Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MFA186

Date 7-1-85

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SDW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 4385
QC REPORT NO. 5924

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	6390	P	13.	MAGNESIUM	4920	P
2.	ANTIMONY	26U	P R	14.	MANGANESE	229	P
3.	ARSENIC	5.7U	F	15.	MERCURY	0.057U	CV
4.	BARIUM	118	P	16.	NICKEL	[21]	P
5.	BERYLLIUM	[0.58]	P	17.	POTASSIUM	[1330]	P
6.	CADMIUM	2.8U	P	18.	SELENIUM	2.8U	F R
7.	CALCIUM	12400	P *	19.	SILVER	2.3U	P
8.	CHROMIUM	17	P	20.	SODIUM	[2290]	P
9.	COBALT	[8.9]	P	21.	THALLIUM	2.3U	F
10.	COPPER	18	P	22.	TIN	20U	P
11.	IRON	12100	P	23.	VANADIUM	33	P
12.	LEAD	54	P	24.	ZINC	81	P

Cyanide 0.57U AS Percent Solids (%) 88

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

SUPERFUND FILE

Lab Manager OCT 22 1992

Total Petroleum Corp (Vickers Petroleum)
OKD057705972

REORGANIZED

9532447

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MFA107

Date 7-1-65

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 4395
QC REPORT NO. 5924

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	7760	P	13.	MAGNESIUM	[2520]	P
2.	ANTIMONY	28U	P R	14.	MANGANESE	164	P
3.	ARSENIC	[4.3]	F	15.	MERCURY	0.35	CV
4.	BARIUM	[45]	P	16.	NICKEL	[14]	P
5.	BERYLLIUM	[0.35]	P	17.	POTASSIUM	[1790]	P
6.	CADMIUM	3.1U	P	18.	SELENIUM	3.1U	F R
7.	CALCIUM	59000	P *	19.	SILVER	2.5U	P
8.	CHROMIUM	136	P	20.	SODIUM	[2390]	P
9.	COBALT	4.3U	P	21.	THALLIUM	2.5U	F
10.	COPPER	20	P	22.	TIN	22U	P
11.	IRON	11500	P	23.	VANADIUM	[29]	P
12.	LEAD	17	F	24.	ZINC	234	P

Cyanide 0.62U AS Percent Solids (%) 81

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager JM

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MFA188

Date 7-1-85

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 4385
QC REPORT NO. 5921

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	8600	P	13.	MAGNESIUM	3380	P
2.	ANTIMONY	29U	P R	14.	MANGANESE	269	F
3.	ARSENIC	[3.5]	F	15.	MERCURY	0.063U	CV
4.	BARIUM	[95]	P	16.	NICKEL	[24]	P
5.	BERYLLIUM	[0.83]	P	17.	POTASSIUM	[2870]	P
6.	CADMIUM	3.2U	P	18.	SELENIUM	3.2U	F R
7.	CALCIUM	14000	P *	19.	SILVER	2.5U	P
8.	CHROMIUM	19	P	20.	SODIUM	[1910]	P
9.	COBALT	[11]	P	21.	THALLIUM	2.5U	F
10.	COPPER	17	P	22.	TIN	23U	P
11.	IRON	20300	P	23.	VANADIUM	[27]	P
12.	LEAD	16	F	24.	ZINC	48	P

Cyanide 0.63U AS Percent Solids (%) 79

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager JM

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MTA189

Date 7-1-85

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 704
LAB SAMPLE ID. NO. -

CASE NO. 4385
QC REPORT NO. 5924

Elements Identified and Measured

Concentration: Low X Medium ___
Matrix: Water ___ Soil X Sludge ___ Other ___

mg/kg dry weight

1.	ALUMINUM	5210	P	13.	MAGNESIUM	3830	P
2.	ANTIMONY	28U	P R	14.	MANGANESE	331	P
3.	ARSENIC	6.1U	F	15.	MERCURY	0.061U	CV
4.	BARIUM	[73]	P	16.	NICKEL	[13]	P
5.	BERYLLIUM	[0.44]	P	17.	POTASSIUM	[1160]	P
6.	CADMIUM	3U	P	18.	SELENIUM	3U	F R
7.	CALCIUM	54900	P *	19.	SILVER	2.4U	P
8.	CHROMIUM	28	P	20.	SODIUM	[2120]	P
9.	COBALT	[8.4]	P	21.	THALLIUM	2.4U	F
10.	COPPER	19	P	22.	TIN	22U	P
11.	IRON	21400	P	23.	VANADIUM	[26]	P
12.	LEAD	27	F	24.	ZINC	110	P

Cyanide 0.61U AS Percent Solids (%) 82

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager JM

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MFA190

Date 7-1-85

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 4385

QC REPORT NO. 5924

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	13100	P	13.	MAGNESIUM	4780	P
2.	ANTIMONY	30U	P R	14.	MANGANESE	393	P
3.	ARSENIC	6.5U	F	15.	MERCURY	0.065U	CV
4.	BARIUM	138	P	16.	NICKEL	34	P
5.	BERYLLIUM	[0.9]	P	17.	POTASSIUM	[3170]	P
6.	CADMIUM	3.2U	P	18.	SELENIUM	1.3U	F R
7.	CALCIUM	25800	P *	19.	SILVER	2.6U	P
8.	CHROMIUM	25	P	20.	SODIUM	[2290]	P
9.	COBALT	[13]	P	21.	THALLIUM	2.6U	F
10.	COPPER	24	P	22.	TIN	23U	P
11.	IRON	22700	P	23.	VANADIUM	61	P
12.	LEAD	46	P	24.	ZINC	75	P

Cyanide 0.65U AS Percent Solids (%) 77

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Comments:

Lab Manager JM

Form I

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Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MFA191

Date 7-1-85

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 4385
QC REPORT NO. 5924

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	12100	P	13.	MAGNESIUM	4040	P
2.	ANTIMONY	32U	P R	14.	MANGANESE	423	P
3.	ARSENIC	6.9U	F	15.	MERCURY	0.069U	CV
4.	BARIUM	143	P	16.	NICKEL	30	P
5.	BERYLLIUM	[1.1]	P	17.	POTASSIUM	3780	P
6.	CADMIUM	3.5U	P	18.	SELENIUM	1.4U	F R
7.	CALCIUM	15600	P *	19.	SILVER	2.8U	P
8.	CHROMIUM	27	P	20.	SODIUM	[3050]	P
9.	COBALT	[15]	P	21.	THALLIUM	2.8U	F
10.	COPPER	22	P	22.	TIN	25U	P
11.	IRON	26000	P	23.	VANADIUM	[34]	P
12.	LEAD	50	F	24.	ZINC	76	P

Cyanide 0.69U AS Percent Solids (%) 72

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager Jm

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MFA192

Date 7-1-85

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 4385
QC REPORT NO. 5924

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	12500	F	13.	MAGNESIUM	3470	P
2.	ANTIMONY	30U	P R	14.	MANGANESE	390	P
3.	ARSENIC	6.5U	F	15.	MERCURY	0.065U	CV
4.	BARIUM	[82]	P	16.	NICKEL	32	P
5.	BERYLLIUM	[1]	P	17.	POTASSIUM	[2690]	P
6.	CADMIUM	3.2U	P	18.	SELENIUM	1.3U	F R
7.	CALCIUM	4400	P *	19.	SILVER	2.6U	P
8.	CHROMIUM	26	P	20.	SODIUM	[2990]	P
9.	COBALT	[16]	P	21.	THALLIUM	2.6U	F
10.	COPPER	23	P	22.	TIN	23U	P
11.	IRON	23100	P	23.	VANADIUM	[28]	P
12.	LEAD	18	F	24.	ZINC	73	P

Cyanide 0.65U AS Percent Solids (%) 77

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager JM

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MFA193

Date 7-1-85

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 4385
QC REPORT NO. 5924

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	16800	P	13.	MAGNESIUM	[2850]	P
2.	ANTIMONY	33U	P R	14.	MANGANESE	281	P
3.	ARSENIC	2.9U	F	15.	MERCURY	0.072U	CV
4.	BARIUM	185	P	16.	NICKEL	[22]	P
5.	BERYLLIUM	[1.3]	P	17.	POTASSIUM	[2630]	P
6.	CADMIUM	3.6U	P	18.	SELENIUM	1.4U	F R
7.	CALCIUM	4970	P *	19.	SILVER	2.9U	P
8.	CHROMIUM	24	P	20.	SODIUM	[2850]	P
9.	COBALT	[11]	P	21.	THALLIUM	2.9U	F
10.	COPPER	[14]	P	22.	TIN	26U	P
11.	IRON	20000	P	23.	VANADIUM	[34]	P
12.	LEAD	12	F	24.	ZINC	54	P

Cyanide 0.72U AS Percent Solids (%) 69

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager JM

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
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703/557-2490 FTS: 8-557-2490

EPA Sample No.
MFA194

Date 7-1-85

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 4385
QC REPORT NO. 5924

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	18400	P	13.	MAGNESIUM	[3330]	P
2.	ANTIMONY	33U	P R	14.	MANGANESE	605	P
3.	ARSENIC	[7]	F	15.	MERCURY	0.071U	CV
4.	BARIUM	167	P	16.	NICKEL	30	P
5.	BERYLLIUM	[1.4]	P	17.	POTASSIUM	4730	P
6.	CADMIUM	3.6U	P	18.	SELENIUM	3.6U	F R
7.	CALCIUM	8590	P *	19.	SILVER	2.9U	P
8.	CHROMIUM	31	P	20.	SODIUM	[3530]	P
9.	COBALT	[18]	P	21.	THALLIUM	2.9U	F
10.	COPPER	20	P	22.	TIN	26U	P
11.	IRON	24500	P	23.	VANADIUM	43	P
12.	LEAD	41	P	24.	ZINC	79	P

Cyanide 0.71U AS Percent Solids (%) 70

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager JM

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MFA195

Date 7-1-85

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 4385

QC REPORT NO. 5924

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	6150	P	13.	MAGNESIUM	[1320]	P
2.	ANTIMONY	28U	P R	14.	MANGANESE	929	P
3.	ARSENIC	11	F	15.	MERCURY	0.061U	CV
4.	BARIUM	122	P	16.	NICKEL	[21]	P
5.	BERYLLIUM	[0.89]	P	17.	POTASSIUM	[1380]	P
6.	CADMIUM	3U	P	18.	SELENIUM	3U	F R
7.	CALCIUM	6070	P *	19.	SILVER	2.4U	P
8.	CHROMIUM	26	P	20.	SODIUM	[2410]	P
9.	COBALT	[14]	P	21.	THALLIUM	2.4U	F
10.	COPPER	[15]	P	22.	TIN	22U	P
11.	IRON	24000	P	23.	VANADIUM	32	P
12.	LEAD	20	F	24.	ZINC	49	P

Cyanide 0.61U AS Percent Solids (%) 82

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager JM

Form II

Q.C. Report No. 5924

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME ROCKY MOUNTAIN ANALYTICAL

CASE NO. 4385

SOW NO. 784

DATE 7-1-85

UNITS ug/L

Compound	Initial Calib.[1,5]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. ALUMINUM	500	498	100	1000	945	95	951	95	P
2. ANTIMONY	500	548	110	1000	1050	105	1060	106	F
3. ARSENIC	43	42	98	~~ERA~~ 50	52	104	52	104	F
4. BARIUM	500	491	98	1000	985	98	993	99	P
5. BERYLLIUM	100	95	95	1000	928	93	926	93	P
6. CADMIUM	100	101	101	1000	951	95	959	96	P
7. CALCIUM	100000	104000	104	100000	103000	103	103000	103	P
8. CHROMIUM	100	101	101	1000	931	93	935	94	P
9. COBALT	100	105	105	1000	991	99	995	100	P
10. COPPER	100	97	97	1000	966	97	968	97	P
11. IRON	500	469	94	1000	938	94	938	94	P
12. LEAD	500	506	101	1000	929	93	933	93	P
13. MAGNESIUM	100000	102000	102	100000	103000	103	103000	103	P
14. MANGANESE	100	102	102	1000	936	94	941	94	P
15. MERCURY	1.00	0.98	98	1.00	0.98	98	1.0	100	CV
16. NICKEL	100	103	103	1000	942	94	944	94	P
17. POTASSIUM	100000	95500	95	100000	107000	107	106000	106	P
18. SELENIUM	58	58	100	20	19	95	22	110	F
19. SILVER	100	103	103	1000	991	99	997	100	P
20. SODIUM	100000	106000	106	100000	109000	109	109000	109	P
21. THALLIUM	43	40	93	20	20	100	20	100	F
22. TIN	500	478	96	1000	971	97	988	99	P
23. VANADIUM	100	105	105	1000	963	97	972	97	P
24. ZINC	100	96	96	1000	952	95	954	95	P
Other: Lead	186	175	94	20	18	90	19	95	F
CYANIDE	76	75	99	[6] 100/76	104	104	75	99	AS

[1] Initial Calibration Source ERA 100 [2] Continuing Calibration Source MCB

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace
CV - Cold Vapor AS - Automated Spectrophotometric

[5] Furnace Initial Calibration Source ERA 9902

[6] First CCV for CN has a true value of 100 ppb. The second CCV for CN has a true value of 76 ppb.

FORM II

Q.C. Report No. 5924

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME ROCKY MOUNTAIN ANALYTICAL

CASE NO. 4385

SOW NO. 784

DATE 7-1-85

UNITS ug/L

Compound	Initial Calib.[1,5]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. ALUMINUM	500			1000					P
2. ANTIMONY	500			1000					P
3. ARSENIC				50	50	100			F
4. BARIUM	500			1000					P
5. BERYLLIUM	100			1000					P
6. CADMIUM	100			1000					P
7. CALCIUM	100000			100000					P
8. CHROMIUM	100			1000					P
9. COBALT	100			1000					P
10. COPPER	100			1000					P
11. IRON	500			1000					P
12. LEAD									
13. MAGNESIUM	100000			100000					P
14. MANGANESE	100			1000					P
15. MERCURY	1			1					CV
16. NICKEL	100			1000					P
17. POTASSIUM	100000			100000					P
18. SELENIUM	58			20	21	105			F
19. SILVER	100			1000					P
20. SODIUM	100000			100000					P
21. THALLIUM	43			20	20	100			F
22. TIN	500			1000					P
23. VANADIUM	100			1000					P
24. ZINC	100			1000					P
Other: Lead				20	18	90	20	100	F
CYANIDE									AS

[1] Initial Calibration Source ERA 100 [2] Continuing Calibration Source MCB

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace
CV - Cold Vapor AS - Automated Spectrophotometric

[5] Furnace Initial Calibration Source ERA 9902

Form III

Q.C. Report No. 5924

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL CASE NO. 4385

DATE 7-1-85 UNITS ug/L

Matrix SOIL

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank 1	2
Metals:							
1. ALUMINUM	23U	23U	23U			23U	
2. ANTIMONY	46U	46U	46U			46U	
3. ARSENIC	4u	4u	4u	4u		4u	
4. BARIUM	12U	12U	12U			12U	
5. BERYLLIUM	0.5U	0.5U	0.5U			0.5U	
6. CADMIUM	5U	5U	5U			5U	
7. CALCIUM	290U	290U	290U			290U	
8. CHROMIUM	4U	4U	4U			4U	
9. COBALT	7U	7U	7U			7U	
10. COPPER	4U	4U	4U			4U	
11. IRON	11U	[23]	11U			[30]	
P 12. LEAD	23U	23U	23U			23U	
13. MAGNESIUM	330U	330U	330U			330U	
14. MANGANESE	3U	3U	3U			3U	
15. MERCURY	0.1u	0.1u	0.1u			0.1u	
16. NICKEL	5U	5U	5U			5U	
17. POTASSIUM	470U	470U	470U			470U	
18. SELENIUM	2u	2u	2u	2u		2u	
19. SILVER	4U	4U	4U			4U	
20. SODIUM	850U	[2220]	[2370]			[3800]	
21. THALLIUM	4u	4u	4u	4u		4u	
22. TIN	36U	36U	36U			36U	
23. VANADIUM	4U	4U	4U			4U	
24. ZINC	2U	2U	2U			[6.6]	
Other: F Lead	2u	2u	2u	2u	2u	2u	
Cyanide							

Form IV

Q.C. Report No. 5924

ICP INTERFERENCE CHECK SAMPLE

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 7-1-85

CASE NO 4385
Check Sample I.D. INT CHK
Check Sample Source BAKER
Units mg/L

Compound	Control Limits[1] Mean	Std. Dev.	True[2]	Initial Observed	%R	Final Observed	%R
Metals:							
1. ALUMINUM	401	1.6		398	99	396	99
2. ANTIMONY	NR						
3. ARSENIC	NR						
4. BARIUM	0.48	0.002		0.45	94	0.44	92
5. BERYLLIUM	0.45	0.002		0.43	96	0.42	93
6. CADMIUM	0.95	0.009		0.93	98	0.92	97
7. CALCIUM	434	1.9		453	104	446	103
8. CHROMIUM	0.72	0.003		0.68	94	0.67	93
9. COBALT	0.57	0.003		0.54	95	0.53	93
10. COPPER	0.55	0.005		0.58	105	0.58	105
11. IRON	431	1.8		398	92	395	92
12. LEAD	NR						
13. MAGNESIUM	444	2.0		442	100	436	98
14. MANGANESE	0.62	0.003		0.58	94	0.57	92
15. MERCURY	NR						
16. NICKEL	0.90	0.004		0.89	99	0.88	98
17. POTASSIUM	NR						
18. SELENIUM	NR						
19. SILVER	NR						
20. SODIUM	NR						
21. THALLIUM	NR						
22. TIN	NR						
23. VANADIUM	0.52	0.003		0.52	100	0.51	98
24. ZINC	0.93	0.004		0.93	100	0.93	100
Other:							

[1] Mean value based on n = 10.

[2] True value of EPA ICP Interference Check Sample or contractor standard.

Form V

Q.C. Report No. 5924

SPIKE SAMPLE RECOVERY

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 7-1-85

CASE NO. 4385
EPA Sample No. MFA186
Lab Sample ID No. -
Units mg/kg

MATRIX SOIL

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	%R	
Metals:						
1. ALUMINUM	75-125	5520	5630	NR		
2. ANTIMONY	75-125	80	23U	250	32	R
3. ARSENIC	75-125	23	5U	20	115	
4. BARIUM	75-125	1240	104	1000	114	
5. BERYLLIUM	75-125	26	[0.51]	25	102	
6. CADMIUM	75-125	31	2.5U	25	124	
7. CALCIUM	75-125	6950	10900	NR		
8. CHROMIUM	75-125	118	15	100	103	
9. COBALT	75-125	266	[7.9]	250	103	
10. COPPER	75-125	144	16	125	102	
11. IRON	75-125	10100	10600	NR		
12. LEAD	75-125	304	47	250	103	
13. MAGNESIUM	75-125	[1880]	4330	NR		
14. MANGANESE	75-125	436	202	250	94	
15. MERCURY	75-125	0.54	0.05U	0.5	108	
16. NICKEL	75-125	280	[18]	250	105	
17. POTASSIUM	75-125	[1190]	[1170]	NR		
18. SELENIUM	75-125	2.9	2.5U	5	58	R
19. SILVER	75-125	25	2U	25	100	
20. SODIUM	75-125	[1690]	[2020]	NR		
21. THALLIUM	75-125	23	2U	25	92	
22. TIN	75-125	216	18U	250	86	
23. VANADIUM	75-125	288	29	250	104	
24. ZINC	75-125	340	72	250	107	
Other:						
Cyanide	75-125	5.8	0.5U	~~50~~ 5.0 SEA	~~12~~ 116 SEA	

* %R = [(SSR - SR)/SA] x 100

"R"- out of control

Comments:

Form VI

Q.C. Report No. 5924

DUPLICATES

LAB NAME ROCKY MOUNTAIN ANALYTICAL

CASE NO. 4385
EPA Sample No. MFA186D
Lab Sample ID No. -
Units mg/kg

DATE 7-1-85

Matrix SOIL

Compound	Control Limit[1]	Sample(S)	Duplicate(D)	RPD[2]
Metals:				
1. ALUMINUM		5630	6590	16
2. ANTIMONY		23U	23U	NC
3. ARSENIC		5U	[4]	NC
4. BARIUM		104	126	19
5. BERYLLIUM		[0.51]	[0.58]	NC
6. CADMIUM		2.5U	2.5U	NC
7. CALCIUM		10900	6690	48 *
8. CHROMIUM		15	15	0
9. COBALT		[7.9]	[8.6]	NC
10. COPPER		16	17	6.1
11. IRON		10600	11900	12
12. LEAD		47	49	4.2
13. MAGNESIUM		4330	[1980]	NC
14. MANGANESE		202	204	0.99
15. MERCURY		0.05U	0.05U	NC
16. NICKEL		[18]	[19]	NC
17. POTASSIUM		[1170]	[1360]	NC
18. SELENIUM		2.5U	2.5U	NC
19. SILVER		2U	2U	NC
20. SODIUM		[2020]	[1870]	NC
21. THALLIUM		2U	2U	NC
22. TIN		18U	18U	NC
23. VANADIUM		29	32	9.8
24. ZINC		72	75	4.1
Other:				
Cyanide		0.5U	0.82	NC

* Out of Control

[1] To be added at a later date.

[2] RPD = [|S-D|/((S+D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

Form VII

Q.C. Report No. 5924
INSTRUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLE

LAB NAME ROCKY MOUNTAIN ANALYTICAL
DATE 7-1-85

CASE NO 4385
UNITS ug/L

Compound	Required Detection Limits (CRDL)-ug/l	Instrument Detection Limits (IDL)-ug/l ICP/AA	Furnace	Lab Control Sample True	Found	%R
Metals:						
1. ALUMINUM	200	23		500	484	97
2. ANTIMONY	60	46		500	546	109
3. ARSENIC	10	47	4	43	40	93
4. BARIUM	200	12		500	478	96
5. BERYLLIUM	5	0.5		100	93	93
6. CADMIUM	5	5		100	102	102
7. CALCIUM	5000	290		100000	102000	102
8. CHROMIUM	10	4		100	97	97
9. COBALT	50	7		100	101	101
10. COPPER	25	4		100	96	96
11. IRON	100	11		500	454	91
P 12. LEAD	5	23	2	500	474	95
13. MAGNESIUM	5000	330		100000	102000	102
14. MANGANESE	15	3		100	98	98
15. MERCURY	0.2		0.1	1.0	0.98	98
16. NICKEL	40	5		100	97	97
17. POTASSIUM	5000	470		100000	105000	105
18. SELENIUM	5		2	58	64	110
19. SILVER	10	4		100	101	101
20. SODIUM	5000	880		100000	108000	108
21. THALLIUM	10		4	43	41	95
22. TIN	40	36		500	461	92
23. VANADIUM	50	4		100	100	100
24. ZINC	20	2		100	95	95
F Other: 5% Lead				186	195	105
Cyanide	10		10AS	76	74	97

CV - Cold Vapor
AS - Automated Spectrophotometric

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MFA196

Date 6-27-85

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 4385
QC REPORT NO. 5925

Elements Identified and Measured

Concentration: Low X Medium
Matrix: Water X Soil Sludge Other

UG/L

1.	ALUMINUM	23U	P	13.	MAGNESIUM	25600	P	
2.	ANTIMONY	46U	P	14.	MANGANESE	107	P	
3.	ARSENIC	4U	F	15.	MERCURY	0.1U	CV	
4.	BARIUM	[160]	P	16.	NICKEL	[5.5]	P	
5.	BERYLLIUM	0.5U	P	17.	POTASSIUM	[3030]	P	
6.	CADMIUM	5U	P	18.	SELENIUM	2U	F	R
7.	CALCIUM	56200	P	19.	SILVER	4U	P	
8.	CHROMIUM	4U	P	20.	SODIUM	237000	P	
9.	COBALT	7U	P	21.	THALLIUM	10U	F	
10.	COPPER	110	P	22.	TIN	36U	P	R
11.	IRON	15600	P	23.	VANADIUM	4U	P	
12.	LEAD	51	P	24.	ZINC	739	P	
Cyanide		10U	AS	Percent Solids (%)				

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Total Petroleum Corp (Vickers Petroleum)
OKD057705972

SUPERFUND FILE

Lab Manager

OCT 22 1992

REORGANIZED

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MFA197

Date 6-27-85

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 4385
QC REPORT NO. 5925

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water X Soil ____ Sludge ____ Other ____

UG/L

1.	ALUMINUM	[38]	P	13.	MAGNESIUM	330U	P
2.	ANTIMONY	46U	P	14.	MANGANESE	3U	P
3.	ARSENIC	4U	F	15.	MERCURY	0.14	CV
4.	BARIUM	12U	P	16.	NICKEL	5U	P
5.	BERYLLIUM	0.5U	P	17.	POTASSIUM	470U	P
6.	CADMIUM	5U	P	18.	SELENIUM	2U	F R
7.	CALCIUM	290U	P	19.	SILVER	4U	P
8.	CHROMIUM	4U	P	20.	SODIUM	[1260]	P
9.	COBALT	7U	P	21.	THALLIUM	4U	F
10.	COPPER	4U	P	22.	TIN	36U	P R
11.	IRON	[65]	P	23.	VANADIUM	4U	P
12.	LEAD	2U	F	24.	ZINC	[9.2]	P
Cyanide		10U	AS	Percent Solids (%)			

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager JM

Form II

Q.C. Report No. 5925

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME ROCKY MOUNTAIN ANALYTICAL

CASE NO. 4385

SOW NO. 784

DATE 6-27-85

UNITS ug/L

Compound	Initial Calib.[1,5]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. ALUMINUM	500	482	96	1000	929	93			P
2. ANTIMONY	500	550	110	1000	1060	106			P
3. ARSENIC	43	39	91	20	21	105			F
4. BARIUM	500	482	96	1000	994	99			P
5. BERYLLIUM	100	94	94	1000	930	93			P
6. CADMIUM	100	100	100	1000	963	96			P
7. CALCIUM	100000	102000	102	100000	103000	103			P
8. CHROMIUM	100	98	98	1000	939	94			P
9. COBALT	100	102	102	1000	999	100			P
10. COPPER	100	98	98	1000	960	96			P
11. IRON	500	461	92	1000	934	93			P
12. LEAD	500	470	94	1000	919	92			P
13. MAGNESIUM	100000	102000	102	100000	102000	102			P
14. MANGANESE	100	98	98	1000	944	94			P
15. MERCURY	1.00	0.96	96	1.00	0.96	96			CV
16. NICKEL	100	101	101	1000	946	95			P
17. POTASSIUM	100000	105000	105	100000	102000	102			P
18. SELENIUM	58	62	107	20	22	110			F
19. SILVER	100	100	100	1000	996	100			P
20. SODIUM	100000	107000	107	100000	106000	106			P
21. THALLIUM	43	41	95	20	20	100			F
22. TIN	500	467	93	1000	983	98			P
23. VANADIUM	100	101	101	1000	974	97			P
24. ZINC	100	95	95	1000	956	96			P
Other: LEAD	186	170	91	20	20	100			F
CYANIDE	76	75	99	P3 ~~100~~ 76/100	75	99	96	96	AS

[1] Initial Calibration Source ERA 100 [2] Continuing Calibration Source MCB

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace
CV - Cold Vapor AS - Automated Spectrophotometric

[5] Furnace Initial Calibration Source ERA 9902

Form III

Q.C. Report No. 5925

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL CASE NO. 4385

DATE 6-27-85 UNITS ug/L

Matrix WATER

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank 1	2
Metals:							
1. ALUMINUM	23U	23U				23U	
2. ANTIMONY	46U	46U				46U	
3. ARSENIC	4U	4U				4U	
4. BARIUM	12U	12U				12U	
5. BERYLLIUM	0.5U	0.5U				0.5U	
6. CADMIUM	5U	5U				5U	
7. CALCIUM	290U	290U				290U	
8. CHROMIUM	4U	4U				4U	
9. COBALT	7U	7U				7U	
10. COPPER	4U	4U				4U	
11. IRON	11U	11U				[49]	
12. LEAD	23U	23U				23U	
13. MAGNESIUM	330U	330U				330U	
14. MANGANESE	3U	3U				3U	
15. MERCURY	0.14	0.14				0.14	
16. NICKEL	5U	5U				[7.2]	
17. POTASSIUM	470U	470U				470U	
18. SELENIUM	2U	2U				2U	
19. SILVER	4U	4U				4U	
20. SODIUM	880U	880U				[1300]	
21. THALLIUM	4U	4U				4U	
22. TIN	36U	36U				36U	
23. VANADIUM	4U	4U				4U	
24. ZINC	2U	2U				[8.3]	
F Other: LEAD	2U	2U				2U	
Cyanide	10U	10U	10U			10U	

Form IV

Q.C. Report No. 5925

ICP INTERFERENCE CHECK SAMPLE

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 6-27-85

CASE NO 4385
Check Sample I.D. INT CHK
Check Sample Source BAKER
Units mg/L

Compound	Control Limits[1] Mean	Std. Dev.	True[2]	Initial Observed	%R	Final Observed	%R
Metals:							
1. ALUMINUM	401	1.6		398	99	396	99
2. ANTIMONY	NR						
3. ARSENIC	NR						
4. BARIUM	0.48	0.002		0.45	94	0.44	92
5. BERYLLIUM	0.45	0.002		0.43	96	0.42	93
6. CADMIUM	0.95	0.009		0.93	98	0.92	97
7. CALCIUM	434	1.9		453	104	446	103
8. CHROMIUM	0.72	0.003		0.68	94	0.67	93
9. COBALT	0.57	0.003		0.54	95	0.53	93
10. COPPER	0.55	0.005		0.58	105	0.58	105
11. IRON	431	1.8		398	92	395	92
12. LEAD	NR						
13. MAGNESIUM	444	2.0		442	100	436	98
14. MANGANESE	0.62	0.003		0.58	94	0.57	92
15. MERCURY	NR						
16. NICKEL	0.90	0.004		0.89	99	0.88	98
17. POTASSIUM	NR						
18. SELENIUM	NR						
19. SILVER	NR						
20. SODIUM	NR						
21. THALLIUM	NR						
22. TIN	NR						
23. VANADIUM	0.52	0.003		0.52	100	0.51	98
24. ZINC	0.93	0.004		0.93	100	0.93	100
Other:							

[1] Mean value based on n = 10.

[2] True value of EPA ICP Interference Check Sample or contractor standard.

Form V

Q.C. Report No. 5925

SPIKE SAMPLE RECOVERY

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 6-27-85

CASE NO. 4385
EPA Sample No. MFA197
Lab Sample ID No. -
Units UG/L

MATRIX WATER

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	%R	
Metals:						
1. ALUMINUM	75-125	1870	[38]	2000	92	
2. ANTIMONY	75-125	521	46U	500	104	
3. ARSENIC	75-125	18	4U	20	90	
4. BARIUM	75-125	1890	12U	2000	95	
5. BERYLLIUM	75-125	48	0.5U	50	96	
6. CADMIUM	75-125	53	5U	50	106	
7. CALCIUM	75-125	102000	290U	100000	102	
8. CHROMIUM	75-125	188	4U	200	94	
9. COBALT	75-125	454	7U	500	91	
10. COPPER	75-125	237	4U	250	95	
11. IRON	75-125	943	[65]	1000	88	
12. LEAD	75-125	19	2U	20	95	
13. MAGNESIUM	75-125	49800	330U	50000	100	
14. MANGANESE	75-125	191	3U	200	96	
15. MERCURY	75-125	1.01	0.14	1.00	101	
16. NICKEL	75-125	380	5U	400	95	
17. POTASSIUM	75-125	51400	470U	50000	103	
18. SELENIUM	75-125	13	2U	10	130	R
19. SILVER	75-125	47	4U	50	94	
20. SODIUM	75-125	106000	[1260]	100000	105	
21. THALLIUM	75-125	46	4U	50	92	
22. TIN	75-125	282	36U	400	70	R
23. VANADIUM	75-125	481	4U	500	96	
24. ZINC	75-125	200	[9.2]	200	95	
Other: ~~LEAD~~ PS		~~19~~ PS	~~2U~~ PS	~~20~~ PS	~~95~~ PS	
Cyanide	75-125	100	10U	100	100	

[1] %R = [(SSR - SR)/SA] x 100

"R"- out of control

Comments:

Form VI

Q.C. Report No. 5925

DUPLICATES

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 6-27-85

CASE NO. 4385
EPA Sample No. MFA196
Lab Sample ID No. -
Units UG/L

Matrix WATER

Compound	Control Limit[1]	Sample(S)	Duplicate(D)	RPD[2]
Metals:				
1. ALUMINUM		23U	23U	NC
2. ANTIMONY		46U	46U	NC
3. ARSENIC		4U	10U	NC
4. BARIUM		[160]	[160]	NC
5. BERYLLIUM		0.5U	0.5U	NC
6. CADMIUM		5U	5U	NC
7. CALCIUM		56200	56200	0
8. CHROMIUM		4U	4U	NC
9. COBALT		7U	7U	NC
10. COPPER		110	110	0
11. IRON		15600	15500	0.64
12. LEAD		51	53	3.8
13. MAGNESIUM		25600	25600	0
14. MANGANESE		107	106	0.94
15. MERCURY		0.14	0.14	NC
16. NICKEL		[5.5]	5U	NC
17. POTASSIUM		[3030]	[2920]	NC
18. SELENIUM		2U	2U	NC
19. SILVER		4U	4U	NC
20. SODIUM		237000	232000	2.1
21. THALLIUM		10U	10U	NC
22. TIN		36U	36U	NC
23. VANADIUM		4U	4U	NC
24. ZINC		739	737	0.27
Other:				
Cyanide		10U	10U	NC

* Out of Control

[1] To be added at a later date.

[2] RPD = [|S-D|/((S+D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

Form VII

D.C. Report No. 5925
INSTRUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLE

LAB NAME ROCKY MOUNTAIN ANALYTICAL
DATE 6-27-85

CASE NO 4385
UNITS ug/L

Compound	Required Detection Limits (CRDL)-ug/l	Instrument Detection Limits (IDL)-ug/l ICP/AA	Furnace	Lab Control Sample True	Found	%R
Metals:						
1. ALUMINUM	200	23		500	491	98
2. ANTIMONY	60	46		500	546	109
3. ARSENIC	10	47	4	43	40	93
4. BARIUM	200	12		500	483	97
5. BERYLLIUM	5	0.5		100	93	93
6. CADMIUM	5	5		100	99	99
7. CALCIUM	5000	290		100000	102000	102
8. CHROMIUM	10	4		100	99	99
9. COBALT	50	7		100	103	103
10. COPPER	25	4		100	98	98
11. IRON	100	11		500	468	94
12. LEAD	5	23	2	500	485	97
13. MAGNESIUM	5000	330		100000	101000	101
14. MANGANESE	15	3		100	102	102
15. MERCURY	0.2		0.1	1.00	0.99 ~~0.96~~	99
16. NICKEL	40	5		100	103	103
17. POTASSIUM	5000	470		100000	102000	102
18. SELENIUM	5		2	58	64	110
19. SILVER	10	4		100	101	101
20. SODIUM	5000	880		100000	106000	106
21. THALLIUM	10		4	43	41	95
22. TIN	40	36		500	467	93
23. VANADIUM	50	4		100	102	102
24. ZINC	20	2		100	96	96
Other: LEAD				186	170	91
Cyanide	10		10AS	76	75	99

CV - Cold Vapor
AS - Automated Spectrophotometric