SDMS DOCID # 1150057

INTERNATIONAL
TECHNOLOGY
CORPORATION

January 2, 1987

Project No. 240308

Mr. A.L. Gualtieri
Vice President - Manufacturing
Powerine Oil Company
12354 Lakeland Road
Santa Fe Springs, California 90670-9883

Progress Report - Results of Quarterly Ground-Water Monitoring and Sampling at Powerine Refinery, Santa Fe Springs, California

Dear Mr. Gualtieri:

1.0 INTRODUCTION

This report summarizes the results of IT's quarterly ground-water monitoring and sampling at the subject site in November 1986. Activities included ground-water monitoring, sampling, and laboratory analyses.

2.0 GROUND-WATER MONITORING AND SAMPLING

Prior to sampling, fourteen on-site monitoring wells (Figure 1) were monitored between November 13, 1986 and November 26, 1986. The depth to ground water was measured and presence of free product (gasoline) in the monitoring wells was checked. The collected data are presented in Table 1. Small amounts of free product above the water table were detected in only two monitoring wells (MW-102 and MW-504).

Ground-water sampling from the on-site monitoring wells was performed between November 13, 1986 and November 26, 1986. In order to minimize the risk of introducing contaminants into the ground water during the sampling program, work proceeded in order from wells with the least contaminated water to wells with increasingly contaminated water. In addition, before

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sampling each well, all equipment used within the well (including pumps, tape measures, and M-scope) was washed with an Alconox solution and thoroughly rinsed with tap water and then distilled water.

Prior to sampling each well, the ground water level was measured. The measuring procedure consisted of an initial reading with a M-scope followed by the use of a steel tape with water indicator paste applied on one side and gasoline indicator paste on the other side. Figure 2 shows the water table elevation contours based on water level measurements of November 13 through 26, 1986 (Table 1). The ground water flow direction is toward the south, similar to the results of the July 27, 1986 and October 1985, water level measurements. The hydraulic gradient is calculated to be about 0.009.

The uppermost ground water table was checked for the presence of free hydrocarbons during monitoring and sampling activities. A hydrocarbon thickness of 0.13 inch was detected in MW-504. A trace amount of free product was detected in MW-102.

Before sampling, each well was purged by extracting about three well volumes. Two methods were used to purge the wells: hand bailing and ejector pumping. Purged water was contained in 55-gallon drums. The method used for each well is identified in Table B-1. The water samples were collected by using either a teflon bailer in conjunction with hand bailing or directly from the ejector pump. During use of the ejector pump, air was not in contact with the water.

Water was not sampled from wells MW-102 and MW-504 due to the presence of free product. In addition, well MW-202 was not sampled due to the small volume of water in the well. Four ground water samples were obtained from the remaining wells and were analyzed for benzene, ethylbenzene, toluene, and xylenes (BETX, EPA method 602), total petroleum hydrocarbons, arsenic, and cyanide. The BETX samples were stored in 40 ml glass vials with no air

space and with hydrochloric acid as a preservative. For total petroleum hydrocarbons, the water samples were stored in one-liter glass bottles and preserved with hydrochloric acid. For arsenic, the samples were pre-filtered in the field with 0.45-micron disposable filters, stored in 500 ml plastic bottles, and preserved with HNO_3. For cyanide, the water samples were stored in one-liter plastic bottles and preserved with NAOH. All samples were placed in pre-cleaned bottles obtained from IT Laboratory in Cerritos, California, and were stored on ice before delivering to the laboratory. Samples were entered into IT Chain-of-Custody procedures to ensure sample integrity and were then delivered to the IT Laboratory for chemical analyses. IT Laboratory is in EPA contract and performs analyses according to EPA approved methods.

For the purpose of quality control, two duplicate well water samples and a control blank sample consisting of distilled water collected through the pre-cleaned teflon bailer were also submitted for analysis. Table B-1 (Appendix B) lists the duplicate and control sample numbers.

3.0 GROUND WATER QUALITY

Ground water analytical results for the uppermost aquifer are summarized in Tables 2 and 3, and the Certificates of Analyses are provided in Appendix B. Tables 2 and 3 also include the analytical results of previous sampling and analyses of October, 1985 and July, 1986. Inorganic and organic water quality are discussed separately.

3.1 INORGANIC WATER QUALITY

The analytical results for arsenic and cyanide are reported in Table 2. Arsenic concentrations in most of the samples were below the drinking water standard permissible concentration of 0.05 mg/l. A few samples showed arsenic concentrations of up to 0.15 mg/l. However, these concentrations

are very low and do not appear to be indicative of significant arsenic contamination. Cyanide concentrations were all below 0.03 to 0.05 mg/l, except for MW-104 which showed a concentration of 0.06 mg/l.

3.2 DISSOLVED ORGANIC COMPOUNDS

The complete analytical results of total petroleum hydrocarbons (TPH) and benzene, ethylbenzene, toluene, and total xylenes (BETX) in the ground water samples are reported in the Certificates of Analyses (Appendix B). As can be noted in the Certificates of Analyses, several petroleum related hydrocarbons (BETX and TPH) were detected in some of the ground water samples. BETX appear to be the compounds of the greatest concentration in the ground water. Concentrations of TPH and BETX compounds are summarized in Tables 2 and 3, respectively. With the exception of the background well (MW-104), the monitoring wells showed benzene concentrations ranging from 7.5 ug(ppb) to 6800 ppb. The highest benzene concentration (6800 ppb) was observed in MW-206 which is located near the southern boundary of the site (Figure 1).

As can be noted from Tables 2 and 3, the control blank samples, (described in Section 2) were clean, indicating that the decontamination procedure that was used in the field during sampling was effective in eliminating the possibility of cross-contamination. Duplicate analyses of the samples from wells MW-205 and MW-503 showed reasonably consistent numbers with the exception of inconsistent BETX concentrations between the original and duplicate samples from MW-503. This may reflect a possible laboratory error. Analytical results for TPH, cyanide, and arsenic for the same original and duplicate samples from MW-503 are consistent with each other.

4.0 SUMMARY AND CONCLUSIONS

Fourteen wells at the site were monitored between November 13, 1986 and November 26, 1986. Water samples were collected during this time period from all wells with the exception of MW-102 and MW504, due to the presence of free product, and MW-202 due to an insufficient volume of water present in the well. Two duplicate samples and one control blank sample were also taken. Water samples were analyzed by IT Laboratory in Cerritos, California for total petroleum hydrocarbons, (TPH), benzene, ethylbenzene, toluene, and xylenes (BETX), arsenic, and cyanide. Arsenic and cyanide concentrations were all very low and insignificant. TPH and BETX compounds were detected in several samples. The highest benzene concentrations were observed in wells located at the southern boundary of the site.

Respectfully submitted,

Karen May
Project Scientist

Esmail (Essi) Esmaili, Ph.D.
Project Manager

Raymond L Moresco
Certified Engineering Geologist 459
Project Director
KM/EE/RM/pc

TABLES

TABLES

TABLE 1

WATER LEVEL ELEVATIONS

MONITORING WELL NO.	DATE	ELEVATION OF TOP OF CASING (feet, MSL)	DEPTH TO WATER (feet)	WATER LEVEL ELEVATION (feet, MSL)
MW-101	11-17	134.98	86.75	48.23
MW-102	11-21	134.81	88.64	46.17
MW-103	11-18	136.95	90.70	46.25
MW-104	11-13	141.60	85.68	55.92
MW-201	11-21	132.91	87.40	45.51
MW-202	11-22	137.89	92.07	45.82
MW-203	11-17	143.89	93.92	49.97
MW-204	11-14	140.14	92.30	47.84
MW-205	11-14	138.17	87.25	50.92
MW-206	11-21	129.93	89.83	40.10
MW-501	11-18	128.70	89.02	39.68
MW-502	11-25	131.19	91.33	39.86
MW-503	11-21	131.43	89.74	41.69
MW-504	11-21	133.83	88.52	45.31

TABLE 2

GROUND WATER QUALITY DATA INCLUDING TOTAL PETROLEUM HYDROCARBONS (TPH), CYANIDE, AND ARSENIC

WELL NO.	DATE	TPH (ug/ml,ppm)	CYANIDE (mg/l, ppm)	ARSENIC (mg/l, ppm)
MW-101	OCT 1985	a	<0.1	0.09
	JUL 1986	a	TR<0.05	0.13
	NOV 1986	2	TR<0.05	0.15
MW-102	OCT 1985	a	<0.1	0.08
	JUL 1986	a	TR<0.03	0.14
	NOV 1986	b	b	b
MW-103	OCT 1985	a	<0.1	<0.005
	JUL 1986	a	TR<0.03	TR<0.03
	NOV 1986	6	TR<0.05	ND<0.01
MW-104	OCT 1985	a	<0.01	TR<0.02
	JUL 1986	a	TR<0.05	<0.03
	NOV 1986	ND<1	0.06	ND<0.01
MW-201	OCT 1985	a	<0.1	0.07
	JUL 1986	a	TR<0.03	0.08
	NOV 1986	2	TR<0.05	0.13

a - Samples not analyzed for constituents indicated.

b - Not sampled due to presence of free product.

c - Not sampled due to insufficient volume of water in well.

ND - This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.

TR - Trace, this compound was present, but was below the level at which concentration could be determined.

TABLE 2 (continued)

GROUND WATER QUALITY DATA INCLUDING
TOTAL PETROLEUM HYDROCARBONS (TPH), CYANIDE, AND ARSENIC

WELL NO.	DATE	TPH (ug/ml, ppm)	CYANIDE (mg/l, ppm)	ARSENIC (mg/l, ppm)
MW-202	OCT 1985	a	<0.1	0.01
	JUL 1986	a	TR<0.03	0.07
	NOV 1986	c	c	c
MW-203	OCT 1985	a	<0.1	TR<0.02
	JUL 1986	a	0.50	TR<0.03
	NOV 1986	4	TR<0.05	TR<0.01
MW-204	OCT 1985	a	<0.1	<0.005
	JUL 1986	a	TR<0.05	TR<0.03
	NOV 1986	7	TR<0.05	TR<0.01
MW-205	OCT 1985	a	<0.01	<0.05
	JUL 1986	a	TR<0.05	<0.05
	NOV 1986	2	TR<0.05	0.064
DUPLICATE SAMPLE, NOV 1986		TR<1	TR<0.05	0.058

a - Samples not analyzed for constituents indicated.

b - Not sampled due to presence of free product.

c - Not sampled due to insufficient volume of water in well.

ND - This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.

TR - Trace, this compound was present, but was below the level at which concentration could be determined.

TABLE 2 (continued)

GROUND WATER QUALITY DATA INCLUDING
TOTAL PETROLEUM HYDROCARBONS (TPH), CYANIDE, AND ARSENIC

WELL NO.	DATE	TPH (ug/ml, ppm)	CYANIDE (mg/l, ppm)	ARSENIC (mg/l, ppm)
MW-206	OCT 1985	a	<0.1	0.02
	JUL 1986	a	0.08	0.06
	NOV 1986	18	ND<0.05	0.06
MW-501	OCT 1985	a	a	a
	JUL 1986	a	TR<0.03	0.03
	NOV 1986	23	TR<0.05	0.054
MW-502	OCT 1985	a	a	a
	JUL 1986	a	TR<0.03	0.07
	NOV 1986	24	TR<0.05	0.14
MW-503	OCT 1985	a	a	a
	JUL 1986	a	TR<0.03	TR<0.03
	NOV 1986	9	ND<0.05	TR<0.01
DUPLICATE SAMPLE	NOV 1986	11	ND<0.05	TR<0.01

a - Samples not analyzed for constituents indicated.

b - Not sampled due to presence of free product.

c - Not sampled due to insufficient volume of water in well.

ND - This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.

TR - Trace, this compound was present, but was below the level at which concentration could be determined.

TABLE 2 (continued)

GROUND WATER QUALITY DATA INCLUDING
TOTAL PETROLEUM HYDROCARBONS (TPH), CYANIDE, AND ARSENIC

WELL NO.	DATE	TPH (ug/ml, ppm)	CYANIDE (mg/l, ppm)	ARSENIC (mg/l, ppm)
MW-504	OCT 1985	a	a	a
	JUL 1986	a	TR<0.03	0.08
	NOV 1986	b	b	b
CONTROL BLANK				
NOV 1986		ND<1	ND<0.05	ND<0.01

a - Samples not analyzed for constituents indicated.

b - Not sampled due to presence of free product.

c - Not sampled due to insufficient volume of water in well.

ND - This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.

TR - Trace, this compound was present, but was below the level at which concentration could be determined.

TABLE 3

GROUND WATER QUALITY DATA
(EPA METHOD 602)
(ALL CONCENTRATIONS ARE IN MICROGRAMS/LITER, ppb)

WELL NO.	DATE	BENZENE	ETHYLBENZENE	TOLUENE	TOTAL XYLENES
MW-101	OCT 1985	TR35	<5	<5	<5
	JUL 1986	58	TR5	<1	<1
	NOV 1986	62	3.3	1.4	1.5
MW-102	OCT 1985	8400	1200	2400	7300
	JUL 1986	3,300	790	<50	3200
	NOV 1986	a	a	a	a
MW-103	OCT 1985	TR190	<25	TR12	<25
	JUL 1986	TR4	<1	<1	<1
	NOV 1986	78	ND<1.0	2.2	5.7
MW-104	OCT 1985	<1	<1	<1	<1
	JUL 1986	<1	<1	<1	<1
	NOV 1986	<1	<1	<1	<1

a - Not sampled due to presence of free product.

b - Not sampled due to insufficient volume of water in well.

c - Samples not analyzed for constituents indicated.

ND - This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.

TR - Trace, this compound was present, but was below the level at which concentration could be determined.

TABLE 3 (continued)

GROUND WATER QUALITY DATA
(EPA METHOD 602)
(ALL CONCENTRATIONS ARE IN MICROGRAMS/LITER, ppb)

WELL NO.	DATE	BENZENE	ETHYLBENZENE	TOLUENE	TOTAL XYLENES
MW-201	OCT 1985	1600	140	650	260
	JUL 1986	<1	<1	<1	<1
	NOV 1986	68	10	10	32
MW-202	OCT 1985	1600	280	1500	2200
	JUL 1986	8100	73	7700	6300
	NOV 1986	b	b	b	b
MW-203	OCT 1985	24	TR2	TR1	TR2
	JUL 1986	50	<1	TR6	18
	NOV 1986	88	TR<1.0	1.4	1.9
MW-204	OCT 1985	16	<1	<1	<1
	JUL 1986	TR9	<1	<1	<1
	NOV 1986	260	15	6.7	41

a - Not sampled due to presence of free product.

b - Not sampled due to insufficient volume of water in well.

c - Samples not analyzed for constituents indicated.

ND - This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.

TR - Trace, this compound was present, but was below the level at which concentration could be determined.

TABLE 3 (continued)

GROUND WATER QUALITY DATA
(EPA METHOD 602)
(ALL CONCENTRATIONS ARE IN MICROGRAMS/LITER, ppb)

WELL NO.	DATE	BENZENE	ETHYLBENZENE	TOLUENE	TOTAL XYLENES
MW-205	OCT 1985	43	<1	<1	<1
	JUL 1986	13	<1	<1	<1
	NOV 1986	7.5	ND<1.0	ND1.0	1.5
DUPLICATE SAMPLE, NOV 1986		12	ND<1.0	ND>1.0	7.1
MW-206	OCT 1985	4600	78	3000	6200
	JUL 1986	3800	TR82	1800	9000
	NOV 1986	6800	1800	2700	7100
MW-501	OCT 1985	c	c	c	c
	JUL 1986	1400	290	51	470
	NOV 1986	1500	210	67	140

a - Not sampled due to presence of free product.

b - Not sampled due to insufficient volume of water in well.

c - Samples not analyzed for constituents indicated.

ND - This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.

TR - Trace, this compound was present, but was below the level at which concentration could be determined.

TABLE 3 (continued)

GROUND WATER QUALITY DATA
(EPA METHOD 602)
(ALL CONCENTRATIONS ARE IN MICROGRAMS/LITER, ppb)

WELL NO.	DATE	BENZENE	ETHYLBENZENE	TOLUENE	TOTAL XYLENES
MW-502	OCT 1985	c	c	c	c
	JUL 1986	10,000	1200	4100	6900
	NOV 1986	6200	1500	4100	8500
MW-503	OCT 1985	c	c	c	c
	JUL 1986	140	<1	<1	740
	NOV 1986	95	940	290	1600
DUPLICATE SAMPLE, NOV 1986		530	540	270	1200
MW-504	OCT 1985	c	c	c	c
	JUL 1986	1700	<20	520	3200
	NOV 1986	a	a	a	a
CONTROL BLANK, NOV 1986		ND<1.0	ND<1.0	ND>1.0	ND<1.0

a - Not sampled due to presence of free product.

b - Not sampled due to insufficient volume of water in well.

c - Samples not analyzed for constituents indicated.

ND - This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.

TR - Trace, this compound was present, but was below the level at which concentration could be determined.

FIGURES

FIGURES

FX-9 Wells

FX-9 Wells

APPENDIX
B

APPENDIX B
CERTIFICATE OF ANALYSES
FOR GROUND WATER SAMPLES

TABLE B-1

SAMPLE NUMBERS, DUPLICATES, AND BLANK

SAMPLE NO.	DUPLICATE	DATE	TIME	PURGING METHOD	SAMPLING METHOD
MW-101-A		11-17	12:30	Teflon Bailer	Teflon Bailer
B					
C					
D					
MW-102	Not sampled due to presence of free product				
MW-103-A		11-18	11:30	1-gal. PVC Bailer	Teflon Bailer
B					
C					
D					
MW-104-A		11-13	14:30	1-gal. PVC Bailer	Teflon Bailer
B					
C					
D					
MW-201-A		11-25	11:00	1-gal. PVC Bailer	Teflon Bailer
B					
C					
D					
MW-202	Not sampled due to insufficient volume of water in well.				

A = Arsenic
B = BETX
C = Cyanide
D = TPH

TABLE B-1 (continued)

SAMPLE NUMBERS, DUPLICATES, AND BLANK

SAMPLE NO.	DUPLICATE	DATE	TIME	PURGING METHOD	SAMPLING METHOD
MW-203-A		11-17	16:15	1-gal. PVC Bailer	Teflon Bailer
B					
C					
D					
MW-204-A		11-14	12:00	1-gal. PVC Bailer	Teflon Bailer
B					
C					
D					
MW-205-A	MW-902-A	11-14	15:00	1-gal. PVC Bailer	Teflon Bailer
B	B				
C	C				
D	D				
MW-206-A		11-21	10:00	Ejector pump	Ejector pump
B					
C					
D					
MW-501-A		11-18	16:15	1-gal. PVC Bailer	Teflon Bailer
B					
C					
D					

A = Arsenic
B = BETX
C = Cyanide
D = TPH

TABLE B-1 (continued)

SAMPLE NUMBERS, DUPLICATES, AND BLANK

SAMPLE NO.	DUPLICATE	DATE	TIME	PURGING METHOD	SAMPLING METHOD
MW-502-A		11-25	07:30	1-gal. PVC Bailer	Teflon Bailer
B					
C					
D					
MW-503-A	MW-901-A	11-21	14:00	Ejector pump	Ejector pump
B	B				
C	C				
D	D				
MW-503-A	MW-901-A	11-21	14:00	Ejector pump	Ejector pump
B	B				
C	C				
D	D				
MW-504	Not sampled due to presence of free product				

CONTROL BLANK: MW-903-A-D - Distilled H_2O sampled with cleaned teflon bailer

A = Arsenic
B = BETX
C = Cyanide
D = TPH

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ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

Prepared For: IT Corporation
17461 Derian Ave.
Irvine, CA 92714

Attn: Essi Esmaili

Date: November 21, 1986

Date Received: November 14, 1986

P.O. Number: 240308
(Powerine Oil Co.)

Job Number: 38928/rjj

One (1) liquid sample labeled: "MW-104".

The sample was analyzed for benzene, toluene, ethylbenzene and total xylenes using a Tekmar liquid sample concentrator and a Varian 6000 gas chromatograph equipped with a photoionization detector. The results are listed in Table I.

The sample was also digested with acid and analyzed by atomic absorption spectroscopy - graphite furnace. The sample was analyzed according to Standard Methods for the Examination of Water and Wastewater, 16th Edition, for cyanide. The results are listed in Table II.

The sample was also extracted by EPA Method 3550 then analyzed for total petroleum hydrocarbons (TPH) by infrared spectroscopy technique (EPA procedure 418.1). The results are listed in Table III.

John Yokoyama
Chemist

Richard L. Merrell
Laboratory Director

Table I

	Micrograms/liter (ppb)			
Sample I.D.	Benzene	Toluene	Ethylbenzene	Total xylenes
MW-104	ND<1.0	ND<1.0	ND<1.0	ND<1.0

Table II

	Milligrams/liter	
Sample I.D.	Arsenic	Cyanide
MW-104	ND<0.01	0.06

Table III

Total Petroleum Hydrocarbons

Sample I.D.	Micrograms/milliliter (ppm)
MW-104	ND<1

ND - This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.

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ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

Prepared For: IT Corporation
17461 Derian Ave.
Irvine, CA 92714

Attn: Essi Esmaili

Date: December 12, 1986

Date Received	Project Number	Lab Number
November 25, 1986	240308-01-01 Powerine	39045/lac

Eight (8) liquid samples labeled: "MW-201A", "MW-201B", "MW-201C", "MW-201D", MW-502A", "MW-502B", "MW-502C", and "MW-502D"

Samples "MW-201B" and "MW-502B" were analyzed for benzene, toluene, ethylbenzene and total xylenes using a Tekmar liquid sample concentrator and a Varian 6000 gas chromatograph equipped with a photoionization detector. The results are listed in Table I.

Samples "MW-201D" and "MW-502D" were analyzed for total petroleum hydrocarbons (TPH) by infrared spectroscopy technique (EPA procedure 418.1). The results are listed on Table II.

Samples "MW-201A" and "MW-502A" were analyzed for arsenic by atomic absorption spectroscopy-graphite furnace. The results are listed on Table III.

Samples "MW-201C" and "MW-502C" were analyzed according to Standard Methods for the Examination of Water and Wastewater, 16th Edition, for cyanide. The results are listed on Table IV.

W. P. Fassinger for
John Yokoyama
Chemist

Richard L. Merrell
Richard L. Merrell
Laboratory Director

fv

Table I

Sample ID	Micrograms Per Liter(ppb) Benzene	Toluene	Ethylbenzene	Total Xylenes
MW-201B	68	10	10	32
MW-502B	6,200	4,100	1,500	8,500

Table II

Sample ID	Micrograms Per Milliliter(ppm) Total Petroleum Hydrocarbons
MW-201D	2
MW-502D	24

Table III

Sample ID	Milligrams Per Liter Arsenic
MW-201A	0.13
MW-502A	0.14

Table IV

Sample ID	Milligrams Per Liter Cyanide
MW-201C	TR<0.05
MW-502C	TR<0.05

TR - Trace, this compound was present, but was below the level at which concentration could be determined.

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ANALYTICAL SERVICES

17605 Fabrica Way • Cerritos, California 90701 • 213-921-9831 / 714-523-9200

CERTIFICATE OF ANALYSIS

Prepared For: IT Corporation
17461 Derian Ave.
Irvine, CA 92714

Attn: Essi Esmaili

Date: November 26, 1986

Date Received: November 14, 1986

Job Number: 240308
Powerine Oil

Job Number: 38959/lac

Twenty-eight (28) liquid samples labeled: "MW-101A", "MW-101B", "MW-101C", "MW-101D", "MW-103A", "MW-103B", "MW-103C", "MW-103D", "MW-203A", "MW-203B", "MW-203C", "MW-203D", "MW-204A", "MW-204B", "MW-204C", "MW-204D", "MW-205A", "MW-205B", "MW-205C", "MW-205D", "MW-501A", "MW-501B", "MW-501C", "MW-501D", "MW-902A", "MW-902B", "MW-902C", and "MW-902D".

Samples MW-101B, MW-103B, MW-203B, MW-204B, MW-205B, MW-501B, and MW-902B were analyzed for benzene, toluene, ethylbenzene and total xylenes using a Tekmar liquid sample concentrator and a Varian 6000 gas chromatograph equipped with a photoionization detector. The results are listed in Table I.

In addition, samples MW-101D, MW-103D, MW-203D, MW-204D, MW-205D, MW-501D and MW-902D were extracted for total petroleum hydrocarbons (TPH) by infrared spectroscopy technique (EPA procedure 418.1). The results are listed in Table II.

Samples MW-101C, MW-103C, MW-203C, MW-204C, MW-205C, MW-501C, and MW-902C were also analyzed according to Standard Methods for the Examination of Water and Wastewater, 16th Edition, for cyanide. In addition, samples MW-101A, MW-103A, MW-203A, MW-204A, MW-205A, MW-501A and MW-902A were digested with acid and analyzed by atomic absorption spectroscopy - graphite furnace for arsenic. The results are listed in Table III.

I certify that this report has been prepared by me or under my direct supervision.

John Yokoyama
Chemist

Richard L. Merrell
Laboratory Director

cc

Table I

Sample I.D.	Micrograms/liter (ppb) Benzene	Toluene	Ethylbenzene	Total Xylenes
MW-101B	62	1.4	3.3	1.5
MW-103B	78	2.2	ND<1.0	5.7
MW-203B	88	1.4	TR<1.0	1.9
MW-204B	260	6.7	15	41
MW-205B	7.5	ND<1.0	ND<1.0	1.5
MW-501B	1500	67	210	140
MW-902B	12	ND<1.0	ND<1.0	7.1

Table II

Sample I.D.	Total Petroleum Hydrocarbons Micrograms/milliliter (ppm)
MW-101D	2
MW-103D	6
MW-203D	4
MW-204D	7
MW-205D	2
MW-501D	23
MW-902D	TR<1

Table III

Sample I.D.	Milligrams/liter Cyanide	Sample I.D.	Milligrams/liter Arsenic
MW-101C	TR<0.05	MW-101A	0.15
MW-103C	TR<0.05	MW-103A	ND<0.01
MW-203C	TR<0.05	MW-203A	TR<0.01
MW-204C	TR<0.05	MW-204A	TR<0.01
MW-205C	TR<0.05	MW-205A	0.064
MW-501C	TR<0.05	MW-501A	0.054
MW-902C	TR<0.05	MW-902A	0.058

ND - This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.

TR - Trace, this compound was present, but was below the level at which concentration could be determined.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

Prepared For: IT Corporation
17461 Derian Ave.
Irvine, CA 92714

Attn: Essi Esmaili

Date: December 5, 1986

Date Received	Sample Number	Job Number
November 24, 1986	240308 (Powerine Oil)	39021/rjj

Sixteen (16) liquid samples labeled: "MW-206A", "MW-206B", "MW-206C", "MW-206D", "MW-503A", "MW-503B", "MW-503C", "MW-503D", "MW-901A", "MW-901B", "MW-901C", "MW-901D", "MW-903A", "MW-903B", "MW-903C", and "MW-903D".

Samples "MW-206B", "MW-503B", "MW-901B", and "MW-903B" were analyzed for benzene, toluene, ethylbenzene and total xylenes using a Tekmar liquid sample concentrator and a Varian 6000 gas chromatograph equipped with a photoionization detector. The results are listed in Table I.

Samples "MW-206D", "MW-503D", "MW-901D", and "MW-903D" were analyzed for total petroleum hydrocarbons (TPH) by infrared spectroscopy technique (EPA procedure 418.1). The results are listed in Table II.

Samples "MW-206A", "MW-503A", "MW-901A" and "MW-903A" were analyzed for arsenic by atomic absorption spectroscopy - graphite furnace. The results are listed in Table III.

Samples "MW-206C", "MW-503C", "MW-901C" and "MW-903C" were analyzed according to Standard Methods for the Examination of Water and Wastewater, 16th Edition, for cyanide. The results are listed in Table IV.

John Yokoyama
John Yokoyama
Chemist

Richard L. Merrell
Richard L. Merrell
Laboratory Director

pc

Table I

Sample	Micrograms/liter (ppb) Benzene	Toluene	Ethylbenzene	Total Xylenes
MW-206B	6800	2700	1800	7100
MW-503B	95	290	940	1600
MW-901B	530	270	540	1200
MW-903B	ND<1.0	ND<1.0	ND<1.0	ND<1.0

Table II

Sample	Total Petroleum Hydrocarbons Micrograms/milliliter (ppm)
MW-206D	18
MW-503D	9
MW-901D	11
MW-903D	ND<1

Table III

Sample	Arsenic Milligrams/liter
MW-206A	0.06
MW-503A	TR<0.01
MW-901A	TR<0.01
MW-903A	ND<0.01

Table IV

Sample	Cyanide Milligrams/liter
MW-206C	ND<0.05
MW-503C	ND<0.05
MW-901C	ND<0.05
MW-903C	ND<0.05

ND - This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.

TR - Trace, this compound was present, but was below the level at which concentration could be determined.