis by SW6010A

Analyst XBE

Specs Subset _____

Test Code ICTSW5MM

Reviewer DLC

Analyte	Aliquot Mass/Volume _____ (mL) Extract/Digestate Volume _____ (mL) Dilution Factor _____ 1	Detection Limit mg/L	Reporting Limit mg/L
	Measured Conc. mg/L		
Antimony	-0.00377 J	0.00414	-1000
Arsenic	-0.000410 J	0.00215	-1000
Barium	-0.000140 J	0.000169	-1000
Beryllium	0 J	0.000194	-1000
Cadmium	-0.000170 J	0.000171	-1000
Chromium	-0.000160 J	0.000794	-1000
Lead	0.000350 J	0.00133	-1000
Nickel	-0.000640 J	0.000573	-1000
Selenium	-0.00107 J	0.00221	-1000
Silver	-0.000650 J	0.000566	-1000
Thallium	-0.00676 J	0.00212	-1000

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LABORATORY BLANK INFORMATION

Work Order # 2709433Page 14

Digestion Batch # _____

Analysis Batch # EM61E271003142701Lab Sample ID CCB-S

Date Prepared _____

Instrument 61E2Reporting Subset _____ Matrix WFile # 61E21003-72Date Analyzed 10/03/97

Column _____

Spikes Subset _____

Method ICP Analysis by SW6010AAnalyst XBE

Specs Subset _____

Test Code ICTSW5MMReviewer DLC

Analyte	Aliquot Mass/Volume ____ (mL) Extract/Digestate Volume ____ (mL) Dilution Factor <u>1</u>	Detection Limit mg/L	Reporting Limit mg/L
	Measured Conc. mg/L		
Antimony	0.00132 J	0.00414	-1000
Arsenic	-0.00203 J	0.00215	-1000
Barium	-0.000070 J	0.000169	-1000
Beryllium	-0.000100 J	0.000194	-1000
Cadmium	-0.000110 J	0.000171	-1000
Chromium	0.000540 J	0.000794	-1000
Lead	-0.000360 J	0.00133	-1000
Nickel	-0.000550 J	0.000573	-1000
Selenium	-0.00315 J	0.00221	-1000
Silver	-0.000960 J	0.000566	-1000
Thallium	-0.00339 J	0.00212	-1000

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LABORATORY BL INFORMATION

Work Order # 9709433

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Digestion Batch # IMDG971002070000

Analysis Batch # EM61E271003142701

Lab Sample ID BLK974318
File # 61E21003-74
Method ICP Analysis by SW6010A
Test Code ICTSW5MM

Date Prepared 10/02/97
Date Analyzed 10/03/97

Instrument 61E2
Column _____
Analyst XBE
Reviewer DLC

Reporting Subset _____ Matrix W
Spikes Subset _____
Specs Subset _____

Analyte	Aliquot Mass/Volume 0.50 (mL) Extract/Digestate Volume 100 (mL) Dilution Factor 1	Detection Limit mg/L	Reporting Limit mg/L
	Measured Conc. mg/L		
Antimony	0.248 J	0.828	0
Arsenic	ND	0.429	0
Barium	0 J	0.0338	0
Beryllium	ND	0.0388	0
Cadmium	ND	0.0342	0
Chromium	0.0560 J	0.159	0
Lead	0.170 J	0.267	0
Nickel	ND	0.115	0
Selenium	0.160 J	0.442	0
Silver	ND	0.113	0
Thallium	ND	0.425	0

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LABORATORY CONTROL SAMPLE

Work Order # 9709433

Digestion Batch # IMDG971002070000

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Analysis Batch # EM61E271003142701

Method ICP Analysis by SW6010A

Date Prepared 10/02/97

Instrument 61E2

Reporting Subset Matrix W

Test Code ICTSW5MM

Date Analyzed 10/03/97

Column

Spikes Subset

Report As: received

Analyst XBE

Specs Subset

% Moisture

Reviewer DLC

Aliquot Mass or Vol 100 (mL)

Extract Mass or Vol 100 (mL)

Control Std. #	Vol. Added	Surrogate Sol'n #	Vol. Added	LCS Lab Sample ID <u>LCS977275</u> File ID <u>61E21003-76</u>			LCS Duplicate Lab Sample ID <u>LCSD977275</u> File ID <u>61E21003-77</u>			Recovery Spec. Limits		RPD	
Analyte	Spiked Conc. mg/L	Measured Conc. mg/L	Rec. %	Spiked Conc. mg/L	Measured Conc. mg/L	Rec. %	Low %	High %	Result %	Spec. Limit %			
Antimony	0.0500	0.0497	99	0.0500	0.0489	98	80	120	1.0	20			
Arsenic	0.400	0.383	96	0.400	0.383	96	80	120	0	20			
Barium	1.00	0.994	99	1.00	0.986	99	80	120	0	20			
Beryllium	1.00	0.969	97	1.00	0.971	97	80	120	0	20			
Cadmium	0.0800	0.0732	91	0.0800	0.0730	91	80	120	0	20			
Chromium	0.0800	0.0737	92	0.0800	0.0737	92	80	120	0	20			
Lead	0.400	0.364	91	0.400	0.367	92	80	120	1.1	20			
Nickel	0.100	0.0941	94	0.100	0.0944	94	80	120	0	20			
Selenium	0.100	0.0938	94	0.100	0.0972	97	80	120	3.1	20			
Silver	0.0800	0.0744	93	0.0800	0.0724	90	80	120	3.3	20			
Thallium	0.100	0.0873	87	0.100	0.0928	93	80	120	6.7	20			

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MATRIX 2 KR(S)

Work Order # 9709433

Digestion Batch # IMDG971002070000

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Analysis Batch # EM61E271003142701

Project Sample ID DOW-VP-LW-33-V20-MET

Date Collected 09/16/97

Instrument 61E2

Reporting Subset

Matrix W

Method ICP Analysis by SW6010A

Date Received 09/19/97

Column

Spikes Subset

Report As received

Test Code ICTSW5MM

Date Prepared 10/02/97

Analyst XBE

Specs Subset

% Moisture

Date Analyzed 10/03/97

Reviewer DLC

Spike Sol'n #		Vol. Added	Sample		Spiked Sample		Spiked Sample Dup			Recovery Specifi- cation Limits			RPD	
			Lab Sample ID	Lab Sample ID	Lab Sample ID									
			9709433-03A	9709433-04A MS	9709433-05A MSD									
			File # 61E21003-94	File # 61E21003-96	File # 61E21003-97									
Surrogate Sol'n		Vol. Added	Aliquot Mass/Vol	Aliquot Mass/Vol	Aliquot Mass/Vol									
			0.50 (mL)	0.50 (mL)	0.50 (mL)									
			Extract Mass/Vol	Extract Mass/Vol	Extract Mass/Vol									
			100 (mL)	100 (mL)	100 (mL)									
			Dil Fact. 1	Dil Fact. 1	Dil Fact. 1									
Analyte	Spike Sol'n Conc. mg/L	Measured Conc. mg/L	Spiked Conc. mg/L	Measured Conc. mg/L	Rec. %	Spiked Conc. mg/L	Measured Conc. mg/L	Rec. %	Low %	High %	Result %	Specifi- cation Limit %		
Antimony	.05	-5.14 B	10.0	4.18	93	10.0	3.73	89	80	120	4.4	20		
Arsenic	.4	3.13	80.0	79.0	95	80.0	79.1	95	80	120	0	20		
Barium	1	0 J	200	195	97	200	194	97	80	120	0	20		
Beryllium	1	-0.0320	200	201	101	200	201	101	80	120	0	20		
Cadmium	.08	-0.0260	16.0	14.3	90	16.0	14.3	90	80	120	0	20		
Chromium	.08	0.506 B	16.0	14.9	90	16.0	15.1	91	80	120	1.1	20		
Lead	.4	0.822 B	80.0	69.8	86	80.0	70.1	87	80	120	1.2	20		
Nickel	.1	-0.152	20.0	18.5	93	20.0	18.5	93	80	120	0	20		
Selenium	.1	4.91 B	20.0	26.1	106	20.0	25.9	105	80	120	0.95	20		
Silver	.08	-0.186	16.0	14.0	89	16.0	14.0	89	80	120	0	20		
Thallium	.1	-2.56	20.0	15.2	89	20.0	14.5	85	80	120	4.6	20		

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CONTINUING (OR DAILY) CALIBRATION
VERIFICATION

Work Order # 9709433

Page 18

Analysis Batch # EM61E271003142701

Initial Calibration # NA

Lab Sample ID CCV-1-S

Date Analyzed 10/03/97

Reporting Subset

Instrument 61E2

File # 61E21003-101

Spikes Subset

Analyst XBE

Method ICP Analysis by SW6010A

Specs Subset

Reviewer DLC

Test Code ICTSW5MM

Analyte	Measured Concentration mg/L	Reference Concentration mg/L	Recovery %	Recovery Specification Limits	
				Low %	High %
Silver	0.461	0.500	92	90	110

DO A 049161
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CONTINUING (OR DLY) CALIBRATION
VERIFICATION

Work Order # 9709433

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Analysis Batch # EM61E271003142701

Initial Calibration # NA

Lab Sample ID CCV-1-S

Date Analyzed 10/03/97

Reporting Subset

Instrument 61E2

File # 61E21001-71

Spikes Subset

Analyst XBE

Method ICP Analysis by SW6010A

Specs Subset

Reviewer DLC

Test Code ICTSW5MM

Analyte	Measured Concentration mg/L	Reference Concentration mg/L	Recovery %	Recovery Specification Limits	
				Low %	High %
Silver	0.476	0.500	95	90	110

DO A 049162
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CONTINUING (OR DAILY) CALIBRATION
VERIFICATION

Work Order # 9709433

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Analysis Batch # EM61E271003142701

Initial Calibration # NA

Lab Sample ID CCV-2-S

Date Analyzed 10/03/97

Reporting Subset

Instrument 61E2

File # 61E21003-100

Spikes Subset

Analyst XBE

Method ICP Analysis by SW6010A

Specs Subset

Reviewer DLC

Test Code ICTSW5MM

Analyte	Measured Concentration mg/L	Reference Concentration mg/L	Recovery %	Recovery Specification Limits	
				Low %	High %
Antimony	0.480	0.500	96	90	110
Arsenic	0.494	0.500	99	90	110
Barium	0.490	0.500	98	90	110
Beryllium	0.495	0.500	99	90	110
Cadmium	0.478	0.500	96	90	110
Chromium	0.479	0.500	96	90	110
Lead	0.474	0.500	95	90	110
Nickel	0.480	0.500	96	90	110
Selenium	0.488	0.500	98	90	110
Thallium	0.476	0.500	95	90	110

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CONTINUING (OR D. Y.) CALIBRATION
VERIFICATION

Work Order # 9709433

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Analysis Batch # EM61E271003142701

Initial Calibration # NA

Lab Sample ID CCV-2-S

Date Analyzed 10/03/97

Reporting Subset

Instrument: 61E2

File # 61E21003-70

Spikes Subset

Analyst XME

Method ICP Analysis by SW6010A

Specs Subset

Reviewer DLC

Test Code ICTSW5MM

Analyte	Measured Concentration mg/L	Reference Concentration mg/L	Recovery %	Recovery Specification Limits	
				Low %	High %
Antimony	0.497	0.500	99	90	110
Arsenic	0.507	0.500	101	90	110
Barium	0.496	0.500	99	90	110
Beryllium	0.511	0.500	102	90	110
Cadmium	0.501	0.500	100	90	110
Chromium	0.495	0.500	99	90	110
Lead	0.493	0.500	98	90	110
Nickel	0.496	0.500	99	90	110
Selenium	0.496	0.500	99	90	110
Thallium	0.490	0.500	98	90	110

DO A 049164
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**CONTINUING (OR DAILY) CALIBRATION
VERIFICATION**

Work Order # 9709433Page 22Analysis Batch # EM61E271003142701Initial Calibration # NALab Sample ID STD 2-SDate Analyzed 10/03/97Reporting Subset Instrument 61E2File # 61E21003-67Spikes Subset Analyst XBEMethod ICP Analysis by SW6010ASpecs Subset Reviewer DLCTest Code ICTSW5MM

Analyte	Measured Concentration mg/L	Reference Concentration mg/L	Recovery %	Recovery Specification Limits	
				Low %	High %
Antimony	1.01	1.00	101	95	105
Arsenic	1.01	1.00	101	95	105
Barium	0.995	1.00	100	95	105
Beryllium	1.01	1.00	101	95	105
Cadmium	1.01	1.00	101	95	105
Chromium	1.01	1.00	101	95	105
Lead	1.01	1.00	101	95	105
Nickel	1.01	1.00	101	95	105
Selenium	0.998	1.00	100	95	105
Silver	1.000	1.00	100	95	105
Thallium	1.01	1.00	101	95	105

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CONTINUING (OR DAILY) CALIBRATION
VERIFICATION

Work Order # 9709433

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Analysis Batch # EM61E271003142701

Initial Calibration # NA

Lab Sample ID CICSAB-S

Date Analyzed 10/03/97

Reporting Subset

Instrument 61E2

File # 61E21003-99

Spikes Subset

Analyst XBE

Method ICP Analysis by SW6010A

Specs Subset

Reviewer DLC

Test Code ICTSW5MM

Analyte	Measured Concentration mg/L	Reference Concentration mg/L	Recovery %	Recovery Specification Limits	
				Low %	High %
Barium	0.0512	0.0500	102	80	120
Beryllium	0.0479	0.0500	96	80	120
Cadmium	0.0858	0.100	86	80	120
Chromium	0.0470	0.0500	94	80	120
Lead	0.0798	0.100	80	80	120
Nickel	0.0889	0.100	89	80	120
Silver	0.0980	0.100	98	80	120

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CONTINUING (OR DAILY) CALIBRATION
VERIFICATION

Work Order # 9709433

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Analysis Batch # EM61E271003142701

Initial Calibration # NA

Lab Sample ID CICSA8-S

Date Analyzed 10/03/97

Reporting Subset

Instrument 61E2

File # 61E21003-69

Spikes Subset

Analyst XBE

Method ICP Analysis by SW6010A

Specs Subset

Reviewer DLC

Test Code ICTSW5MM

Analyte	Measured Concentration mg/L	Reference Concentration mg/L	Recovery %	Recovery Specification Limits	
				Low %	High %
Barium	0.0518	0.0500	104	80	120
Beryllium	0.0496	0.0500	99	80	120
Cadmium	0.0898	0.100	90	80	120
Chromium	0.0475	0.0500	95	80	120
Lead	0.0824	0.100	82	80	120
Nickel	0.0924	0.100	92	80	120
Silver	0.100	0.100	100	80	120

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ANALYTICAL I K R (S)

Digestion Batch # IMDG971002070000Analysis Batch # EM61E271003142701Work Order # 9709433Page 25Project Sample ID DOW-VP-LW-33-V20-METDate Collected 09/16/97Instrument 61E2Reporting Subset Matrix WMethod ICP Analysis by SW6010ADate Received 09/19/97Column Spikes Subset Report As receivedTest Code ICTSW5MMDate Prepared 10/02/97Analyst XBESpecs Subset % Moisture Date Analyzed 10/03/97Reviewer DLC

Spike Sol'n # _____ _____ _____ Surrogate Sol'n		Vol. Added _____ _____ _____ Vol. Added		Sample Lab Sample ID 9709433-03A File # 61E21003-94		Spiked Sample Lab Sample ID 9709433-03A File # 61E21003-95		Spiked Sample Dup. Lab Sample ID _____ File # _____		Aliquot Mass/Vol 0.50 (mL) Extract Mass/Vol 100 (mL) Dil Fact. 1		Aliquot Mass/Vol 0.50 (mL) Extract Mass/Vol 100 (mL) Dil Fact. 1.0989		Aliquot Mass/Vol _____ Extract Mass/Vol _____ Dil Fact. _____		Recovery Specifi- cation Limits		RPD							
Analyte		Spike Sol'n Conc. mg/L		Measured Conc. mg/L		Spiked Conc. mg/L		Measured Conc. mg/L		Rec. %		Spiked Conc.		Measured Conc.		Rec. %		Low %		High %		Result %		Specifi- cation Limit %	
Antimony		.05		-5.14 B		11.0		4.54		88								75		125					
Arsenic		.4		3.13		87.9		89.5		98								75		125					
Barium		1		0 J		220		223		101								75		125					
Beryllium		1		-0.0320		220		233		106								75		125					
Cadmium		.08		-0.0260		17.6		16.0		91								75		125					
Chromium		.08		0.506 B		17.6		17.2		95								75		125					
Lead		.4		0.822 B		87.9		78.9		89								75		125					
Nickel		.1		-0.152		22.0		20.7		95								75		125					
Selenium		.1		4.91 B		22.0		28.9		109								75		125					
Silver		.08		-0.186		17.6		15.9		92								75		125					
Thallium		.1		-2.56		22.0		16.3		86								75		125					

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S E R I A L D I L U T I O N C H E C K

Work Order # 9709433

Digestion Batch # IMDG971002070000Page 26Analysis Batch # EM61E271003142701Project Sample ID DOW-VP-LW-33-V20-METDate Prepared 10/02/97Instrument 61E2Reporting Subset Matrix MMethod ICP Analysis by SW6010ADate Analyzed 10/03/97Analyst XBESpikes Subset Report As receivedTest Code ICTSW5MMReviewer DLCSpecs Subset

	Sample Result Lab Sample ID <u>9709433-03A</u> Dilution Factor <u>1</u>		Diluted Sample Result Lab Sample ID <u>9709433-03A</u> Dilution Factor <u>5</u>		% Difference	
Analyte	Measured Concentration mg/L	Detection Limit mg/L	Measured Concentration mg/L	Detection Limit mg/L	Result	Specification Limit %
Antimony	ND	0.828	ND	4.14	NC	10
Arsenic	3.13	0.429	1.73 J	2.15	45 Q	10
Barium	0 J	0.0338	ND	0.169	NC	10
Beryllium	ND	0.0388	ND	0.194	NC	10
Cadmium	ND	0.0342	ND	0.171	NC	10
Chromium	0.506 B	0.159	ND	0.794	NC	10
Lead	0.822 B	0.267	0.830 J	1.33	0.97	10
Nickel	ND	0.115	ND	0.573	NC	10
Selenium	4.91 B	0.442	6.31	2.21	28 Q	10
Silver	ND	0.113	ND	0.566	NC	10
Thallium	ND	0.425	ND	2.12	NC	10

DO A 049169
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ANALYTICAL O T O C O L S U M M A R Y
C O M M E N T S / N A R R A T I V E

Work Order 09433
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Method ICP Analysis by SW6010A Specification#

Lab Sample ID	Project Sample			
File ID	ID/Description	Analyte	Flag	Comment/Narrative
				Corrective Action

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