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.
MF1570

Date 6-17-85

INORGANIC ANALYSIS DATA SHEET

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

CASE NO. 4281
QC REPORT NO. 5903

Elements Identified and Measured

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

ug/L

1.	ALUMINUM	2450	P R	13.	MAGNESIUM	17500	P
2.	ANTIMONY	46U	P	14.	MANGANESE	330	P
3.	ARSENIC	4u	F	15.	MERCURY	0.1u	CV
4.	BARIUM	233	P	16.	NICKEL	[7.1]	P
5.	BERYLLIUM	0.5U	P	17.	POTASSIUM	[3730]	P
6.	CADMIUM	5U	P	18.	SELENIUM	5u	F R
7.	CALCIUM	59800	P	19.	SILVER	4U	P
8.	CHROMIUM	[7.6]	P	20.	SODIUM	57800	P
9.	COBALT	7U	P	21.	THALLIUM	10u	F
10.	COPPER	[16]	P	22.	TIN	36U	P
11.	IRON	3480	P	23.	VANDIUM	[13]	P
12.	LEAD	5u	F	24.	ZINC	64	P

Cyanide 10u MS 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
OCT 22 1992
REORGANIZED

Lab Manager

9532448

Form I

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Elements Identified and Measured

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

ug/L

1.	ALUMINUM	5330	P R	13.	MAGNESIUM	6420	P
2.	ANTIMONY	46U	P	14.	MANGANESE	132	P
3.	ARSENIC	13	F	15.	MERCURY	0.1U	CV
4.	BARIUM	[101]	P	16.	NICKEL	[7.5]	P
5.	BERYLLIUM	0.5U	P	17.	POTASSIUM	8060	P
6.	CADMIUM	5U	P	18.	SELENIUM	5u	F R
7.	CALCIUM	19000	P	19.	SILVER	4U	P
8.	CHROMIUM	17	P	20.	SODIUM	38300	P
9.	COBALT	7U	P	21.	THALLIUM	4u	F
10.	COPPER	[12]	P	22.	TIN	36U	P
11.	IRON	7350	P	23.	VANDIUM	[19]	P
12.	LEAD	5u	F	24.	ZINC	29	P

Cyanide 10u MS 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. 5903

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME ROCKY MOUNTAIN ANALYTICAL

CASE NO. 4281

SOW NO. 784

DATE 6-17-85

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	548	110	1000	1100	110			P
2. ANTIMONY	500	534	107	1000	998	100			P
3. ARSENIC	~~58~~ 43	44	102	20	22	110			F
4. BARIUM	500	497	99	1000	934	93			P
5. BERYLLIUM	100	104	104	1000	980	98			P
6. CADMIUM	100	104	104	1000	929	93			P
7. CALCIUM	100000	106000	106	100000	101000	101			P
8. CHROMIUM	100	100	100	1000	928	93			P
9. COBALT	100	102	102	1000	926	93			P
10. COPPER	100	106	106	1000	920	92			P
11. IRON	500	507	101	1000	929	93			P
12. LEAD	186	170	91	20	21	105			F
13. MAGNESIUM	100000	101000	101	100000	97100	97			P
14. MANGANESE	100	103	103	1000	921	92			P
15. MERCURY	1.00	0.96	96	1.00	1.08	108			CV
16. NICKEL	100	110	110	1000	943	94			P
17. POTASSIUM	100000	94800	95	100000	93600	94			P
18. SELENIUM	~~58~~ 58	58	100	20	22	110			F
19. SILVER	100	99	99	1000	930	93			P
20. SODIUM	100000	97000	97	100000	93200	93			P
21. THALLIUM	~~50~~ 43	42	98	20	22	110			F
22. TIN	500	507	101	1000	1030	103			P
23. VANDIUM	100	100	100	1000	936	94			P
24. ZINC	100	102	102	1000	929	93			P
Other:									
CYANIDE	76	79	104	200	206	103			MS

[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 MS - Manual Spectrophotometer

[5] Furnace Initial Calibration Source ERA 9902

Form III

Q.C. Report No. 5223

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL CASE NO. 4281

DATE 6-17-85 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				[19]	
12. LEAD	2u	2u				2u	
13. MAGNESIUM	330U	330U				330U	
14. MANGANESE	3U	3U				3U	
15. MERCURY	0.1u	0.1u				0.1u	
16. NICKEL	5U	5U				5U	
17. POTASSIUM	470U	470U				470U	
18. SELENIUM	2u	2u				2u	
19. SILVER	4U	4U				4U	
20. SODIUM	880U	880U				880U	
21. THALLIUM	4u	4u				4u	
22. TIN	36U	36U				36U	
23. VANDIUM	4U	4U				4U	
24. ZINC	2U	2U				[5.8]	
Other:							
Cyanide	10u	10u				10u	

Form IV

Q.C. Report No. 5903

ICP INTERFERENCE CHECK SAMPLE

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 6-17-85

CASE NO 4281
Check Sample I.D. INT CHK
Check Sample Source EMSL-LV
Units mg/L

Compound	Control Limits[1] Mean	Std. Dev.	True[2]	Initial Observed	%R	Final Observed	%R
Metals:							
1. ALUMINUM	401	1.6		393	98	394	98
2. ANTIMONY	NR						
3. ARSENIC	NR						
4. BARIUM	0.48	0.002		0.42	87	0.43	90
5. BERYLLIUM	0.45	0.002		0.44	98	0.44	98
6. CADMIUM	0.95	0.009		0.92	97	0.92	97
7. CALCIUM	434	1.9		449	103	447	103
8. CHROMIUM	0.72	0.003		0.69	96	0.69	96
9. COBALT	0.57	0.003		0.54	95	0.54	95
10. COPPER	0.55	0.005		0.58	105	0.58	105
11. IRON	431	1.8		394	91	393	91
12. LEAD	NR						
13. MAGNESIUM	444	2.0		440	99	441	99
14. MANGANESE	0.62	0.003		0.57	92	0.58	94
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. VANDIUM	0.52	0.003		0.51	98	0.51	98
24. ZINC	0.93	0.004		0.92	99	0.9	97
Other:							

[1] Mean value based on n = 10.

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

Form V

U.C. Report No. 5903

SPIKE SAMPLE RECOVERY

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 6-17-85

CASE NO. 4281
EPA Sample No. MF1571
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	6640	5330	2000	66	R
2. ANTIMONY	75-125	488	46U	500	98	
3. ARSENIC	75-125	32	13	20	95	
4. BARIUM	75-125	2020	[101]	2000	96	
5. BERYLLIUM	75-125	54	0.5U	50	108	
6. CADMIUM	75-125	52	5U	50	104	
7. CALCIUM	75-125	122000	19000	100000	103	
8. CHROMIUM	75-125	216	17	200	99	
9. COBALT	75-125	500	7U	500	100	
10. COPPER	75-125	268	[12]	250	102	
11. IRON	75-125	7560	7350	1000	21	
12. LEAD	75-125	17	5U	20	85	
13. MAGNESIUM	75-125	57000	6420	50000	101	
14. MANGANESE	75-125	323	132	200	96	
15. MERCURY	75-125	1.02	0.1U	1.00	102	
16. NICKEL	75-125	427	[7.5]	400	105	
17. POTASSIUM	75-125	56500	8060	50000	97	
18. SELENIUM	75-125	4.9	5U	10	49	R
19. SILVER	75-125	52	4U	50	104	
20. SODIUM	75-125	135000	38300	100000	97	
21. THALLIUM	75-125	43	4U	50	86	
22. TIN	75-125	344	36U	400	86	
23. VANDIUM	75-125	527	[19]	500	102	
24. ZINC	75-125	247	29	200	109	
Other:						
Cyanide	75-125	103	10U	100	103	

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

"R"- out of control

Comments:

Form VI

D.C. Report No. 5903

DUPLICATES

LAB NAME ROCKY MOUNTAIN ANALYTICAL

CASE NO. 4281
EPA Sample No. MF1570
Lab Sample ID No. -
Units ug/L

DATE 6-17-85

Matrix WATER

Compound	Control Limit[1]	Sample(S)	Duplicate(D)	RPD[2]
Metals:				
1. ALUMINUM		2450	2740	11
2. ANTIMONY		46U	46U	NC
3. ARSENIC		4u	4u	NC
4. BARIUM		233	249	6.6
5. BERYLLIUM		0.5U	0.5U	NC
6. CADMIUM		5U	5U	NC
7. CALCIUM		59800	64200	7.1
8. CHROMIUM		[7.6]	[6.5]	NC
9. COBALT		7U	7U	NC
10. COPPER		[16]	[18]	NC
11. IRON		3480	3700	6.1
12. LEAD		5u	5u	NC
13. MAGNESIUM		17500	18800	7.2
14. MANGANESE		330	352	6.5
15. MERCURY		0.1u	0.1u	NC
16. NICKEL		[7.1]	5U	NC
17. POTASSIUM		[3730]	[4060]	NC
18. SELENIUM		5u	5u	NC
19. SILVER		4U	4U	NC
20. SODIUM		57800	62300	7.5
21. THALLIUM		10u	10u	NC
22. TIN		36U	36U	NC
23. VANDIUM		[13]	[12]	NC
24. ZINC		64	72	12
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

Q.C. Report No. 5903
INSTRUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLE

LAB NAME ROCKY MOUNTAIN ANALYTICAL
DATE 6-17-85

CASE NO 4281
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	529	106
2. ANTIMONY	60	46		500	523	105
3. ARSENIC	10		4	~~50~~ 43	44	102
4. BARIUM	200	12		500	488	98
5. BERYLLIUM	5	0.5		100	102	102
6. CADMIUM	5	5		100	102	102
7. CALCIUM	5000	290		100000	105000	105
8. CHROMIUM	10	4		100	97	97
9. COBALT	50	7		100	102	102
10. COPPER	25	4		100	108	108
11. IRON	100	11		500	505	101
12. LEAD	5	23	2	186	165	89
13. MAGNESIUM	5000	330		100000	101000	101
14. MANGANESE	15	3		100	102	102
15. MERCURY	0.2		.10CV	1.00	0.96	96
16. NICKEL	40	5		100	110	110
17. POTASSIUM	5000	470		100000	98900	99
18. SELENIUM	5		2	~~38~~ 58	62	107
19. SILVER	10	4		100	96	96
20. SODIUM	5000	880		100000	97600	98
21. THALLIUM	10		4	~~50~~ 43	45	105
22. TIN	40	36		500	501	100
23. VANDIUM	50	4		100	99	99
24. ZINC	20	2		100	102	102
Other:						
Cyanide	10		10MS	76	74	97

CV - Cold Vapor
MS - Manual Spectrophotometer