

QUARTERLY GROUNDWATER REPORT

**5800 CHRISTIE AVENUE,
EMERYVILLE, CALIFORNIA**

93 NOV -2 PM 3: 23

OCTOBER 31, 1993

SUBMITTED TO:

**MR. BRIAN OLIVA
ALAMEDA COUNTY HEALTH CARE SERVICES
HAZARDOUS MATERIALS DIVISION
80 SWAN WAY, ROOM 200
OAKLAND, CALIFORNIA 94621**

PREPARED FOR :

**CROLEY & HERRING INVESTMENT COMPANY
448 THARP DRIVE,
MORAGA, CALIFORNIA 94556**

PREPARED BY:

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2081 15TH STREET,
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ETS ENVIRONMENT & TECHNOLOGY SERVICES

2081 15TH STREET, SAN FRANCISCO, CALIFORNIA 94114
PHONE 415-861-0810 FAX 415-861-3269

October 31, 1993

Mr. Dick Herring
President
Croley & Herring Investment Company
448 Tharp Avenue,
Moraga, California 94556

Subject: Quarterly Groundwater Report
5800 Christie Avenue, Emeryville, California

Dear Mr. Herring:

Enclosed please find a copy of the quarterly groundwater report for the October, 1993 water sampling period at the subject facility.

Please contact me if you have any question about this report.

Sincerely,

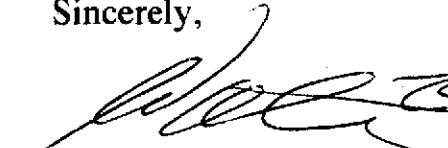

Walter W. Loo, RG CEG
President



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1.0 INTRODUCTION

Environment & Technology Services(ETS) was retained by Croley & Herring Investment Company to perform the 17th quarterly groundwater monitoring for the facility located at 5800 Christie Street in Emeryville, California. The subject facility is currently leased to an electronic merchandise retailer. Prior to leasing, soil contamination was identified at the subject facility. The contaminated soil was removed with the exception of that which was underlying the building because of safety concerns. The removed soil was remediated on-site and properly disposed of with the approval of the regulatory agencies.

A vapor extraction system(VES) was installed immediately adjacent to the northeastern side of the building to mitigate the residual volatile hydrocarbons contained in the soil. The residual volatile organic chemicals(VOCs) were remediated from an average VOCs concentration of about 660 ppm to a satisfactory level at an average of 0.82 ppm in soil. A soil closure plan was submitted(11/15/91) and approval of closure was received on 1/21/92 after submittal of confirmation soil sampling results. The soil vapor extraction system was decommissioned and the Bay Area Air Quality Management District was notified on 12/16/91. The final VES closure report was completed on August 29, 1992. An indoor vapor monitoring system Sierra Monitor Model 5000 was installed by the "Good Guys" electronic store in 1989 through March, 1993. No significant level of methane was detected for the monitoring period. The vapor monitoring system was disconnected in March, 1993 with the concurrence of Mr. Brian Oliva of Alameda County Health Care Services, March 15,1993 correspondence.

As part of the site activities, a quarterly groundwater monitoring program has been implemented. Previous quarterly monitoring events were conducted on November 6, 1989, February 20, 1990, May 31, 1990, September 7, 1990, December 4, 1990, April 16, 1991, July 3,1991, October 12, 1991, January 26, 1992, April 8, 1992, July 15,1992, October 19, 1992, January 11, 1993, March 29, 1993 and July 7, 1993 respectively. This quarterly monitoring event was conducted on October 8, 1993. Water samples were taken from the monitoring wells and sent to a State-certified laboratory for analysis under proper chain-of-custody procedures.

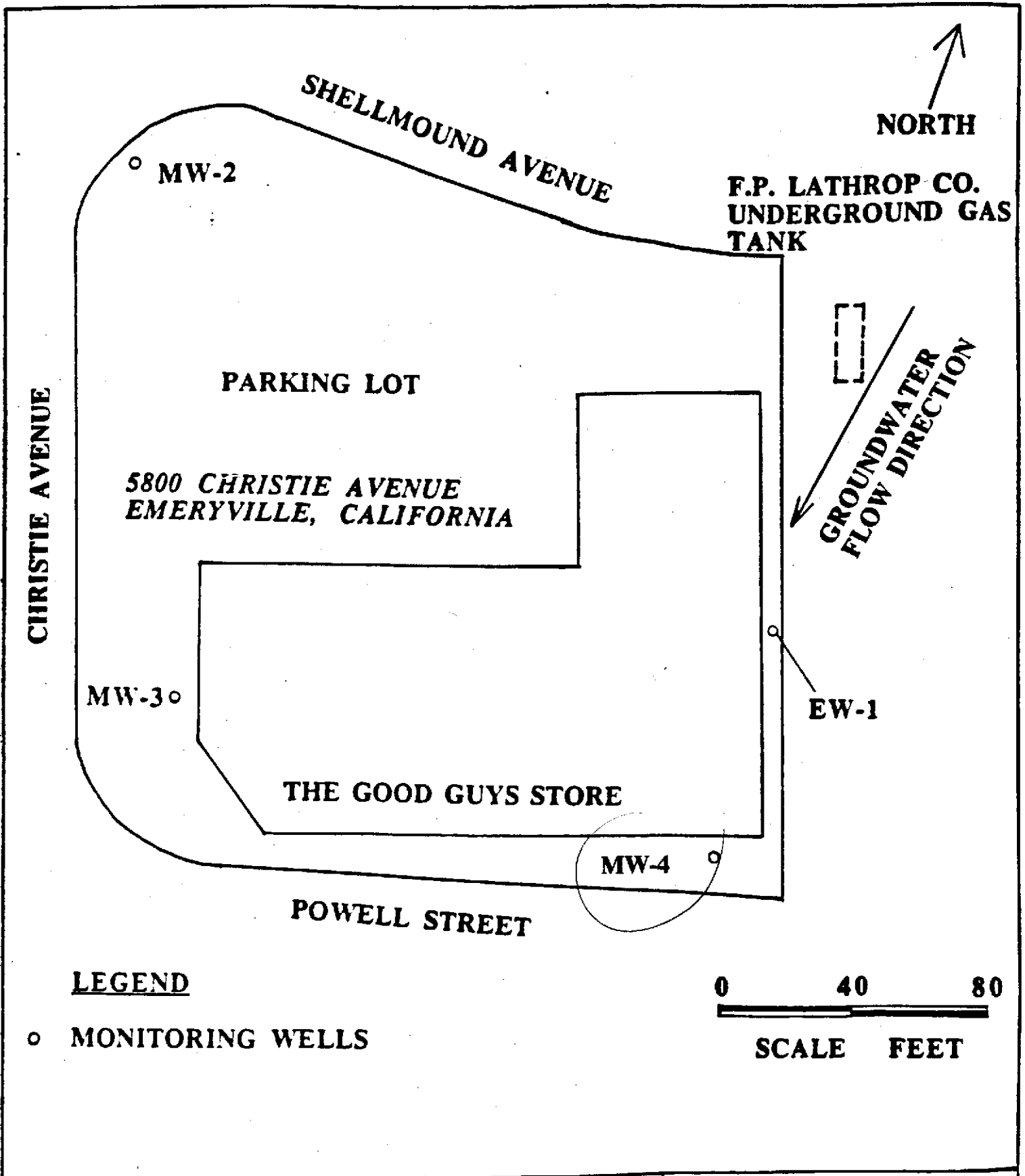
This report presents the results of this quarterly groundwater monitoring event on well EW1 and MW4 including laboratory analytical results, groundwater movement analysis, summary of findings, and conclusions and discussions.

2.0 GROUNDWATER MOVEMENT ANALYSIS

Prior to sample collection of this quarterly sampling, depth-to-water table in each of the three existing monitoring wells at the facility was measured for the analysis of groundwater movement. Table 1 presents a summary of the water levels in the three wells (EW1, MW2, MW3 and MW4) from the groundwater monitoring events prepared by ETS.

From the result of the water level measurements on October 15, 1993, elevation of water levels were about the same in the four wells, as compared to the data collected in July 1993. The groundwater flow direction remained in the same direction, flowing towards south(Figure 1). The hydraulic gradient was 0.0153 feet per horizontal foot.

Groundwater movement across the facility remains in a similar pattern, as compared to the result from the previous sampling event. Data of flow direction and hydraulic gradient are summarized in Table 2.



ETS
ENVIRONMENT & TECHNOLOGY SERVICES

FIGURE 1
LOCATION MAP

3.0 GROUNDWATER QUALITY

On October 8, 1993, ETS field personnel visited the facility and collected water samples from monitoring well EW1 and MW4 for laboratory analysis. These groundwater samples were sent to a state-certified laboratory for analyses of halocarbons using EPA method 601, total petroleum hydrocarbons (TPH) as gasoline and gasoline constituents benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA method 602.

From the results of the laboratory analysis (Appendix A), water sample taken from well EW1 contained some volatile organic compounds. The VOCs detected in well EW-1 from the October 8, 1993 sampling episode are presented in Table 3.

Groundwater quality results of well MW4 are included in Table 4 of this report. Traces of chlorinated solvents were detected. The BTEX detected was not related to gasoline compounds. They may be associated with asphaltic material found near MW-4.

4.0 SUMMARY OF FINDINGS

Table 3 presents a summary of analytical results of well EW1 in time series. Table 4 presents the groundwater quality of well MW4. There are several factors that affect the changes in the hydrocarbon concentration. These factors are variations in water table, chemical breakdown due to biodegradation, and unidentified off-site sources.

It is obvious that there is no sign of downgradient or off site migration of the chlorinated solvents as indicated by NDs in Table 4.

MW4 detected elevated levels of BTEX compounds in the initial sample and analysis. The suspected sources of the BTEX compounds may have been originated from upgradient closed underground storage tank or from upgradient asphalt manufacturing plant. Well MW4 is located very close to underground utility lines along Powell Street which may serve as migration conduits from upgradient sources. During the construction of well MW4, asphaltic material of unknown origin(may be from upgradient asphalt manufacturing plant) was detected between 2 to 6 feet below grade.

However, there is still strong microbial activity in the subsurface as indicated in the microbiology reports on EW1 and MW4 prepared by Microbe Inotech Laboratories(Appendix B).

TABLE 1

SUMMARY OF WATER LEVEL DATA

WELL Name	Elev. of TOC (Ft-MSL)	11/6/89		2/20/90		5/31/90		9/7/90	
		DTW Ft.	SWL Ft.	DTW Ft.	SWL Ft.	DTW Ft.	SWL Ft.	DTW Ft.	SWL Ft.
EW-1	8.62	6.15	2.47	5.93	2.69	5.86	2.76	6.30	2.32
MW-2	7.42	4.37	3.05	4.26	3.16	4.26	3.16	4.60	2.82
MW-3	6.42	5.10	1.32	5.42	1.00	4.93	1.49	5.15	1.17

WELL Name	12/4/90		4/16/91		7/3/91		10/14/91		1/9/92	
	DTW Ft.	SWL Ft.	DTW Ft.	SWL Ft.	DTW Ft.	SWL Ft.	DTW Ft.	SWL Ft.	DTW Ft.	SWL Ft.
EW-1	7.39	2.23	6.02	2.60	6.20	2.42	6.5	2.12	6.20	2.42
MW-2	4.67	2.75	4.31	3.11	4.52	2.9	3.92	3.5	4.43	3.10
MW-3	5.96	1.35	5.25	1.17	5.33	1.09	4.63	1.79	6.50	-0.08

WELL Name	7/15/92		10/19/92		1/11/93		4/19/93	
	DTW Ft.	SWL Ft.	DTW Ft.	SWL Ft.	DTW Ft.	SWL Ft.	DTW Ft.	SWL Ft.
EW-1	6.10	2.52	6.1	2.52	5.5	3.12	5.95	2.67
MW-2	4.42	3.00	4.77	2.65	2.9	4.92	4.35	3.07
MW-3	5.23	1.19	5.37	1.05	3.6	2.82	5.1	1.32

TABLE 1(continue)

SUMMARY OF WATER LEVEL DATA

WELL Name	Elev. of TOC (Ft-MSL)	7/13/93		10/15/93	
		DTW Ft.	SWL Ft.	DTW Ft.	SWL Ft.
EW-1	8.62	6.2	2.42	6.25	2.37
MW-2	7.42	4.7	2.72	4.25	3.17
MW-3	6.42	5.35	1.07	5.35	1.07
MW-4	7.07*	5.75	1.32	5.80	1.27

* Adjusted elevation

Note: TOC top of casing
DTW depth to water table
SWL static water level above MSL
MSL mean sea level

TABLE 2**GROUNDWATER MOVEMENT ANALYSIS**

Date	4/25/89	11/6/89	2/20/90	5/31/90	9/7/90	12/4/90
------	---------	---------	---------	---------	--------	---------

Flow Towards	SW	S	S	S	S	S
--------------	----	---	---	---	---	---

Gradient	0.001	0.012	0.016	0.0125	0.0115	0.045
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Date	4/16/91	7/3/91	10/14/91	1/9/92	7/15/92	10/19/92
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Flow Towards	S	S	S	SW	S	S
--------------	---	---	---	----	---	---

Gradient	0.014	0.013	0.011	0.0238	0.013	0.0127
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Date	1/11/93	4/19/93	7/7/93	10/15/93
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Flow Towards	S	SW	SW	S
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Gradient	0.011	0.013	0.013	0.0153
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TABLE 3

SUMMARY OF QUARTERLY GROUNDWATER QUALITY RESULTS OF WELL EW-1
5800 CHRISTIE AVENUE,
EMERYVILLE, CALIFORNIA

CONCENTRATIONS IN MG/L

COMPOUNDS	5/8/89	11/6/89	2/20/90	5/31/90	9/7/90	12/4/90	4/6/91	7/3/91	10/12/92	1/8/92	4/8/92
TPH as GASOLINE	NA	0.74	12.0	24.0	25.0	7.4	51.0	23.0	39.0	<5.0	12.0
BENZENE	ND	0.18	1.3	0.056	1.1	0.18	3.0	0.65	ND	ND	4.0
TOLUENE	0.19	0.039	3.6	6.1	0.8	3.2	12.0	8.7	1.3	0.58	ND
XYLENES	0.17	0.067	0.047	0.14	0.042	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	ND	0.0008	0.0071	0.017	ND	ND	ND	ND	ND	ND	ND
HALOCARBONS	0.718	1.1861	4.701	6.876	6.661	3.762	10.6	6.49	2.794	4.459	6.8
TCE	0.64	0.74	1.1	0.83	0.49	1.5	1.3	0.13	0.73	1.7	2.8
1,1 DCE	0.078	0.0023	0.014	0.069	0.036	ND	ND	ND	ND	ND	ND
1,2 DCE	ND	0.35	2.5	0.11	2.4	1.5	3.7	2.0	0.62	1.52	ND
1,1,1 TCA	ND	0.026	0.55	1.2	0.51	0.072	2.9	0.2	0.47	0.089	ND
1,1 DCA	ND	0.034	0.46	1.9	1.3	0.46	1.8	2.0	0.63	0.42	1.3
1,2 DCA	ND	0.0048	0.034	0.033	0.053	ND	ND	ND	0.12	0.25	2.7
VINYL CHLORIDE	ND	0.029	ND	2.6	1.7	0.23	0.9	1.99	0.17	0.48	ND
CHLOROETHANE	ND	ND	0.029	0.094	0.15	ND	ND	0.17	0.054	ND	ND
MET. CHLORIDE	ND	ND	0.014	0.04	0.022	ND	ND	ND	ND	ND	ND
TOTAL VOCs	1.078	1.9261	16.701	30.876	31.661	11.162	61.6	29.49	41.794	<9.459	18.8

NA NOT ANALYSED

ND NOT DETECTED OR BELOW DETECTION LIMITS

VOCs VOLATILE ORGANIC COMPOUNDS (TPH PLUS TOX)

TABLE 3(CONTINUE)

SUMMARY OF QUARTERLY GROUNDWATER QUALITY RESULTS OF WELL EW-1
5800 CHRISTIE AVENUE,
EMERYVILLE, CALIFORNIA

CONCENTRATIONS IN MG/L

COMPOUNDS	7/15/92	10/19/92	1/11/93	3/29/93	7/7/93	10/8/93
TPH as GASOLINE	100.0	26.0	20.0	15.0	40	12
BENZENE	ND	ND	ND	ND	ND	ND
TOLUENE	4.7	12.5	7.5	12.0	3.6	11
XYLENES	ND	ND	0.075	ND	ND	0.081
ETHYLBENZENE	ND	ND	ND	ND	ND	ND
HALOCARBONS	2.461	5.07	0.065	2.5	1.7	1.81
PCE	ND	ND	0.042	ND	ND	ND
TCE	0.68	0.27	0.023	2.0	ND	ND
1,1 DCE	ND	4.8	ND	0.5	ND	ND
1,2 DCE	0.6	ND	ND	ND	ND	ND
1,1,1 TCA	0.42	ND	ND	ND	ND	0.21
1,1 DCA	0.6	ND	ND	ND	1.7	1.6
1,2 DCA	0.11	ND	ND	ND	ND	ND
VINYL CHLORIDE	0.15	ND	ND	ND	ND	ND
CHLOROETHANE	ND	ND	ND	ND	ND	ND
MET. CHLORIDE	ND	ND	ND	ND	ND	ND
TOTAL VOCs	102.461	31.07	20.065	17.5	41.7	13.81

NA NOT ANALYSED

ND NOT DETECTED OR BELOW DETECTION LIMITS

VOCs VOLATILE ORGANIC COMPOUNDS (TPH PLUS TOX)

TABLE 4

SUMMARY OF QUARTERLY GROUNDWATER QUALITY RESULTS OF WELL MW-4
 5800 CHRISTIE AVENUE,
 EMERYVILLE, CALIFORNIA

CONCENTRATIONS IN MG/L

COMPOUNDS	7/13/93	10/8/93
TPH as GASOLINE	<100.0*	2.2*
BENZENE	0.8	0.29
TOLUENE	0.28	0.22
XYLENES	0.3	0.2
ETHYLBENZENE	0.27	0.12
HALOCARBONS	ND	0.06
PCE	ND	ND
TCE	ND	ND
1,1 DCE	ND	ND
1,2 DCE	ND	ND
1,1,1 TCA	ND	0.005
1,1 DCA	ND	ND
1,2 DCA	ND	0.055
VINYL CHLORIDE	ND	ND
CHLOROETHANE	ND	ND
MET. CHLORIDE	ND	ND
TOTAL VOCs	<100*	2.26*

* BTEX DO NOT MATCH GASOLINE PATTERN
 NA NOT ANALYSED
 ND NOT DETECTED OR BELOW DETECTION LIMITS
 VOCs VOLATILE ORGANIC COMPOUNDS (TPH PLUS TOX)

APPENDIX A

GROUNDWATER LABORATORY ANALYSIS REPORT



CKY incorporated Environmental Services

Date: 10/18/93
N9310-07

CHIC
448 Tharp Drive
Moraga, CA 94556

Attn: Mr. Walter Loo

Subject: Laboratory Report

Enclosed is the laboratory report for samples received on 10/08/93. The samples were received in coolers with ice and intact; the chain-of-custody forms were properly filled out. The data reported includes:

<u>Method</u>	<u>No. of Analysis</u>
M8015-G	2 Water
EPA 601	2 Water
EPA 602	2 Water

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely,



Danny Hoang
Laboratory Director

EPA METHODS - 601

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=====
CLIENT:      CHIC                      DATE REC'D:   10/08/93
PROJECT:     PROJECT:                   DATE ANALYZED: 10/12/93
SAMPLE ID:   BLANK                     MATRIX TYPE:   Water
CONTROL NO:  N9310-07-Blk
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<u>PARAMETERS</u>	<u>RESULTS</u> (ug/L)	<u>D. LIMIT</u> (ug/L)
Benzene	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	5
Carbon Tetrachloride	ND	1
Chlorobenzene	ND	1
Chlorodibromomethane	ND	1
Chloroethane	ND	5
2-Chloroethyl vinyl ether	ND	5
Chloroform	ND	1
Chloromethane	ND	5
Dichlorodifluoromethane	ND	10
1,1-Dichloroethane	ND	1
1,2-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
trans-1,2 Dichloroethene	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
trans-1,3-Dichloropropene	ND	1
Ethylbenzene	ND	1
Methylene chloride	ND	10
1,1,2,2-Tetrachloroethane	ND	1
Tetrachloroethene	ND	1
Toluene	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2-Trichloroethane	ND	1
Trichloroethene	ND	1
Trichlorofluoromethane	ND	5
Vinyl Chloride	ND	10
1,3 Dichlorobenzene	ND	1
1,4 Dichlorobenzene	ND	1
1,2 Dichlorobenzene	ND	1
Xylenes	ND	1
<u>% SURROGATE RECOVERY</u>		
1,2 Dichloroethane-d ₄	76	76-114
Toluene -d ₈	102	88-110
Bromofluorobenzene	101	86-115

ND - Non Detected

EPA METHOD - 601
VOLATILE ORGANICS BY GC/MS

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=====
CLIENT:          CHIC                      DATE REC'D:    10/08/93
PROJECT:         DATE ANALYZED:          10/12/93
SAMPLE ID:      EW-1                      MATRIX TYPE:   Water
CONTROL NO:     N9310-07-01
=====
  
```

<u>PARAMETERS (601)</u>	<u>RESULTS</u> <u>(ug/L)</u>	<u>DETECTION LIMIT</u> <u>(ug/L)</u>
Benzene	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	5
Carbon Tetrachloride	ND	1
Chlorobenzene	ND	1
Chlorodibromomethane	ND	1
Chloroethane	ND	5
2-Chloroethyl vinyl ether	ND	5
Chloroform	ND	1
Chloromethane	ND	5
Dichlorodifluoromethane	ND	10
1,1-Dichloroethane	1600	1
1,2-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
trans-1,2 Dichloroethene	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
trans-1,3-Dichloropropene	ND	1
Ethylbenzene	ND	1
Methylene chloride	ND	10
1,1,2,2-Tetrachloroethane	ND	1
Tetrachloroethene	ND	1
Toluene	13000	1
1,1,1-Trichloroethane	210	1
1,1,2-Trichloroethane	ND	1
Trichloroethene	ND	1
Trichlorofluoromethane	ND	5
Vinyl Chloride	ND	10
1,3 Dichlorobenzene	ND	1
1,4 Dichlorobenzene	ND	1
1,2 Dichlorobenzene	ND	1
Xylenes	ND	1
<u>§ SURROGATE RECOVERY</u>		
1,2 Dichloroethane-d ₄	106	76-114
Toluene -d ₈	96	88-110
Bromofluorobenzene	94	86-115

ND - Non Detected

EPA METHOD - 601
VOLATILE ORGANICS BY GC/MS

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CLIENT:      CHIC                      DATE REC'D:   10/08/93
PROJECT:     DATE ANALYZED: 10/12/93
SAMPLE ID:   MW-4                      MATRIX TYPE:   Water
CONTROL NO:  N9310-07-02
=====
  
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<u>PARAMETERS (601)</u>	<u>RESULTS</u> <u>(ug/L)</u>	<u>DETECTION LIMIT</u> <u>(ug/L)</u>
Benzene	320	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	5
Carbon Tetrachloride	ND	1
Chlorobenzene	ND	1
Chlorodibromomethane	ND	1
Chloroethane	ND	5
2-Chloroethyl vinyl ether	ND	5
Chloroform	ND	1
Chloromethane	ND	5
Dichlorodifluoromethane	ND	10
1,1-Dichloroethane	ND	1
1,2-Dichloroethane	55	1
1,1-Dichloroethene	ND	1
trans-1,2 Dichloroethene	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
trans-1,3-Dichloropropene	ND	1
Ethylbenzene	91	1
Methylene chloride	ND	10
1,1,2,2-Tetrachloroethane	ND	1
Tetrachloroethene	ND	1
Toluene	60	1
1,1,1-Trichloroethane	5	1
1,1,2-Trichloroethane	ND	1
Trichloroethene	ND	1
Trichlorofluoromethane	ND	5
Vinyl Chloride	ND	10
1,3 Dichlorobenzene	ND	1
1,4 Dichlorobenzene	ND	1
1,2 Dichlorobenzene	ND	1
Xylenes	35	1

<u>% SURROGATE RECOVERY</u>		
1,2 Dichloroethane-d ₄	148	76-114
Toluene -d ₈	98	88-110
Bromofluorobenzene	104	86-115

* Matrix Interference

ND - Non Detected

ky

EPA METHOD Mod. 8015-GAS
TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

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CLIENT:	CHIC	DATE REC'D:	10/08/93
PROJECT:		DATE EXTRACTED:	N/A
CONTROL NO:	N9310-07	DATE ANALYZED:	10/15/93
MATRIX:	Water		

=====

<u>SAMPLE ID:</u>	<u>CONTROL NO:</u>	<u>RESULTS</u> <u>(mg/L)</u>	<u>%SURROGATE</u>
M. BLANK	N931007-BLK	ND	89
EW-1	N931007-01	12	93
MW-4	N931007-02	2.2*	76

* Does not match gasoline pattern. Reported value is quantitated against gasoline calibration data.

DETECTION LIMIT: 0.5 mg/L

=====

QUALITY CONTROL DATA

CLIENT: CHIC DATE RECEIVED: 10/08/93
PROJECT: DATE EXTRACTED: N/A
CONTROL NO: N9310-07 DATE ANALYZED: 10/09/93

METHOD M8015-GAS
MATRIX: Water

SAMPLE ID: N9310-06-BLK

<u>COMPOUND</u>	<u>SAMPLE RESULTS</u> (mg/L)	<u>AMOUNT SPIKED</u> (mg/L)	<u>% REC.</u>	<u>DUP. % REC.</u>	<u>RPD</u>
GAS	ND	2	105	100	5

CKY

EPA METHOD - 602
BTEX

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CLIENT:	CHIC	DATE RECEIVED:	10/08/93
CONTROL NO:	N9310-07	DATE ANALYZED:	10/08/93
MATRIX:	Water		

=====

<u>SAMPLE ID:</u>	<u>CONTROL NO:</u>	<u>RESULTS (ug/L)</u>				<u>% SURR</u>	
		<u>Benz</u>	<u>Tol</u>	<u>Et Benz</u>	<u>Xyls</u>	<u>REC</u>	
M. BLANK	N931006-BLK	ND	ND	ND	ND	89	
EW-1*	N931007-01	ND	11000	ND	81	93	
MW-4	N931007-02	290	220	120	20	76	
DETECTION LIMIT		1.0	1.0	1.0	1.0		

* The detection limit is 50 ug/L. Confirmation was done at a high detection limit due to high concentration of toluene. Due to a limited amount of sample, confirmation at 1 ug/L detection limit could not be done.

QUALITY CONTROL DATA

CLIENT: CHIC DATE RECEIVED 10/08/93
 CONTROL NO: N9310-07

METHOD EPA 602
 MATRIX: Water

SAMPLE ID: N9310-06-BLK

<u>COMPOUND</u>	<u>SAMPLE RESULTS</u> (ug/L)	<u>AMOUNT SPIKED</u> (ug/L)	<u>% REC.</u>	<u>DUP. % REC.</u>	<u>RPD</u>
Benzene	ND	50	92	110	18
Toluene	ND	50	96	112	15
Ethyl Benzene	ND	50	98	116	17
Xylene	ND	100	100	115	14



CKY incorporated Environmental Services

Date: 10/13/93
N9310-08

CHIC
448 Tharp Drive
Moraga, CA 94556

Attn: Mr. Walter Loo

Subject: Laboratory Report

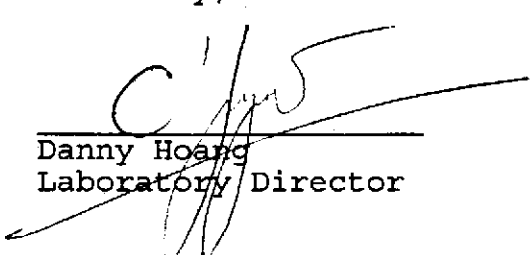
Enclosed is the laboratory report for samples received on 10/08/93. The samples were received in coolers with ice and intact; the chain-of-custody forms were properly filled out. The data reported includes:

<u>Method</u>	<u>No. of Analysis</u>
EPA 625	2 Waters

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely,



Danny Hoang
Laboratory Director

**EPA METHOD - 625
SEMIVOLATILE ORGANICS BY GC/MS**

=====
CLIENT: CHIC
PROJECT:
SAMPLE ID: EW-1
CONTROL NO: N931008-01

=====
DATE REC'D: 10/08/93
DATE EXTRACTED: 10/12/93
DATE ANALYZED: 10/12/93
MATRIX: Water

<u>PARAMETER</u>	<u>RESULTS</u> (mg/L)	<u>PARAMETER</u>	<u>RESULTS</u> (mg/L)
Phenol	0.016(.01)	Acenaphthene	ND(.01)
bis(2-chloroethyl)ether	ND(.01)	2,4-Dinitrophenol	ND(.05)
2-Chlorophenol	ND(.01)	4-Nitrophenol	ND(.05)
1,3-Dichlorobenzene	ND(.01)	Dibenzofuran	ND(.01)
1,4-Dichlorobenzene	ND(.01)	2,4-Dinitrotoluene	ND(.01)
Benzyl Alcohol	ND(.01)	2,6-Dinitrotoluene	ND(.01)
1,2-Dichlorobenzene	ND(.01)	Diethylphthalate	ND(.01)
2-Methylphenol	0.700(.10)	4-Chlorophenyl-phenylether	ND(.01)
bis(2-chloroisopropyl)ether	ND(.01)	Fluorene	ND(.01)
4-Methylphenol	ND(.01)	4-Nitroaniline	ND(.05)
N-Nitroso-Di-n-Propylamine	ND(.01)	4,6-Dinitro-2-Methylphenol	ND(.05)
Hexachloroethane	ND(.01)	N-Nitrosodiphenylamine	ND(.01)
Nitrobenzene	ND(.01)	4-Bromophenyl-phenylether	ND(.01)
Isophorone	ND(.01)	Hexachlorobenzene	ND(.01)
2-Nitrophenol	ND(.01)	Pentachlorophenol	ND(.01)
2,4-Dimethylphenol	ND(.01)	Phenanthrene	ND(.01)
Benzoic Acid	ND(.05)	Anthracene	ND(.01)
bis-(2-Chloroethoxy)methane	ND(.01)	Di-n-Butylphthalate	ND(.01)
2,4-Dichlorophenol	ND(.01)	Fluoranthene	ND(.01)
1,2,4-Trichlorobenzene	ND(.01)	Pyrene	ND(.01)
Naphthalene	0.012(.01)	Butylbenzylphthalate	ND(.01)
4-Chloroaniline	ND(.02)	3,3'-Dichlorobenzidine	ND(.02)
Hexachlorobutadiene	ND(.01)	Benzo(a)Anthracene	ND(.01)
4-Chloro-3-Methylphenol	ND(.01)	bis(2-Ethylhexyl)Phthalate	0.023(.01)
2-Methylnaphthalene	ND(.01)	Chrysene	ND(.01)
Hexachlorocyclopentadiene	ND(.01)	Di-n-Octyl Phthalate	ND(.01)
2,4,6-Trichlorophenol	ND(.01)	Benzo(b)Fluoranthene	ND(.01)
2,4,5-Trichlorophenol	ND(.01)	Benzo(k)Fluoranthene	ND(.01)
2-Chloronaphthalene	ND(.01)	Benzo(a)Pyrene	ND(.01)
2-Nitroaniline	ND(.05)	Indeno(1,2,3-cd)Pyrene	ND(.01)
Dimethyl Phthalate	ND(.01)	Dibenz(a,h)Anthracene	ND(.01)
Acenaphthylene	ND(.01)	Benzo(g,h,i)Perylene	ND(.01)
3-Nitroaniline	ND(.05)		

ND = Not Detected

% Surrogate Recovery

2-Fluorophenol	59
Phenol - d ₅	82
Nitrobenzene - d ₅	81
2-Fluorobiphenyl	80
2,4,6 Tribromophenol	78
Terphenyl - d ₁₄	69

21-110
10-110
35-114
43-116
10-123
33-141

QUALITY CONTROL DATA

CLIENT: CHIC
 PROJECT:
 CONTROL NO: N9310-08

DATE EXTC'D: 10/12/93
 DATE ANALYZED: 10/12/93

 METHOD EPA 625
 MATRIX: Water

SAMPLE ID: N931008-blk

<u>COMPOUND</u>	<u>SAMPLE RESULTS</u> (ug/L)	<u>AMOUNT SPIKED</u> (ug/L)	<u>% REC.</u>
Phenol	ND	150	29
2-Chlorophenol	ND	150	43
1,4-DCB	ND	100	46
N-Nitroso-di-n propylamine	ND	100	50
1,2,4-TCB	ND	100	46
4-Chloro-3- methylphenol	ND	150	49
Acenaphthene	ND	100	51
4-Nitrophenol	ND	150	38
2,4-Dinitrotoluene	ND	100	73
Pentachlorophenol	ND	150	70
Pyrene	ND	100	70

**EPA METHOD - 625
SEMIVOLATILE ORGANICS BY GC/MS**

=====

CLIENT: CHIC
PROJECT:
SAMPLE ID: MW-4
CONTROL NO: N931008-02

DATE REC'D: 10/08/93
DATE EXTRACTED: 10/12/93
DATE ANALYZED: 10/12/93
MATRIX: Water

=====

<u>PARAMETER</u>	<u>RESULTS</u> (mg/L)	<u>PARAMETER</u>	<u>RESULTS</u> (mg/L)
Phenol	0.120(.01)	Acenaphthene	0.140(.01)
bis(2-chloroethyl)ether	ND(.01)	2,4-Dinitrophenol	ND(.05)
2-Chlorophenol	ND(.01)	4-Nitrophenol	ND(.05)
1,3-Dichlorobenzene	ND(.01)	Dibenzofuran	ND(.01)
1,4-Dichlorobenzene	ND(.01)	2,4-Dinitrotoluene	ND(.01)
Benzyl Alcohol	ND(.01)	2,6-Dinitrotoluene	ND(.01)
1,2-Dichlorobenzene	ND(.01)	Diethylphthalate	ND(.01)
2-Methylphenol	ND(.10)	4-Chlorophenyl-phenylether	ND(.01)
bis(2-chloroisopropyl)ether	ND(.01)	Fluorene	0.050(.01)
4-Methylphenol	ND(.01)	4-Nitroaniline	ND(.05)
N-Nitroso-Di-n-Propylamine	ND(.01)	4,6-Dinitro-2-Methylphenol	ND(.05)
Hexachloroethane	ND(.01)	N-Nitrosodiphenylamine	ND(.01)
Nitrobenzene	ND(.01)	4-Bromophenyl-phenylether	ND(.01)
Isophorone	ND(.01)	Hexachlorobenzene	ND(.01)
2-Nitrophenol	ND(.01)	Pentachlorophenol	ND(.01)
2,4-Dimethylphenol	ND(.01)	Phenanthrene	0.100(.01)
Benzoic Acid	0.180(.05)	Anthracene	0.018(.01)
bis-(2-Chloroethoxy)methane	ND(.01)	Di-n-Butylphthalate	0.013(.01)
2,4-Dichlorophenol	ND(.01)	Fluoranthene	0.031(.01)
1,2,4-Trichlorobenzene	ND(.01)	Pyrene	0.032(.01)
Naphthalene	2.800(.20)	Butylbenzylphthalate	ND(.01)
4-Chloroaniline	ND(.02)	3,3'-Dichlorobenzidine	ND(.02)
Hexachlorobutadiene	ND(.01)	Benzo(a)Anthracene	ND(.01)
4-Chloro-3-Methylphenol	ND(.02)	bis(2-Ethylhexyl)Phthalate	0.130(.01)
2-Methylnaphthalene	0.130(.01)	Chrysene	ND(.01)
Hexachlorocyclopentadiene	ND(.01)	Di-n-Octyl Phthalate	ND(.01)
2,4,6-Trichlorophenol	ND(.01)	Benzo(b)Fluoranthene	ND(.01)
2,4,5-Trichlorophenol	ND(.01)	Benzo(k)Fluoranthene	ND(.01)
2-Chloronaphthalene	ND(.01)	Benzo(a)Pyrene	ND(.01)
2-Nitroaniline	ND(.05)	Indeno(1,2,3-cd)Pyrene	ND(.01)
Dimethyl Phthalate	ND(.01)	Dibenz(a,h)Anthracene	ND(.01)
Acenaphthylene	0.064(.01)	Benzo(g,h,i)Perylene	ND(.01)
3-Nitroaniline	ND(.05)		

ND = Not Detected

§ Surrogate Recovery

2-Fluorophenol	53	21-110
Phenol - d ₅	64	10-110
Nitrobenzene - d ₅	127	35-114
2-Fluorobiphenyl	64	43-116
2,4,6 Tribromophenol	64	10-123
Terphenyl - d ₁₄	64	33-141

**EPA METHOD - 625
SEMIVOLATILE ORGANICS BY GC/MS**

=====

CLIENT: CHIC
PROJECT:
SAMPLE ID: Method Blank
CONTROL NO: N931008-blk

DATE REC'D: NA
DATE EXTRACTED: 10/12/93
DATE ANALYZED: 10/12/93
MATRIX: Water

=====

<u>PARAMETER</u>	<u>RESULTS</u> (mg/L)	<u>PARAMETER</u>	<u>RESULTS</u> (mg/L)
Phenol	ND(.01)	Acenaphthene	ND(.01)
bis(2-chloroethyl)ether	ND(.01)	2,4-Dinitrophenol	ND(.05)
2-Chlorophenol	ND(.01)	4-Nitrophenol	ND(.05)
1,3-Dichlorobenzene	ND(.01)	Dibenzofuran	ND(.01)
1,4-Dichlorobenzene	ND(.01)	2,4-Dinitrotoluene	ND(.01)
Benzyl Alcohol	ND(.01)	2,6-Dinitrotoluene	ND(.01)
1,2-Dichlorobenzene	ND(.01)	Diethylphthalate	ND(.01)
2-Methylphenol	ND(.01)	4-Chlorophenyl-phenylether	ND(.01)
bis(2-chloroisopropyl)ether	ND(.01)	Fluorene	ND(.01)
4-Methylphenol	ND(.01)	4-Nitroaniline	ND(.05)
N-Nitroso-Di-n-Propylamine	ND(.01)	4,6-Dinitro-2-Methylphenol	ND(.05)
Hexachloroethane	ND(.01)	N-Nitrosodiphenylamine	ND(.01)
Nitrobenzene	ND(.01)	4-Bromophenyl-phenylether	ND(.01)
Isophorone	ND(.01)	Hexachlorobenzene	ND(.01)
2-Nitrophenol	ND(.01)	Pentachlorophenol	ND(.01)
2,4-Dimethylphenol	ND(.01)	Phenanthrene	ND(.01)
Benzoic Acid	ND(.05)	Anthracene	ND(.01)
bis-(2-Chloroethoxy)methane	ND(.01)	Di-n-Butylphthalate	ND(.01)
2,4-Dichlorophenol	ND(.01)	Fluoranthene	ND(.01)
1,2,4-Trichlorobenzene	ND(.01)	Pyrene	ND(.01)
Naphthalene	ND(.01)	Butylbenzylphthalate	ND(.01)
4-Chloroaniline	ND(.02)	3,3'-Dichlorobenzidine	ND(.02)
Hexachlorobutadiene	ND(.01)	Benzo(a)Anthracene	ND(.01)
4-Chloro-3-Methylphenol	ND(.01)	bis(2-Ethylhexyl)Phthalate	ND(.01)
2-Methylnaphthalene	ND(.01)	Chrysene	ND(.01)
Hexachlorocyclopentadiene	ND(.01)	Di-n-Octyl Phthalate	ND(.01)
2,4,6-Trichlorophenol	ND(.01)	Benzo(b)Fluoranthene	ND(.01)
2,4,5-Trichlorophenol	ND(.01)	Benzo(k)Fluoranthene	ND(.01)
2-Chloronaphthalene	ND(.01)	Benzo(a)Pyrene	ND(.01)
2-Nitroaniline	ND(.05)	Indeno(1,2,3-cd)Pyrene	ND(.01)
Dimethyl Phthalate	ND(.01)	Dibenz(a,h)Anthracene	ND(.01)
Acenaphthylene	ND(.01)	Benzo(g,h,i)Perylene	ND(.01)
3-Nitroaniline	ND(.05)		

ND = Not Detected

% Surrogate Recovery

2-Fluorophenol	39	21-110
Phenol - d ₅	33	10-110
Nitrobenzene - d ₅	40	35-114
2-Fluorobiphenyl	44	43-116
2,4,6 Tribromophenol	43	10-123
Terphenyl - d ₁₄	65	33-141

QUALITY CONTROL DATA

CLIENT: CHIC
 PROJECT:
 CONTROL NO: N9310-08

DATE EXTC'D: 10/12/93
 DATE ANALYZED: 10/12/93

METHOD: EPA 625
 MATRIX: Water

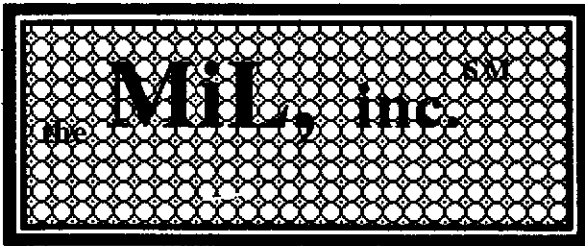
SAMPLE ID: N931008-blk

<u>COMPOUND</u>	<u>SAMPLE RESULTS</u> (ug/L)	<u>AMOUNT SPIKED</u> (ug/L)	<u>% REC.</u>
Phenol	ND	150	29
2-Chlorophenol	ND	150	43
1,4-DCB	ND	100	46
N-Nitroso-di-n propylamine	ND	100	50
1,2,4-TCB	ND	100	46
4-Chloro-3- methylphenol	ND	150	49
Acenaphthene	ND	100	51
4-Nitrophenol	ND	150	38
2,4-Dinitrotoluene	ND	100	73
Pentachlorophenol	ND	150	70
Pyrene	ND	100	70

CKY

APPENDIX B

MICROBIOLOGY ANALYSIS



**Total Plate
Count and
GC-FAME
and BiologTM
Analyses**

**Microbe
Inotech
Laboratories,
inc.**

**1840 Craig Road
St. Louis, MO
63146-4712
U.S.A.**

Telephone: (314) 878-6626

(800) 688-9144

FAX: (314) 878-9376

E-mail: Bruce C. Hemming

76177.204@compuserve.com

Report Prepared For:

**Environmental & Technical
Services**

**ATTN: Walter Loo, R.G.,
C.E.G.**

**2081 15th Street
San Francisco, CA 94114**

Client Phone 415-861-0810

Client Fax 415-861-3269

Report No. MILB-2419

PO Number

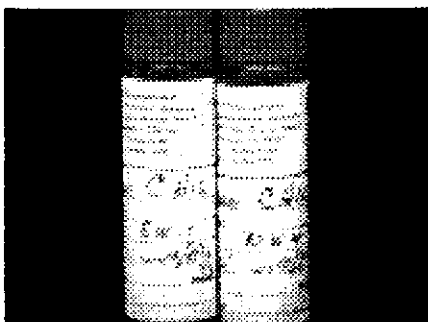
October 23, 1993

Summary Report of Analysis
[No. 2419]

Environmental & Technical Services
 ATTN: Walter Loo, R.G., C.E.G.
 2081 15th Street
 San Francisco, CA 94114

October 23, 1993

Description: Tue, Oct 12, 1993 - 1:29 PM: Received by Priority Mail two water samples from the CHIC site. Analysis request is for TPC and ID's. MILB-2419 pict



Chain of Custody Record Information

Purchase Order No.— None
 MiLB Report No. 2419

Processing:

[Standard Bacterial Plate Count - serial dilution method and direct spread plate count] Within 20 minutes of reception aliquots from each of the samples was checked for weight or volume and then serially diluted. Each dilution was aseptically transferred in a laminar flow biological cabinet and placed on previously prepared and dried trypticase soy broth agar (TSBA) medium in Petri plates. Observations for colony forming units (CFU) were made at 24 and 48 hours of incubation at 28°C for each sample. Colony differentiation was noted at 48 hours.

Summary Final Results—Total Heterotrophic Plate Count:

DATA: Direct Count: Colony Forming Units (CFU/ ml) on TSBA Medium			
Sample:	24 Hrs.	48 Hrs.	Colony Types
MW-4	5.20 x 10 ⁶	5.24 x 10 ⁶	2
EW-1	4.50 x 10 ⁵	9.61 x 10 ⁵	3

Percentage of strain types in each sample

Sample Strains	MW-4	EW-1	Colony Description
2419-1	80%		med. tan w. sheen
2419-2	20%		smll. white yellow
2419-3		60%	beige medium
2419-4		30%	yellow medium
2419-5		10%	large yellow tan

GC-FAME & Biolog™ Processing:

Following isolation the strains were individually streaked out onto TSBA. The TSBA plates were processed after 24 hr incubation by [Method 1 - Standard GC-FAME]. The strains were examined against both the newly installed Aerobe (TSBA [rev. 3.70]) and Clinical Aerobe (CLIN [rev.3.70]) GC-FAME databases. Subsequently the strains were prepared for Biolog™ analysis by suspending them in sterile saline and loading the solutions into the appropriate microtiter plates (Gram negative or Gram positive). The plates were incubated for 24 hours and then examined against version 3.5 of the Biolog™ database using an automated microplate reader.

Summary of GC-FAME/Biolog Analyses							
Strain Name	Primary Identification by GC	Sim. Coef.	Dist Coef.	Primary ID by Biolog™	Plate Type	Sim. Coef	Dist. Coef
2419-1	<i>Pseudomonas aeruginosa, clin.</i>	0.788	2.29	<i>Pseudomonas aeruginosa</i>	GN	0.893	0.646
2419-2	<i>Pseudomonas putida biotype A</i>	0.212	5.69	<i>Pseudomonas fluorescens type C</i>	GN	0.441	2.238
2419-3	Insufficient growth	—	—	—	GN	—	—
2419-4	<i>Aureobacterium liquefaciens</i>	0.852	1.828	<i>Bacillus amyloliquefaciens</i>	GP	0.482	8.091
2419-5	<i>Comamonas testosteronis, clin.</i>	0.626	3.126	<i>Comamonas acidovorans</i>	GN	0.478	4.881

Similarity and Distance Coefficient

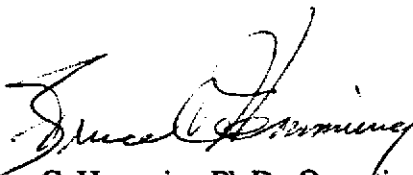
In order to create the database that we use to identify your organisms, thousands of species of bacteria had to be tested. In fact each species itself had to be tested hundreds of times to determine a set of characteristics unique to it. The species characteristics that are in our database are an "average" of the characteristics of hundreds of tested bacteria of the same species. The Similarity and Distance Coefficient of your organism refers to the similarity and distance to the hypothetical 'mean' organism in the database. The database organism has a similarity coefficient of one and a distance of zero. So the closer your strain is to one and zero the more closely it matches the mean organism in the database.

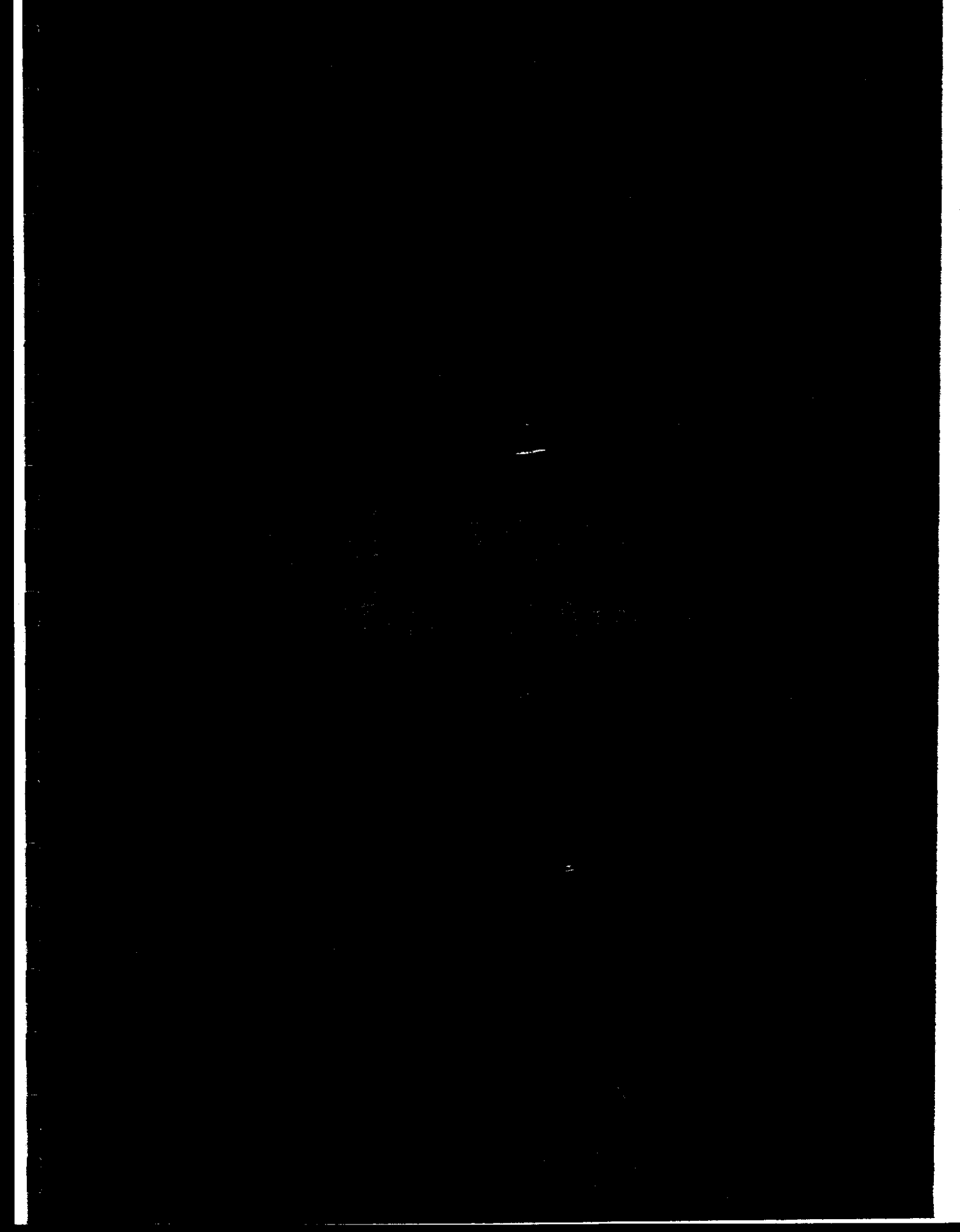
A good match is one with a similarity coefficient greater than .5 and a distance coefficient of less than 7.

Disclaimer: the MiL, inc. is not a human clinical diagnostic laboratory and makes no warranty to the fitness of this data for such purposes.

Thank you from the Staff on project:

Julie K. Milke - Laboratory Manager


Bruce C. Hemming Ph.D., Operations Director



ID: 1 CALIBRATION STANDARD Date of run: 16-OCT-93 01:19:11
 Bottle: 1 CALIBRATION (CREATED)

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.586	131136000	0.023	...	7.037	SOLVENT PEAK	...	< min rt	
1.970	2896	0.020	...	7.593	...	...	< min rt	
2.327	2600	0.022	...	8.292	...	...
2.689	46032	0.025	1.225	9.000	9:0	5.11		
3.090	2290	0.025	...	9.785	...	...
3.200	96464	0.027	1.157	10.000	10:0	10.12	Peak match	0.0003
3.904	50496	0.029	1.101	11.000	11:0	5.64	Peak match	-0.0016
4.049	20816	0.031	1.093	11.155	10:0 30H	2.06	Peak match	0.0019
4.294	10648	0.032	1.086	11.420	10:0 30H	1.04	Peak match	0.0022
4.445	1464	0.030	...	11.582	...	...
4.833	107024	0.032	1.054	12.000	12:0	10.23	Peak match	-0.0015
5.393	55696	0.036	1.017	13.000	13:0	5.13	Peak match	0.0001
6.451	984	0.035	...	13.323	...	...
7.367	112768	0.039	0.987	14.000	14:0	10.09	Peak match	-0.0001
8.910	58720	0.043	0.964	15.000	15:0	5.13	Peak match	-0.0004
9.250	24936	0.044	0.960	15.204	14:0 20H	2.17	Peak match	-0.0004
9.722	12176	0.045	0.955	15.487	Sum In Feature 3	1.05	Peak match	0.0025 14:0 30H/16:1 ISO I
10.576	118296	0.045	0.947	16.000	16:0	10.15	Peak match	-0.0012
11.470	864	0.046	...	16.517	...	...
12.305	59760	0.047	0.934	17.000	17:0	5.06	Peak match	-0.0002
12.717	25760	0.049	0.932	17.234	16:0 20H	2.18	Peak match	0.0005
14.062	121160	0.049	0.926	18.000	18:0	10.17	Peak match	-0.0000
15.095	1008	0.053	...	18.591	...	...
15.810	66816	0.049	0.921	19.000	19:0	5.06	Peak match	-0.0004
16.675	960	0.044	...	19.501	...	...
17.535	122536	0.050	0.918	20.000	20:0	10.19		
18.524	1384	0.062	...	20.573	...	...
19.095	2920	0.076	...	20.904	...	...	> max ar/ht	
19.457	9204	0.190	...	21.114	...	...	> max ar/ht	
*****	12176	...	...	...	SUMMED FEATURE 3	1.05	12:0 ALDE ?	unknown 10.928
*****	...	...	...	...	...	...	16:1 ISO 1/14:0 20H	14:0 30H/16:1 ISO I

Solvent Ar Total Area Named Area % Named Total Point Nbr Ref ECL Deviation Ref ECL Shift

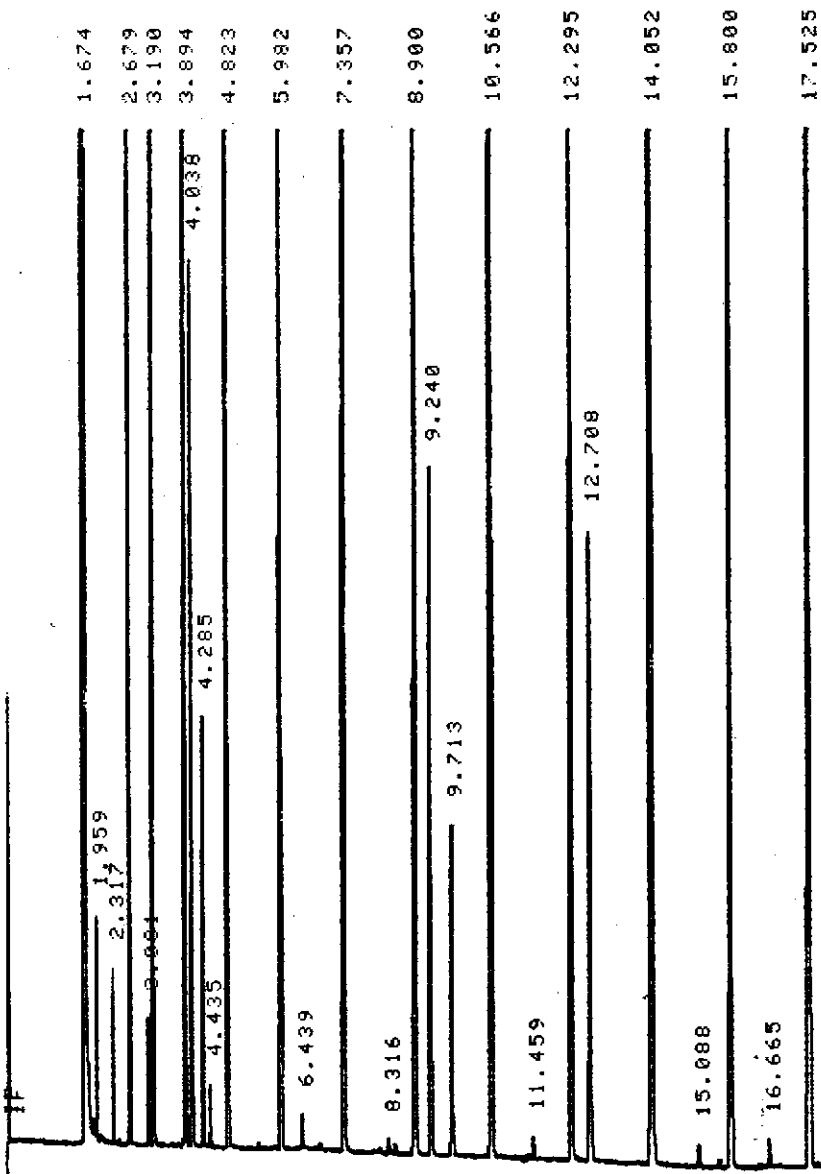
131136000 1111680 1104120 99.32 1103270 0
 GOOD PEAK MATCHING: PEAK POSITION MATCHING ERROR (RMS) IS 0.0012.

BOTTLE: 1 ID#: ISAT 16-OCT-93 11:13:16

FILE DATA:F93A16385

CALIBRATION STANDARD

RUN # 2 OCT 16, 1993 01:15:11
START



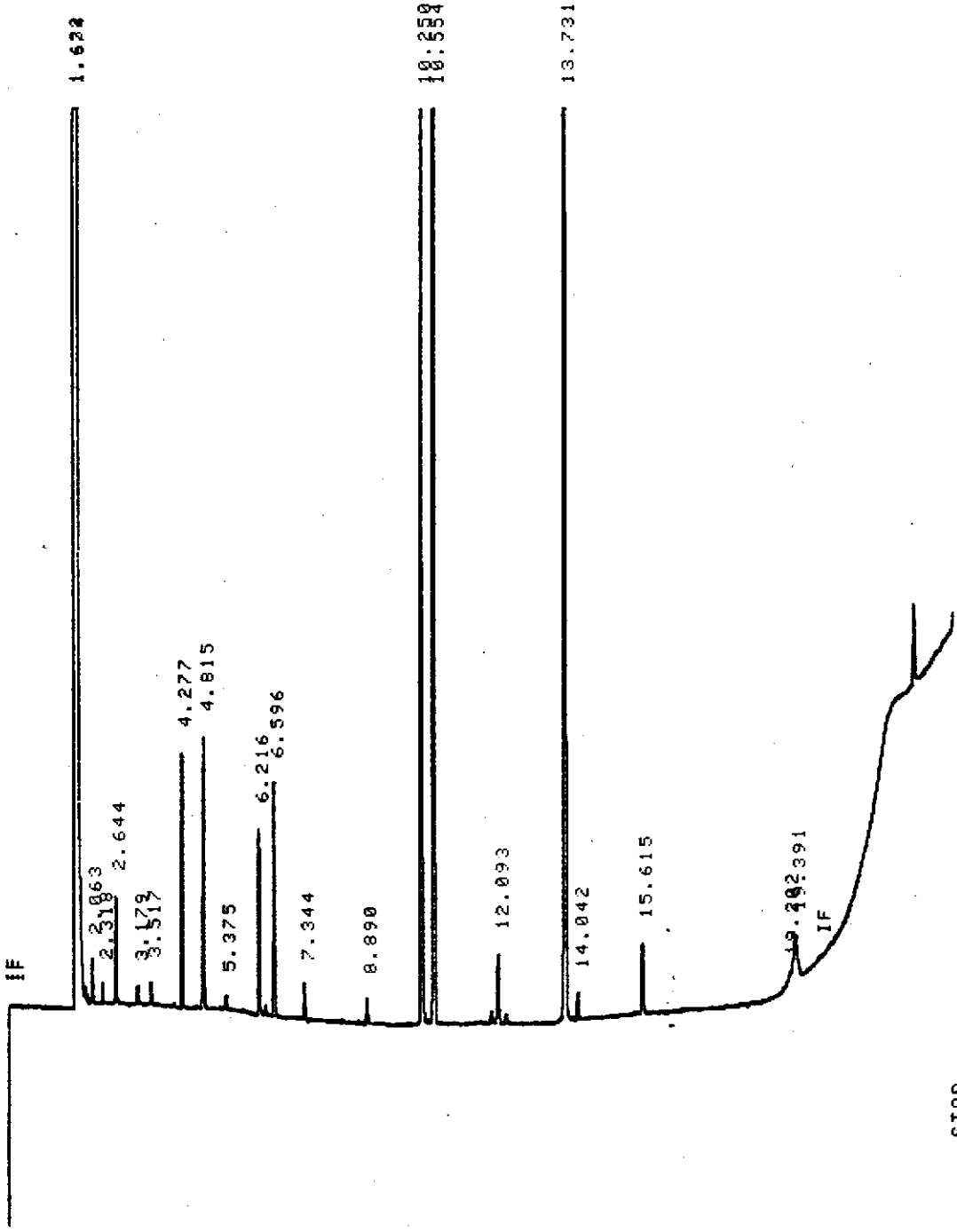
STOP

RUN # 2 OCT 16, 1993 01:15:11
START-No Plot
END OF SIGNAL

BOTTLE: 2 ID#: ISAT 16-OCT-93 11:43:29
FILE DATA:F93A16385

2419-1 WALTER-L00 STRAIN # 1

RUN # 3 OCT 16, 1993 01:45:24
START



STOP

RUN # 3 OCT 16, 1993 01:45:24
START-No Plot
END OF SIGNAL

*

ID: 2 2419-i Walter-Loa strain # 2 Date of run: 16-DEC-93 02:15:47
 Bottle: 3 SAMPLE [AEROBIC]

RT	Area	Ar/Mt	Respon	ECL	Name	X	Comment 1	Comment 2
1.582	121851264	0.028	...	7.046	SOLVENT PEAK		< min rt	
2.069	864	0.033	...	7.803			< min rt	
2.330	448	0.027	...	8.313			< min rt	
2.490	520	0.025	...	8.626			< min rt	
2.650	2024	0.027	...	8.939			< min rt	
3.182	2888	0.032	...	9.980				
3.522	3144	0.029	...	10.473				
3.835	1104	0.032	1.105	10.917	Sum In Feature 3	0.32	ECL deviates	0.003 12:0 ALDE ?
4.073	1352	0.034	...	11.197				
4.285	21496	0.032	1.080	11.425	10:0 30H	6.16	ECL deviates	0.002
4.826	9248	0.052	1.054	12.008	12:0	2.59	ECL deviates	0.000 Reference -0.014
5.225	2408	0.036	...	12.352				
5.383	3288	0.037	1.035	12.488	unknown 12.488	0.88	ECL deviates	0.002
6.222	21280	0.039	1.011	13.180	12:0 20H	5.71	ECL deviates	0.002
6.273	4408	0.039	1.007	13.290	12:1 30H	1.18	ECL deviates	0.001
6.603	25784	0.039	1.002	13.457	12:0 30H	6.85	ECL deviates	0.002
7.082	1000	0.053	...	13.885				
7.269	1488	0.061	...	13.941				
7.350	3056	0.041	0.987	14.000	14:0	0.80	ECL deviates	0.000 Reference -0.012
7.769	800	0.045	...	14.273				
8.126	1520	0.050	0.974	14.504	unknown 14.503	0.39	ECL deviates	0.001
8.889	952	0.054	0.964	14.998	15:0	0.24	ECL deviates	-0.002 Reference -0.014
9.350	2720	0.045	...	15.276				
9.705	5800	0.045	0.955	15.489	Sum In Feature 3	1.47	ECL deviates	-0.001 14:0 30H/16:1 ISO I
10.255	54096	0.046	0.949	15.819	16:1 w7c	13.62	ECL deviates	0.002
10.559	120600	0.044	0.947	16.001	16:0	30.28	ECL deviates	0.001 Reference -0.010
12.096	85136	0.046	0.936	16.890	17:0 CYCLO	21.13	ECL deviates	0.002 Reference -0.009
13.199	920	0.053	0.930	17.519	16:0 30H	0.23	ECL deviates	-0.001
13.733	30848	0.048	0.927	17.823	Sum In Feature 7	7.59	ECL deviates	0.001 18:1 w7c/w9t/w12t
14.039	1272	0.047	0.926	17.997	18:0	0.31	ECL deviates	-0.003 Reference -0.013
14.614	960	0.059	...	18.441				
15.619	1080	0.056	0.921	18.901	19:0 CYCLO w8c	0.24	ECL deviates	0.001 Reference -0.009
19.227	6232	0.213	...	29.990			> max rt	
*****	6904				SUMMED FEATURE 3	1.79	12:0 ALDE ?	unknown 10.928
*****							16:1 ISO I/14:0 30H	14:0 30H/16:1 ISO I
*****	30848				SUMMED FEATURE 7	7.59	18:1 w7c/w9t/w12t	18:1 w9c/w12t/w7c
*****							18:1 w12t/w9t/w7c	

Solvent Ar	Total Area	Named Area	% Named	Total Amt	Nbr Ref	ECL Deviation	Ref ECL Shift
121851264	408480	391720	95.90	376979	7	0.002	0.012

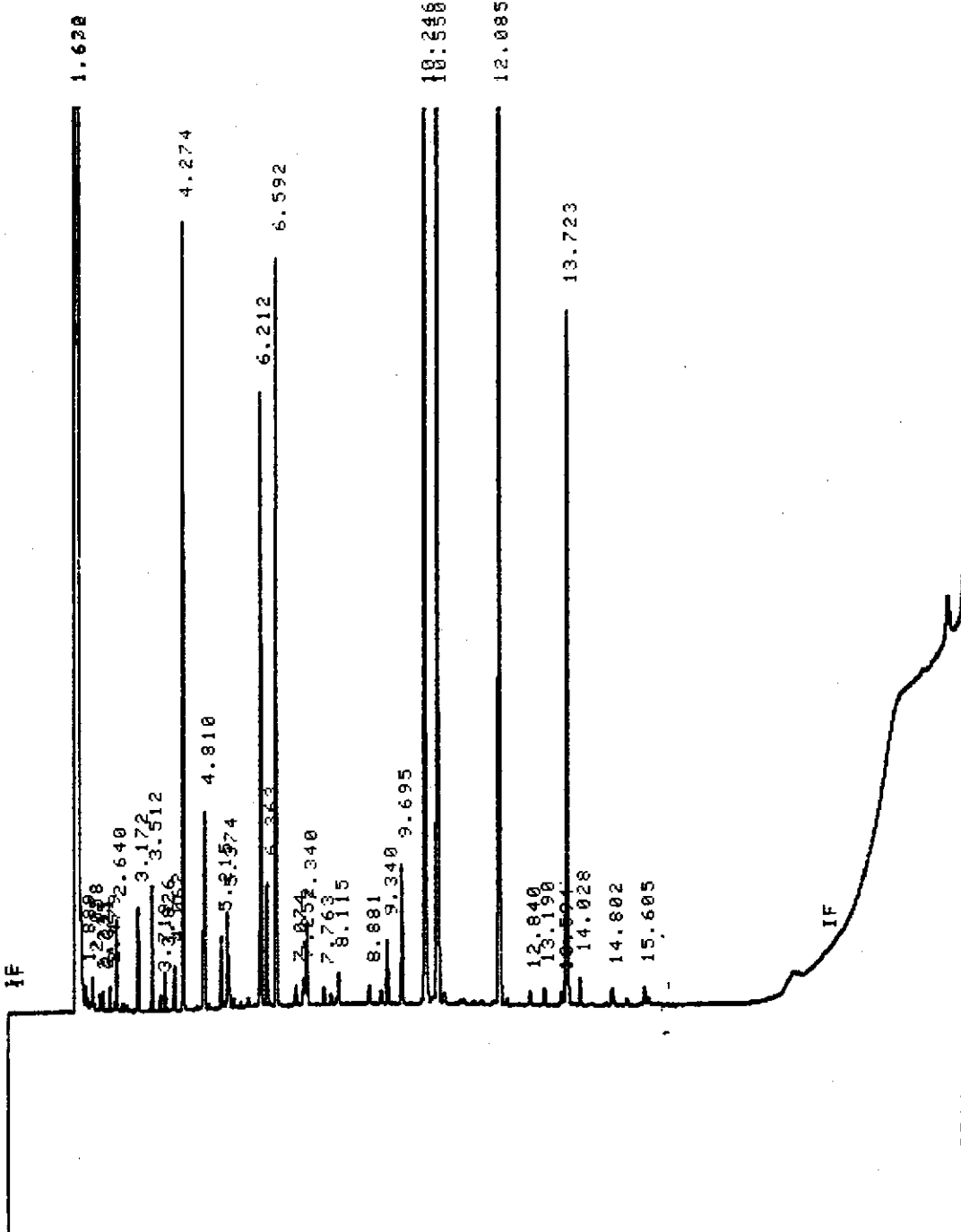
158A [Rev 3.70] Pseudomonas	0.160	(Pseudomonas aureofaciens)
P. chlororaphis	0.160	(Pseudomonas aureofaciens)
P. putida	0.129	
P. p. biotype A	0.129	
P. p. biotype B	0.072	
CLIN [Rev 3.70] Pseudomonas	0.212	
P. putida	0.212	
P. p. biotype A	0.212	
P. p. biotype B	0.110	
P. fluorescens	0.204	

BOTTLE: 3 ID#: 2SAT 16-OCT-93 12:13:55

FILE DATA: F93A16385

2419-1 WALTER-L00 STRAIN # 2

RUN # 4 OCT 16, 1993 02:15:47
START



STOP

RUN # 4 OCT 16, 1993 02:15:47
START-No Plot
END OF SIGNAL

*

ID: 3 2419-2 Walter-Loo strain # 3 Date of run: 16-OCT-93 02:47:13
 Bottle: 4 SAMPLE [BROUHE]

RT	Area	Ar/Mt	Respon	ECL	Name	%	Comment 1	Comment 2
1.600	121404096	0.028	...	7.029	SOLVENT PEAK	...	< min rt	
2.649	648	0.029	...	8.022		...	< min rt	
4.816	4536	0.036	...	11.982		...		
6.597	2344	0.041	...	13.440		...		
10.248	21016	0.046	...	15.803		...		
10.550	15008	0.045	...	15.984		...		
13.632	13976	0.048	...	17.755		...		
13.725	2448	0.050	...	17.808		...		

Solvent Ar Total Area Named Area % Named Total Amt Nbr Ref ECL Deviation Ref ECL Shift

121404096 59328 0 0.00 0 0

* QUESTION ANALYSIS: PERCENT AREA NAMED IS LESS THAN 85. CHECK FOR CONTAMINATION.

*** ANALYSIS NOT GOOD ENOUGH FOR LIBRARY SEARCH ***

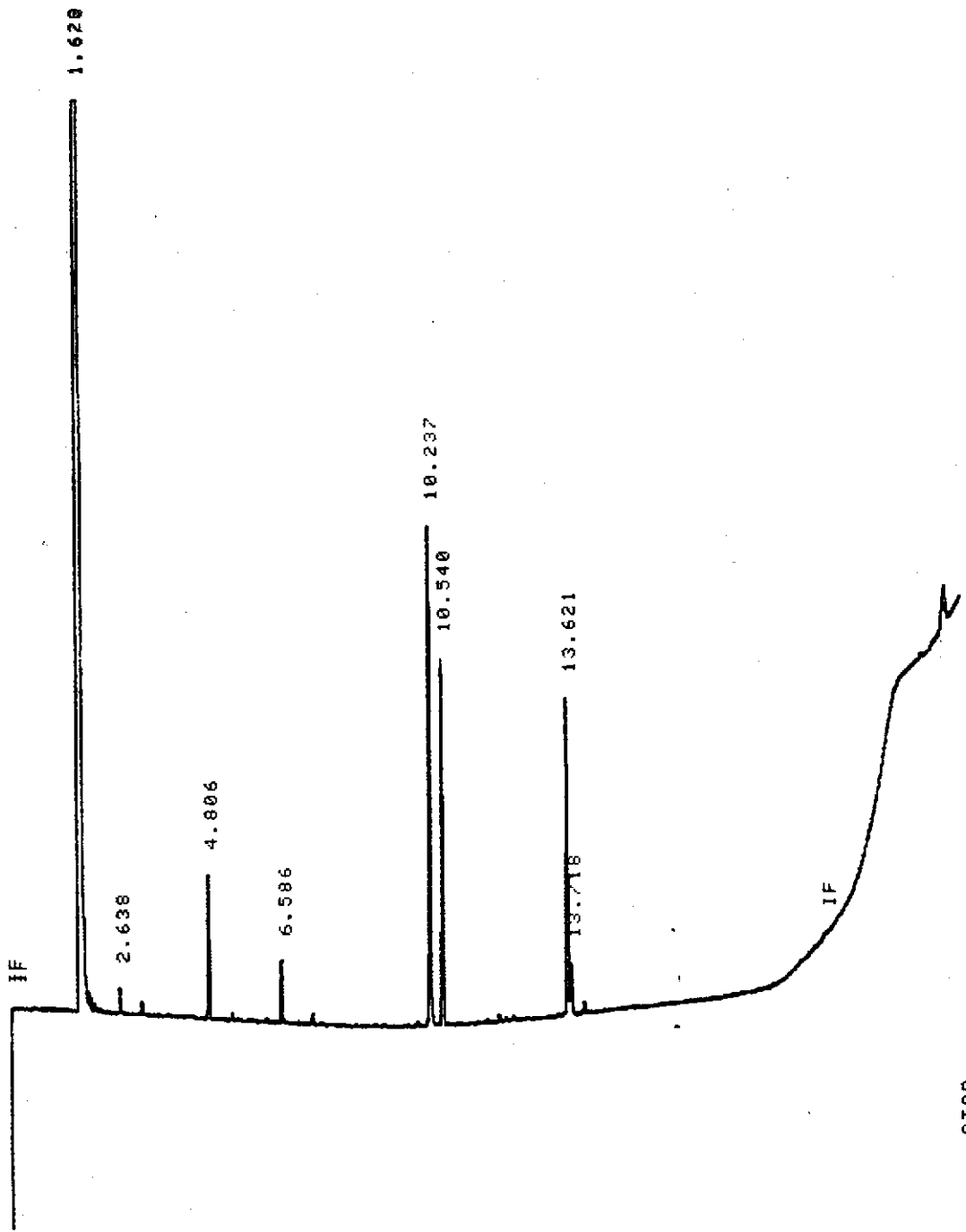
=====

BOTTLE: 4 ID#: 3SAT 16-OCT-93 12:45:19

FILE DATA:F93A16385

2419-2 WALTER-L00 STRAIN # 3

RUN # 5 OCT 16, 1993 02:47:13
START



STOP

RUN # 5 OCT 16, 1993 02:47:13
START-NO PLOT
END OF SIGNAL

#

ID: 1 CALIBRATION STANDARD Date of run: 16-OCT-93 03:47:36
 Bottle: 1 CALIBRATION ERRORED

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.678	136164480	0.023	...	7.041	SOLVENT PEAK	...	< min rt	
1.960	3040	0.020	...	7.595	...	...	< min rt	
2.315	2760	0.022	...	8.293	...	...
2.675	46880	0.025	1.241	9.000	9:0	5.12		
3.075	2328	0.024	...	9.786	...	...
3.184	102560	0.027	1.170	10.000	10:0	10.13	Peak match -0.0001	
3.825	648	0.020	...	10.914	...	...
3.885	53896	0.029	1.109	11.000	11:0	5.05	Peak match -0.0022	
4.020	21968	0.030	1.101	11.155	10:0 20H	2.04	Peak match 0.0026	
4.273	11376	0.032	1.087	11.420	10:0 30H	1.04	Peak match 0.0018	
4.423	1592	0.030	...	11.582	...	...
4.809	114472	0.032	1.059	12.000	12:0	10.23	Peak match -0.0007	
5.965	59800	0.036	1.018	13.000	13:0	5.14	Peak match 0.0001	
6.422	1832	0.035	...	13.334	...	...
7.335	121560	0.039	0.985	14.000	14:0	10.11	Peak match 0.0004	
8.876	63544	0.043	0.960	15.000	15:0	5.15	Peak match -0.0013	
9.214	26536	0.044	0.956	15.203	14:0 20H	2.14	Peak match 0.0006	
9.685	12456	0.045	0.950	15.486	Sum In feature 3	1.00	Peak match 0.0050	14:0 30H/16:1 ISO I
10.539	127968	0.044	0.942	16.000	16:0	10.17	Peak match -0.0011	
11.434	888	0.045	...	16.516	...	...
12.266	64504	0.047	0.929	17.000	17:0	5.07	Peak match -0.0015	
12.677	27168	0.048	0.927	17.233	16:0 20H	2.13	Peak match 0.0017	
14.021	120800	0.048	0.921	18.000	18:0	10.17	Peak match 0.0000	
15.055	1080	0.050	...	18.592	...	...
15.769	65600	0.049	0.917	19.000	19:0	5.08	Peak match -0.0001	
16.635	1048	0.046	...	19.502	...	...
17.493	132136	0.049	0.915	20.000	20:0	10.22		
18.480	2208	0.073	...	20.573	...	...	> max ar/ht	
19.055	5556	0.095	...	20.986	...	...	> max ar/ht	
*****	12456	...	...	...	SUMMED FEATURE 3	1.00	12:0 ALGE ?	unknown 10.928
*****	...	...	...	...	...	...	16:1 ISO I/14:0 30H	14:0 30H/16:1 ISO I

Solvent Ar Total Area Named Area % Named Total Amt Nbr Ref ECL Deviation Ref ECL Shift

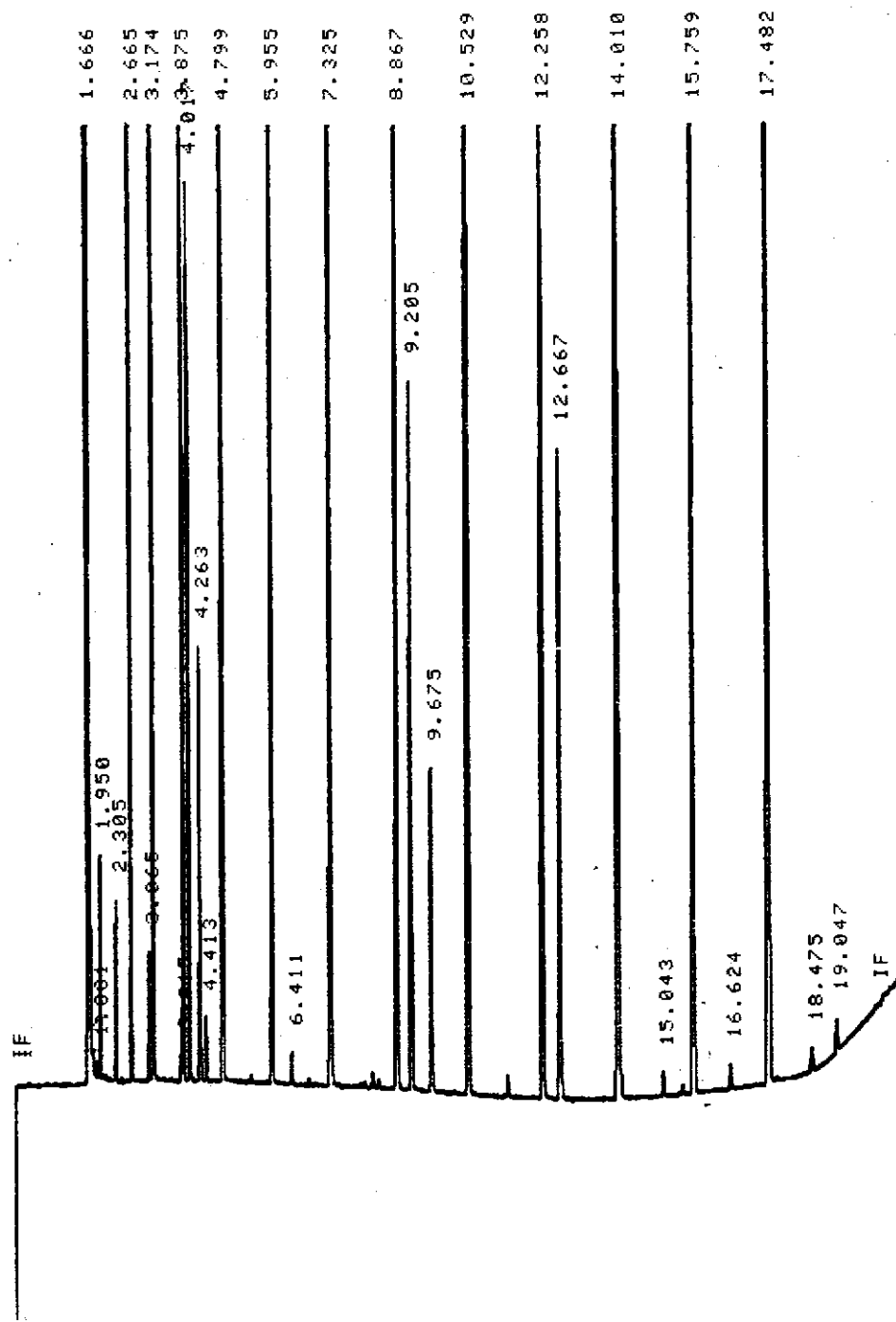
136164480 1193928 1185312 99.28 1184310 0

GOOD PEAK MATCHING: PEAK POSITION MATCHING ERROR (RMS) IS 0.0015.

BOTTLE: 1 ID#: ISAT 16-OCT-93 13:44:56
FILE DATA:F93A16385

CALIBRATION STANDARD

RUN # 7 OCT 16, 1993 03:47:36
START



STOP

RUN # 7 OCT 16, 1993 03:47:36
START-No Plot
END OF SIGNAL

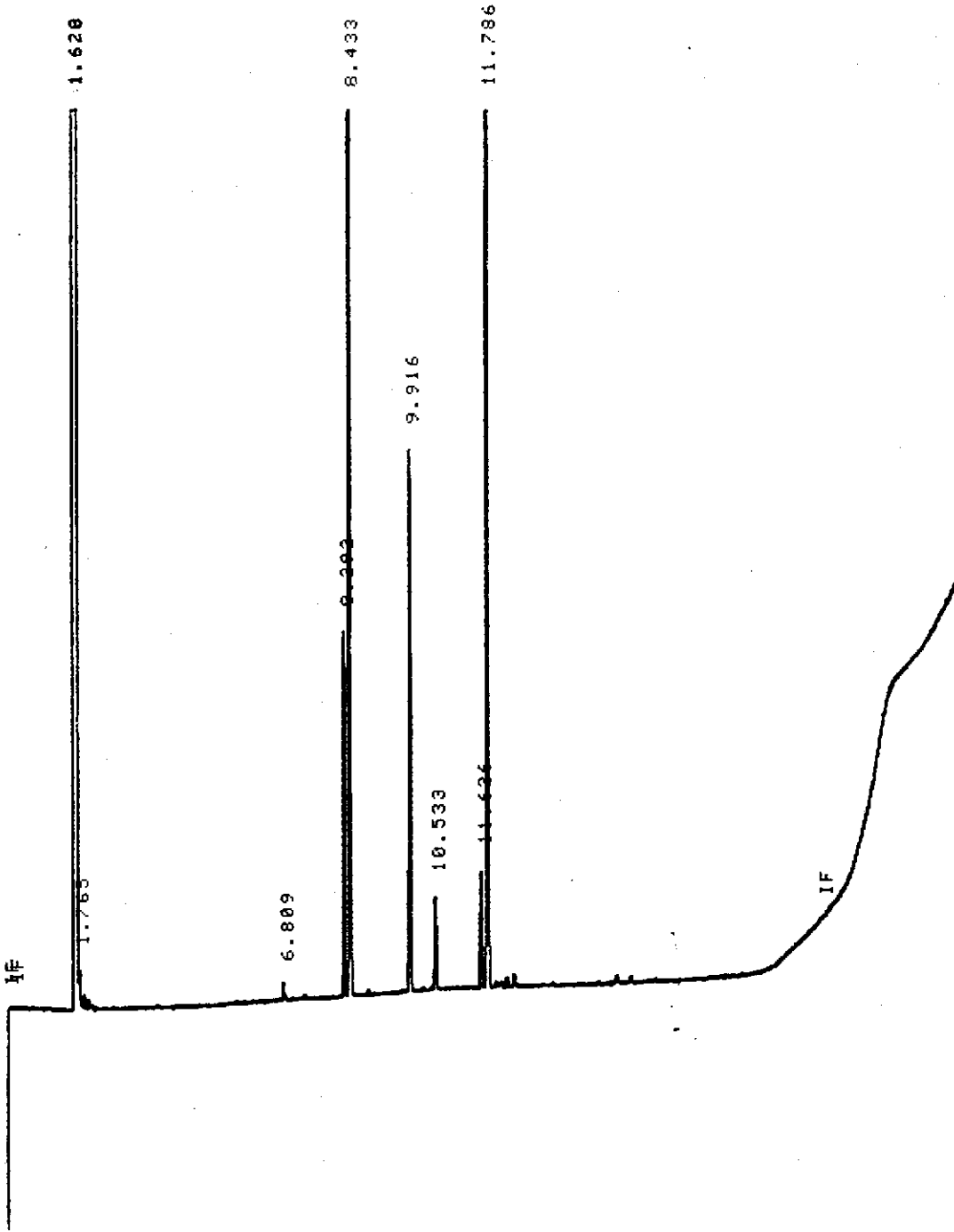
*

BOTTLE: 5 ID#: 4SAT 16-OCT-93 13:14:11

FILE DATA:F93A16385

2419-2 WALTER-L00 STRAIN # 4

RUN # 6 OCT 16, 1993 03:17:24
START



STOP

RUN # 6 OCT 16, 1993 03:17:24
START-No Plot
END OF SIGNAL

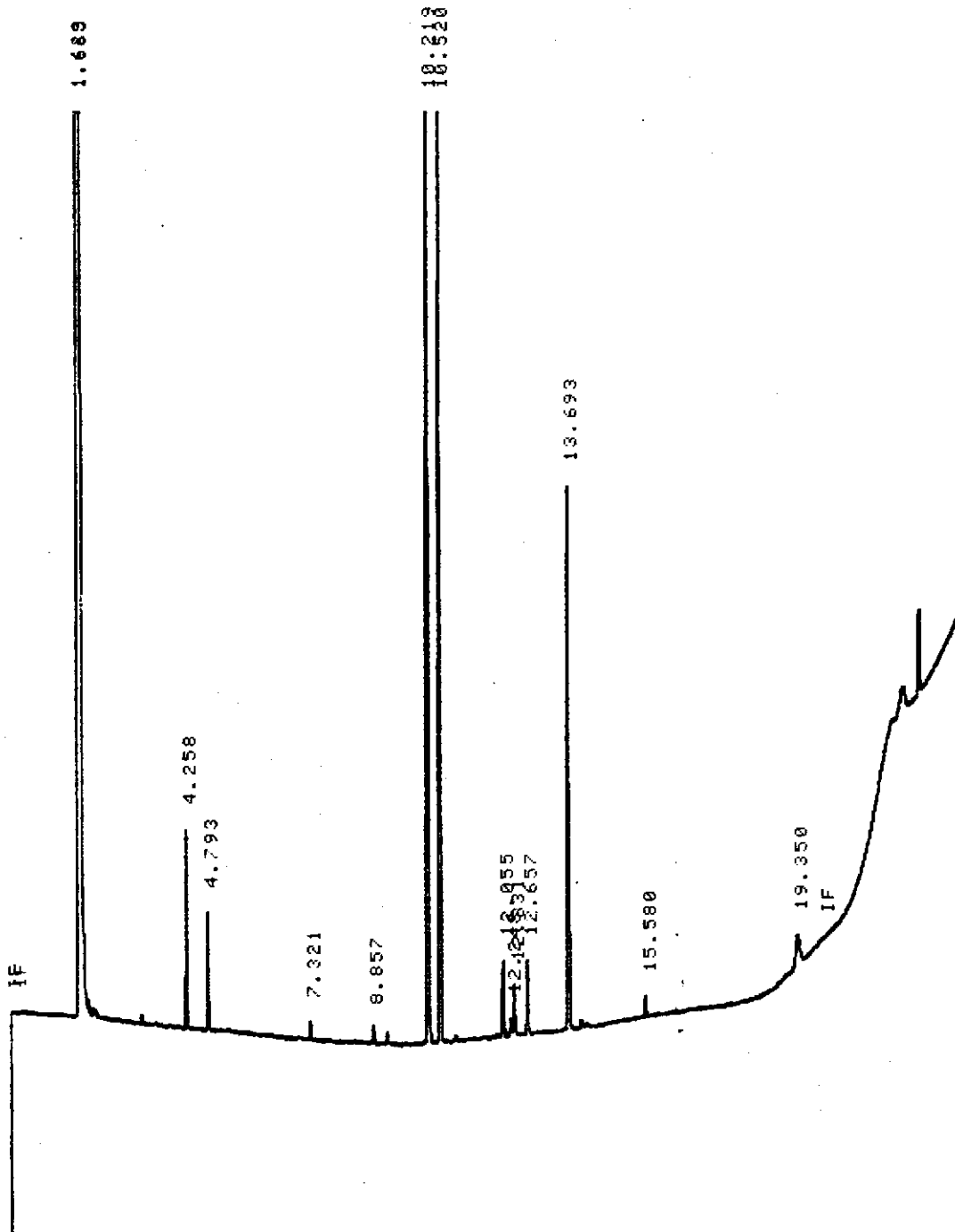
*

BOTTLE: 6 ID#: 5SAT 16-OCT-93 14:15:55

FILE DATA:F93A16385

2419-2 WALTER-L00 STRAIN # 5

RUN # 8 OCT 16, 1993 04:17:50
START



STOP

RUN # 8 OCT 16, 1993 04:17:50
START-No Plot
END OF SIGNAL

#



the MiL, inc.

**Interpretation of the Carbon Source
Pattern Recognition Data using a
Multi-well Plate Method (Biolog
Microplate System™) -- Contact Us:
314-878-6626 or Fax 314-878-9376**

The MiL, inc. utilizes the Biolog Microplate System™ for microbial identification and characterization by carbon source pattern recognition. The microplate technique allows for characterization by 95 different tests yielding a potential of 4×10^{28} patterns generated from a single microplate. Each strain of micro-organism yields a distinct pattern and the different species of bacteria will give distinct families of patterns that can be recognized by the Biolog MicroLog™ Software. Microplates are available for Gram Negative (GN), Gram Positive (GP) and E.coli/Salmonella (ES) Analysis. Custom analysis are performed by the MiL, inc. and can be particularly useful in biodegradation or additional selective media development studies. Additional interpretative instructions are provided with such custom services.

To characterize a given microbial isolate the organism is streaked onto a nutrient medium that will support vigorous growth (for example, Nutrient agar, tryptic soy agar or tryptic soy agar supplemented with 5% sheep red blood cells). The more fastidious organisms may require chocolate or BHI agar for growth, whereas many environmental organisms grow better in more minimal media. The culture plates are incubated at 28 to 35° C for 4-18 hours (environmental isolates are typically grown at 28° C with thermophilic strains often incubated at 50° C). After incubation colonies are removed from the culture plate using a saline moistened cotton swab. A suspension of uniform turbidity is prepared in 0.85% saline by comparison with a

known turbidimetric standard. The bacterial suspension is inoculated into the microplate wells (150 µl per well) and the plate covered with the microplate lid. The covered plates are incubated at 28-35° C for 4 hours or overnight (16-24 hours). Should other diluents be requested or used, such changes will be noted.

Microplates may be read at 4 or 24 hours because some organisms give results at 4 hours and may become unreadable at 24 hours. The plates are read in our microplate reader at 590 nm. The absorbance or transmittance (i.e. color) in each well is referenced against the negative control well (A-1) so that any purple color recorded above this control level is read as a positive utilization of the given carbon source. The data are reported as the percent color change as compared to well A-1 utilizing the following formula.

$$\text{Percent color change} = \frac{\text{OD}_{590}(\text{well}) - \text{OD}_{590}(\text{well A-1})}{\text{OD}_{590}(\text{well A-1})}$$

Positive results will be reported in brackets ([.]), generally if the Percent Color Change is equal to or greater than 40, the reaction in the given well is considered to be "positive" however the parameters for each substrate may be different and a positive test below a value of 40 is possible. The reported results will be otherwise considered negative. The computer algorithms employed provide standardization of settings ensuring repeatability and avoidance of operator bias. Names of all carbon source substrates employed are provided in the results regardless of response.

We, the MiL's microbiologists, find these methods to be excellent for strain characterization or differentiation between isolates. However, we urge caution in acceptance of the putative identifications to the commercial database and suggest these tests be conducted in conjunction with other methods (we recommend our GC-FAME analyses) when strain identifications are sought.

GN MicroPlate™

A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
water	α -cyclodextrin	dextrin	glycogen	tween 40	tween 80	N-acetyl-D-galactosamine	N-acetyl-D-glucosamine	adonitol	L-arabinose	D-arabitol	cellobiose
B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
ϵ -erythritol	D-fructose	L-fucose	D-galactose	gentiobiose	α -D-glucose	m-inositol	α -D-lactose	lactulose	maltose	D-mannitol	D-mannose
C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
D-melibiose	β -methyl D-glucoside	D-psicose	D-raffinose	L-rhamnose	D-sorbitol	sucrose	D-trehalose	suranose	xyitol	methyl pyruvate	mono-methyl succinate
D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12
acetic acid	cis-acrylic acid	citric acid	formic acid	D-galactonic acid lactone	D-galacturonic acid	D-gluconic acid	D-glucosaminic acid	D-glucuronic acid	α -hydroxybutyric acid	β -hydroxybutyric acid	γ -hydroxybutyric acid
E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
p-hydroxy phenylacetic acid	itaconic acid	α -keto butyric acid	α -keto glutaric acid	α -keto valeric acid	D,L-lactic acid	malonic acid	propionic acid	quinic acid	D-saccharic acid	sebacic acid	succinic acid
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
bromo succinic acid	succinamic acid	glucuronamide	alaninamide	D-alanine	L-alanine	L-alanyl-glycine	L-asparagine	L-aspartic acid	L-glutamic acid	glycyl-L-aspartic acid	glycyl-L-glutamic acid
G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12
L-histidine	hydroxy L-proline	L-leucine	L-ornithine	L-phenylalanine	L-proline	L-pyrogutamic acid	D-serine	L-serine	D-threonine	D,L-carnitine	γ -amino butyric acid
H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
urocaric acid	inosine	uridine	thymidine	phenyl ethylamine	putrescine	2-amino ethanol	2,3-butanediol	glycerol	D,L- α -glycerol phosphate	glucose-1-phosphate	glucose-6-phosphate

GP MicroPlate™

A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
water	α -cyclodextrin	β -cyclodextrin	dextrin	glycogen	inulin	mannan	tween 40	tween 80	N-acetyl-D-glucosamine	N-acetyl-D-mannosamine	amygdalin
B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
L-arabinose	D-arabitol	arbutin	cellobiose	D-fructose	L-fucose	D-galactose	D-galacturonic acid	gentiobiose	D-gluconic acid	α -D-glucose	m-inositol
C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
α -D-lactose	lactulose	maltose	maltotriose	D-mannitol	D-mannose	D-melibiose	D-melibiose	α -methyl D-galactoside	β -methyl D-galactoside	3-methyl glucose	α -methyl D-glucoside
D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12
β -methyl D-glucoside	α -methyl D-mannoside	palatinose	D-psicose	D-raffinose	L-rhamnose	D-ribose	salicin	sedheptulcan	D-sorbitol	stachyose	sucrose
E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
D-tagatose	D-trehalose	suranose	xyitol	D-xylose	acetic acid	α -hydroxybutyric acid	β -hydroxybutyric acid	γ -hydroxybutyric acid	β -hydroxyphenyl acetic acid	α -keto glutaric acid	α -keto valeric acid
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
lactamide	D-lactic acid methyl ester	L-lactic acid	D-malic acid	L-malic acid	methyl pyruvate	mono-methyl succinate	propionic acid	pyruvic acid	succinamic acid	succinic acid	N-acetyl L-glutamic acid
G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12
alaninamide	D-alanine	L-alanine	L-alanyl-glycine	L-asparagine	L-glutamic acid	glycyl-L-glutamic acid	L-pyrogutamic acid	L-serine	putrescine	2,3-butanediol	glycerol
H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
adenosine	2-deoxy adenosine	inosine	thymidine	uridine	adenosine-5'-monophosphate	thymidine-5'-monophosphate	uridine-5'-monophosphate	fructose-6-phosphate	glucose-1-phosphate	glucose-6-phosphate	D-L- α -glycerol phosphate

MICROLOG (TM) 3 RELEASE 3.50

Date : 10/19/93
 Hour : 24
 Plate Type : GN
 Media Type : TSA/BUGM
 Plate # : 5
 Strain Name : 2418-1
 Strain # : L00
 Other Info : ?
 Input Mode : Reader : BIOLOG MICROSTATION
 Data Base : MicroLog GN

POSITIVE/NEGATIVE DATA

XXX = percent change in optical density versus A1 control well
 <XXX> = positive, <XXX> = borderline, XXX = negative
 -XXX = percent change negative
 XXX+ = data negative or borderline, "=" ID choice positive > 90% of time
 XXX- = data positive or borderline, "=" ID choice positive < 10% of time

	1	2	3	4	5	6	7	8	9	10	11	12
A	0	13	< 66-	< 57-	< 999>	< 445>	1	< 333>	6	< 37-	< 101>	3
B	-5	< 289>	10	< 31-	< 43-	< 999>	7	8	15	< 49>	< 751>	< 27>
C	5	2	< 64>	13	8	27	7	< 55-	21	-5	< 583>	< 424>
D	< 101>	< 999>	< 999>	< 179>	15	9	< 999>	10	9	< 105>	< 949>	23
E	< 993>	< 942>	< 145>	< 999>	< 181>	< 933>	< 595>	< 221>	< 874>	-3	< 127>	< 697>
F	< 397>	< 399>	15	< 61>	< 201>	< 322>	< 68>	< 999>	< 906>	< 999>	< 40-	< 67>
G	< 999>	< 922>	< 232>	< 621>	< 75>	< 984>	< 999>	< 55>	< 261>	< 41>	< 578>	< 999>
H	< 999>	< 999>	< 88>	4	0	< 897>	< 821>	19	< 777>	< 53-	3	3

BIO-NUMBER : 1322-2102-1003-7446-7773-6775-7753-7150

SPECIES IDENTIFICATION : PSEUDOMONAS AERUGINOSA

	CLOSEST SPECIES	SIM.	DIST.	AVG.	MAX
=>	1) PSEUDOMONAS AERUGINOSA	0.893	0.646	0.797	3.456
	2) PSEUDOMONAS FLUORESCENS TYPE C	0.060	1.542	0.875	4.137
	3) PSEUDOMONAS PUTIDA TYPE B1	0.000	3.322	0.604	1.319
	4) PSEUDOMONAS PUTIDA TYPE A2	0.000	4.400	0.109	0.706
	5) PSEUDOMONAS AURANTIACA	0.000	5.981	0.438	2.894
	6) PSEUDOMONAS CHLORORAPHIS (FLUOR. TYPE D)	0.000	5.039	0.091	1.419
	7) PSEUDOMONAS FLUORESCENS TYPE G	0.000	7.169	0.375	3.625
	8) PSEUDOMONAS ASARICI	0.000	7.241	0.094	0.356
	9) PSEUDOMONAS FLUORESCENS TYPE B	0.000	7.275	0.281	1.531
	10) PSEUDOMONAS FUSCOVAGINAE	0.000	7.349	0.438	2.162
	other :				

MICROLOG 6N DATA BASE Release 3.50

ABBREVIATED NAME : PSD.AER
 FULL NAME : PSEUDOMONAS AERUGINOSA
 DATA BASE CATEGORY : CLINICAL

4 HOUR DATA :

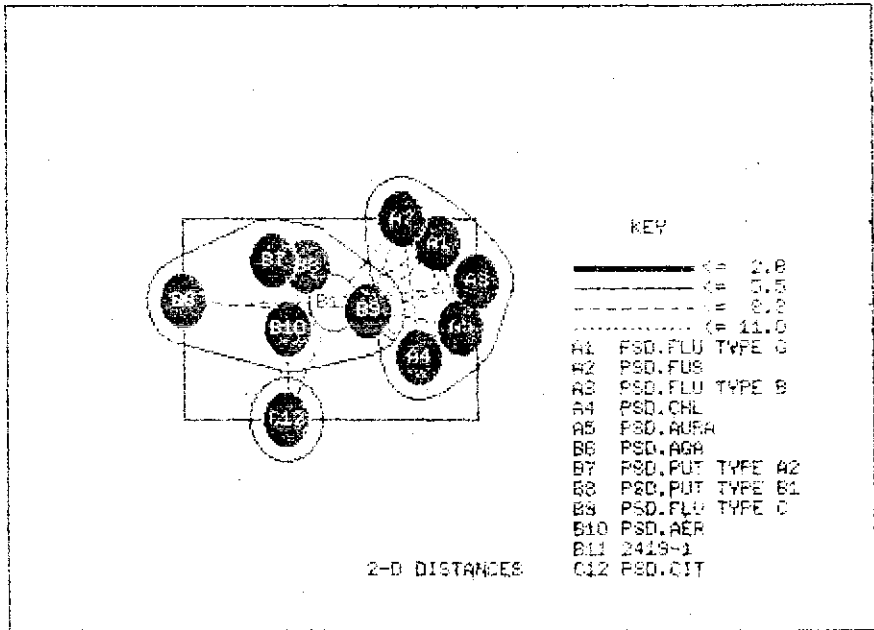
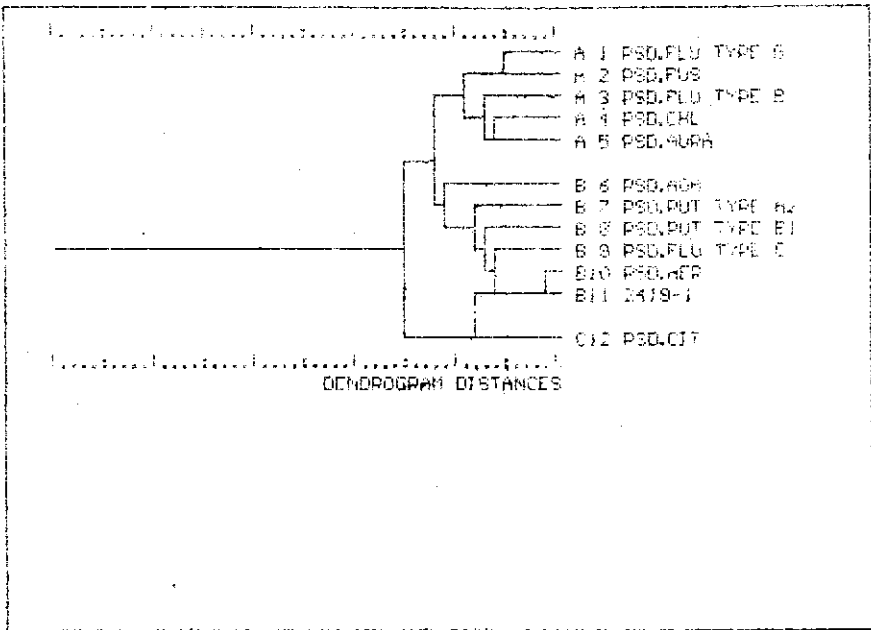
	1	2	3	4	5	6	7	8	9	10	11	12
A	0	0	0	0	22	7	0	7	0	0	0	0
B	0	9	0	0	0	49	0	0	0	0	0	7
C	0	0	0	0	0	0	0	0	0	0	0	11
D	40	18	42	0	0	0	12	0	0	0	27	0
E	0	0	13	20	7	24	0	22	0	0	0	53
F	51	7	7	22	38	24	7	44	27	44	0	11
G	13	7	18	18	13	5	29	7	22	9	0	36
H	42	13	0	0	0	0	33	0	15	0	0	0

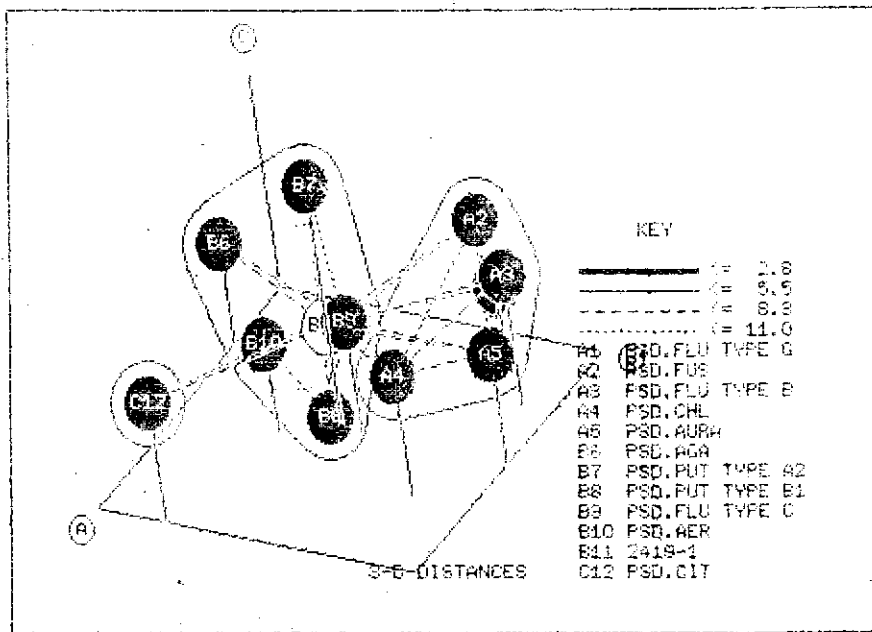
24 HOUR DATA :

	1	2	3	4	5	6	7	8	9	10	11	12
A	0	0	0	0	84	82	0	100	0	0	13	0
B	0	100	0	0	0	100	0	0	0	18	100	15
C	0	0	39	0	0	0	0	0	0	0	100	93
D	53	100	100	87	0	0	100	0	0	55	100	0
E	93	100	76	100	73	100	100	85	100	0	88	100
F	100	100	0	48	93	100	55	100	100	100	0	13
G	100	100	84	100	19	100	100	28	100	51	100	100
H	100	100	36	0	0	100	100	34	100	0	0	0

CLOSEST SPECIES :

- 1) 8.518 : PSEUDOMONAS CITRONELLOLIS
- 2) 8.924 : PSEUDOMONAS PUTIDA TYPE B1
- 3) 9.710 : PSEUDOMONAS FLUORESCENS TYPE C
- 4) 11.537 : PSEUDOMONAS PUTIDA TYPE A2
- 5) 12.129 : PSEUDOMONAS PUTIDA TYPE A1





[Faint, illegible text and markings, possibly bleed-through from the reverse side of the page.]

MICROLOG (TM) 3 RELEASE 3.50

Date : 10/19/93
 Hour : 24
 Plate Type : GN
 Media Type : TSA/BUGM
 Plate # : 4
 Strain Name : 2419-2
 Strain # : 100
 Other Info : ?
 Input Mode : Reader : BIOLOG MICROSTATION
 Data Base : MicroLog 6N

POSITIVE/NEGATIVE DATA

XXX = percent change in optical density versus A1 control well
 <XXX> = positive, {XXX} = borderline, XXX = negative
 -XXX = percent change negative
 XXX+ = data negative or borderline, "=" ID choice positive > 90% of time
 XXX- = data positive or borderline, "=" ID choice positive < 10% of time

	1	2	3	4	5	6	7	8	9	10	11	12
A	0	7	28	18	<421>	<167>	0	<419>	11	17	{ 57+ }	11
B	{ 40 }	<165>	1	-3	19	<783>	<386>	3	6	{ 46 }	{ 27+ }	<416>
C	5	2	{ 39 }	6	-2	3	<280>	<627>	7	-3	<178>	<158>
D	<141>	<906>	<993>	< 96 >	2	2	<743>	20	3	23	<308>	{ 68 }
E	<578>	<398>	{ 31+ }	<841>	<115>	<605>	<362>	<159>	<623>	<778- >	{ 65+ }	<516>
F	<311>	<248>	-2	<199>	<326>	<479>	<495 >	532	<735 >	<557 >	11	<227 >
G	<681>	<590>	<177>	{ 62+ }	17	<228 >	<294 >	<756 >	<312 >	{ 59+ }	<345 >	<556 >
H	<689 >	<474 >	<173 >	-1	< 85 >	<348 >	<248 >	2	<570 >	{ 81 }	5	9

BIO-NUMBER : 0322-2141-0063-7443-6777-6775-7577-7354

GENUS IDENTIFICATION : PSEUDOMONAS

CLOSEST SPECIES	SIM.	DIST.	AVG.	MAX
=> 1) PSEUDOMONAS FLUORESCENS TYPE C	0.441	2.238	0.875	4.137
2) PSEUDOMONAS CHLORORAPHIS (FLUOR. TYPE D)	0.398	2.272	0.081	1.419
3) PSEUDOMONAS AURANTIACA	0.009	3.515	0.438	2.894
4) PSEUDOMONAS AUREOFACIENS (FLUOR. TYPE E)	0.000	4.577	0.081	2.419
5) PSEUDOMONAS AERUGINOSA	0.000	6.846	0.797	3.456
6) PSEUDOMONAS PUTIDA TYPE B1	0.000	6.874	0.604	1.319
7) PSEUDOMONAS PUTIDA TYPE A1	0.000	7.631	1.406	3.806
8) PSEUDOMONAS PUTIDA TYPE A2	0.000	7.937	0.109	0.706
9) PSEUDOMONAS FLUORESCENS TYPE B	0.000	8.098	0.281	1.531
10) PSEUDOMONAS CORRUGATA	0.000	8.414	0.656	2.581
other :				

ABBREVIATED NAME : PSD.FLU TYPE C
 FULL NAME : PSEUDOMONAS FLUORESCENS TYPE C
 DATA BASE CATEGORY : CLINICAL

4 HOUR DATA :

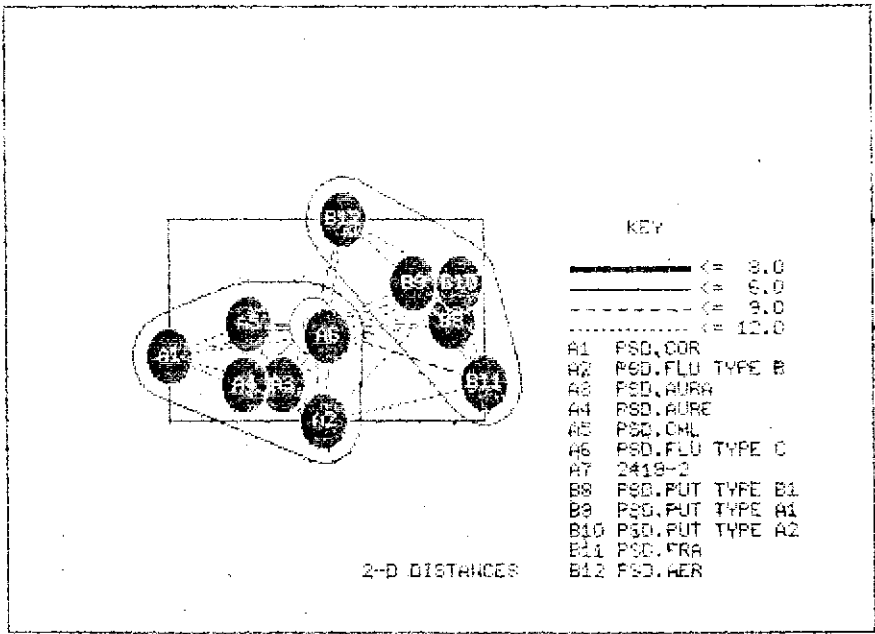
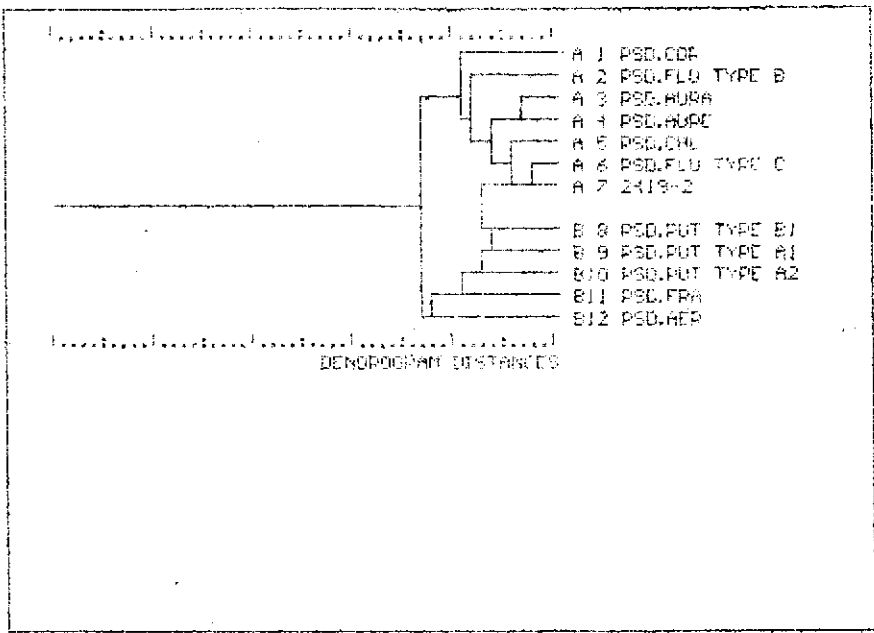
	1	2	3	4	5	6	7	8	9	10	11	12
A	0	0	0	0	82	21	0	6	6	0	0	0
B	0	32	0	0	0	79	9	0	0	0	9	26
C	0	0	12	0	0	0	29	6	0	0	0	32
D	82	53	69	41	6	0	41	0	0	0	62	50
E	15	6	6	74	0	53	12	47	6	0	0	82
F	59	24	0	9	9	24	24	71	62	79	0	50
G	29	9	32	6	0	18	18	35	56	28	0	59
H	29	44	9	0	0	0	38	0	35	9	0	29

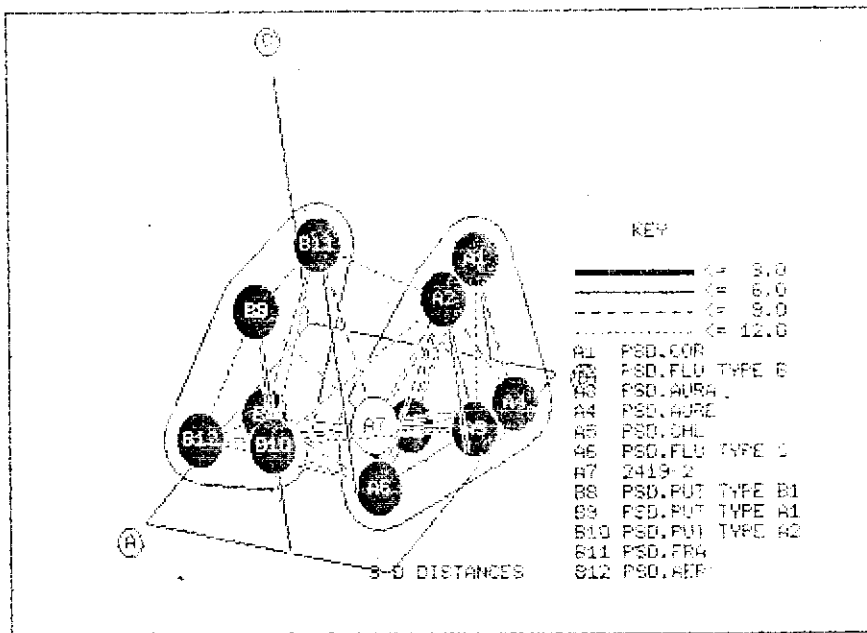
24 HOUR DATA :

	1	2	3	4	5	6	7	8	9	10	11	12
A	0	0	24	8	100	100	0	100	45	11	92	0
B	45	100	0	42	16	100	100	0	0	74	92	100
C	0	0	79	0	34	0	34	92	0	39	100	100
D	100	100	100	89	37	0	100	59	0	89	100	75
E	100	63	100	100	65	100	100	100	89	0	92	100
F	100	100	0	100	100	100	100	100	100	100	11	100
G	100	71	100	100	8	100	100	100	100	100	100	100
H	100	100	100	0	39	78	100	50	100	89	0	53

CLOSEST SPECIES :

- 1) 5.817 : PSEUDOMONAS AURANTIACA
- 2) 6.075 : PSEUDOMONAS CHLORORAPHIS (FLUOR. TYPE D)
- 3) 8.110 : PSEUDOMONAS PUTIDA TYPE B1
- 4) 8.337 : PSEUDOMONAS AGARICI
- 5) 8.373 : PSEUDOMONAS FLUORESCENS TYPE B





MICROLOG (TM) 3 RELEASE 3.50

Date : 10/19/93
 Hour : 24
 Plate Type : GP
 Media Type : BUGM+6
 Plate # : 3
 Strain Name : 2419-4
 Strain # : L00
 Other Info : ?
 Input Mode : Reader : BIOLOG MICROSTATION
 Data Base : MicroLog GP

POSITIVE/NEGATIVE DATA

XXX = percent change in optical density versus A1 control well
 <XXX> = positive, {XXX} = borderline, XXX = negative
 -XXX = percent change negative
 XXX+ = data negative or borderline, "=" ID choice positive > 90% of time
 XXX- = data positive or borderline, "=" ID choice positive < 10% of time

	1	2	3	4	5	6	7	8	9	10	11	12
A	0	{ 60}	<106>	<279>	<184>	{ 80}	4	28	-21	{ 44}	24	26
B	{ 50}	-7	<207>	<285>	<361>	20	{ 53}	21	<112>	<165>	<318>	4
C	<256>	<217>	<367>	<319>	<328>	<389>	{ 42}	29	19	8	{ 63+}	4
D	<186>	15	35	<272>	{ 41}	28	35	<332>	27	<135>	17	<341>
E	{ 48-}	<337>	<326>	22	<264>	36	<162>	<193-}	-4	< 80-	28	<169>
F	{ 66}	<244>	<177>	< 82-	<108>	<370>	30	33	<231>	{ 34}	{ 46}	{ 52}
G	<313>	{ 80}	< 89>	{ 72}	{ 72}	{ 59}	22	23	{ 37}	<323>	39	<247>
H	<356>	<327>	<339>	<335>	<338>	<156>	{ 88}	<149>	{ 53}	35	{ 50}	{ 68}

BIO-NUMBER : 1700-1616-7702-4425-3265-7710-7705-7761

NO IDENTIFICATION

"SIM" < 0.50

	CLOSEST SPECIES :	SIM	DIST	AVG	MAX
=>	1) BACILLUS AMYLOLIQUEFACIENS	0.482	8.091	0.375	3.975
	2) BACILLUS COAGULANS	0.006	9.500	0.875	1.100
	3) BACILLUS SUBTILIS VAR GLOBIGII	0.004	9.663	0.117	0.406
	4) BACILLUS ALCALOPHILUS SS HALODURANS	0.000	10.541	0.500	0.613
	5) BACILLUS THURINGIENSIS/CEREUS	0.000	10.796	0.588	3.381
	6) BACILLUS SUBTILIS	0.000	11.005	0.583	2.636
	7) BACILLUS PUMILUS	0.000	11.675	0.366	1.431
	8) BACILLUS CEREUS/THURINGIENSIS	0.000	12.865	0.238	1.331
	9) BACILLUS MYCOIDES	0.000	12.980	0.625	2.063
	10) BACILLUS LICHENIFORMIS	0.000	13.484	0.875	3.512
	other :				

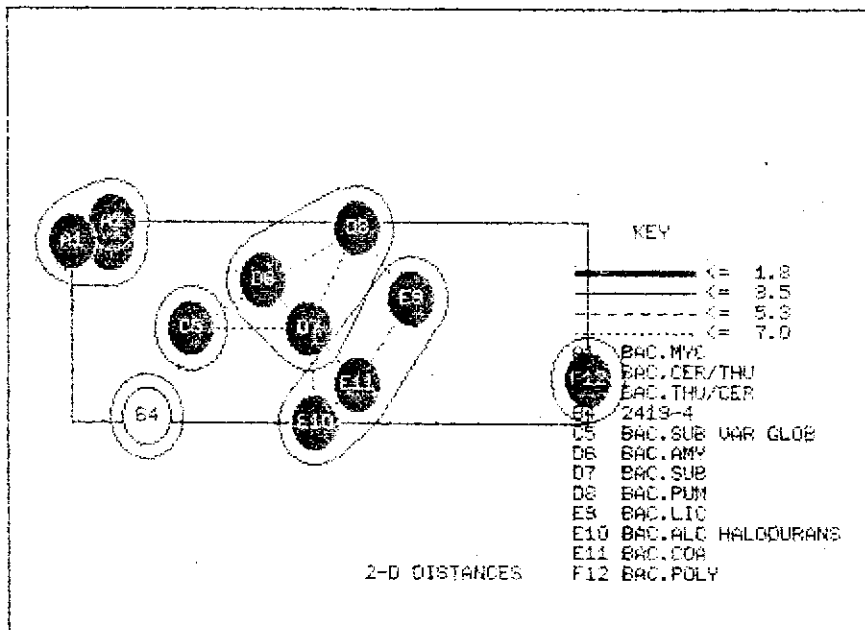
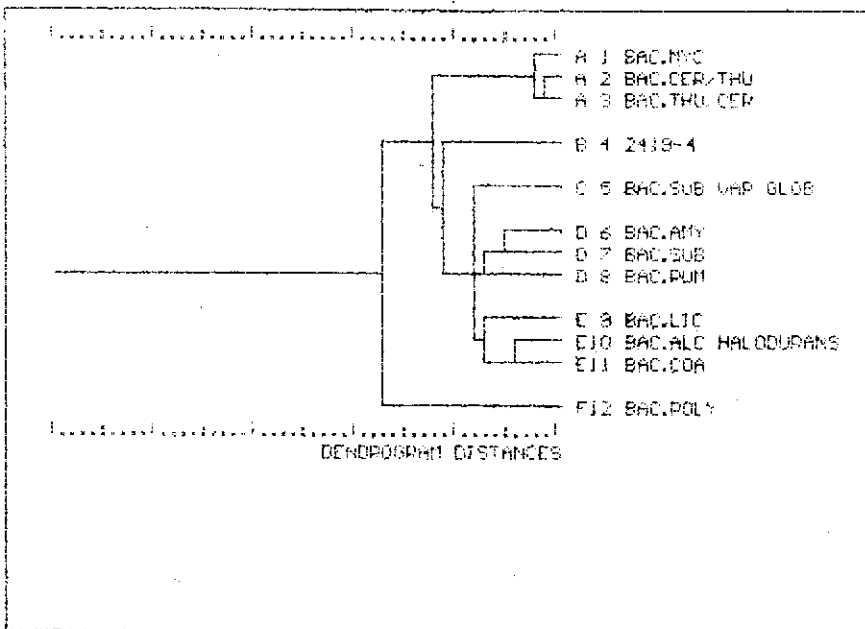
MICROLOG GP DATA BASE Release 3.50

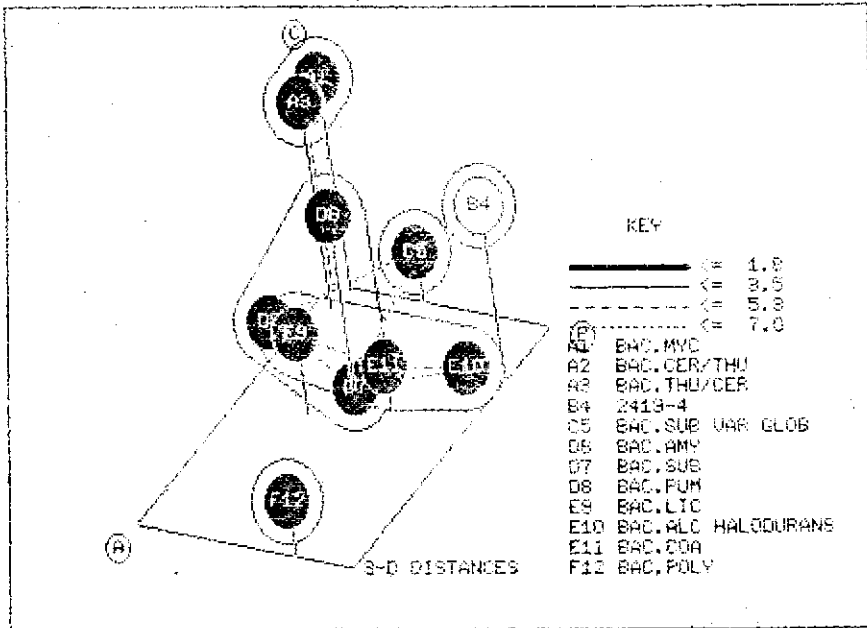
ABBREVIATED NAME : BAC.AMY
 FULL NAME : BACILLUS AMYLOLIQUEFACIENS
 24 HOUR DATA :

	1	2	3	4	5	6	7	8	9	10	11	12
A	0	62	62	100	100	12	25	75	0	38	25	62
B	12	0	50	100	100	0	25	50	100	75	100	0
C	25	0	100	62	62	100	75	25	12	0	100	12
D	68	0	75	88	75	25	88	25	62	62	50	100
E	0	88	100	0	100	12	25	0	0	0	38	50
F	25	75	38	0	75	100	12	0	88	38	68	62
G	50	75	75	50	75	75	38	38	75	25	25	12
H	88	75	88	88	88	62	50	62	88	50	75	38

CLOSEST SPECIES :

- 1) 4.885 : BACILLUS SUBTILIS
- 2) 7.263 : BACILLUS PUMILUS
- 3) 7.958 : BACILLUS LICHENIFORMIS
- 4) 8.249 : BACILLUS CEREUS/THURINGIENSIS
- 5) 8.260 : BACILLUS THURINGIENSIS/CEREUS





MICROLOG (TM) 3 RELEASE 3.50

Data : 10/19/93
 Hour : 24
 Plate Type : GN
 Media Type : TSA/BUGM
 Plate # : 1
 Strain Name : 2419-5
 Strain # : L00
 Other Info : ?
 Input Mode : Reader : BIOLOG MICROSTATION
 Data Base : MicroLog GN

POSITIVE/NEGATIVE DATA

XXX = percent change in optical density versus A1 control well
 <XXX> = positive, {XXX} = borderline, XXX = negative
 -XXX = percent change negative
 XXX+ = data negative or borderline, "=" ID choice positive > 90% of time
 XXX- = data positive or borderline, "=" ID choice positive < 10% of time

	1	2	3	4	5	6	7	8	9	10	11	12
A 1	0	-7	-10	5	<545>	<267>	-8	2	-1	21	-6	-4
B 1	-3	-4	-7	-4	-7	-6	-1	-3	1	-6	-5	-6
C 1	-8	-6	4	-4	-10	-5	-3	-8	-5	-4	<847>	<613>
D 1	<682>	<850>	< 82>	<303>	-8	1	<891>	-3	-3	<266>	<913>	<219>
E 1	<451>	< 75>	<166>	<891>	14	<932>	-4	<788>	2	<999>	<510>	<999>
F 1	<835>	<903>	-8	21	<106>	{ 73}	< 99>	<986>	<999>	<998>	8	<108>
G 1	<406>	-1	<303>	{ 35>	<126>	<586>	<999>	< 27>	25	< 78>	3	-5
H 1	<925>	<809>	-4	-6	-12	-6	-8	-4	.11	{ 68}	-4	-2

BIO-NUMBER : 0300-0000-0003-7447-7527-6375-5344-6004 !

NO IDENTIFICATION
 "SIM" < 0.50

	CLOSEST SPECIES :	SIM	DIST	AUS	MAX
=>	1) COMAMONAS ACIDOVORANS	0.478	4.881	1.031	4.600
	2) CDC GROUP IVC-2	0.119	5.338	0.110	1.644
	3) ALCALIGENES XYLOSOXYDANS SS DEN/PIE	0.072	5.504	0.826	2.806
	4) COMAMONAS TESTOSTERONI	0.002	6.720	1.000	4.225
	5) ALCALIGENES XYLOSOXYDANS SS XYLOSOXYDANS	0.000	7.453	0.729	4.537
	6) ALCALIGENES FAECALIS SS FAECALIS	0.000	9.059	0.174	1.715
	7) ALCALIGENES EUTROPHUS	0.000	9.359	0.076	1.394
	8) PSEUDOMONAS PSEUDOALCALIGENES	0.000	9.973	1.250	4.125
	9) AQUASPIRILLUM AUTOTROPHICUM	0.000	10.241	0.063	0.118
	10) PSEUDOMONAS MENDOCINA	0.000	10.422	0.667	6.400
	other :				

ABBREVIATED NAME : COM.ACI
 FULL NAME : COMAMONAS ACIDOVORANS
 DATA BASE CATEGORY : CLINICAL

4 HOUR DATA :

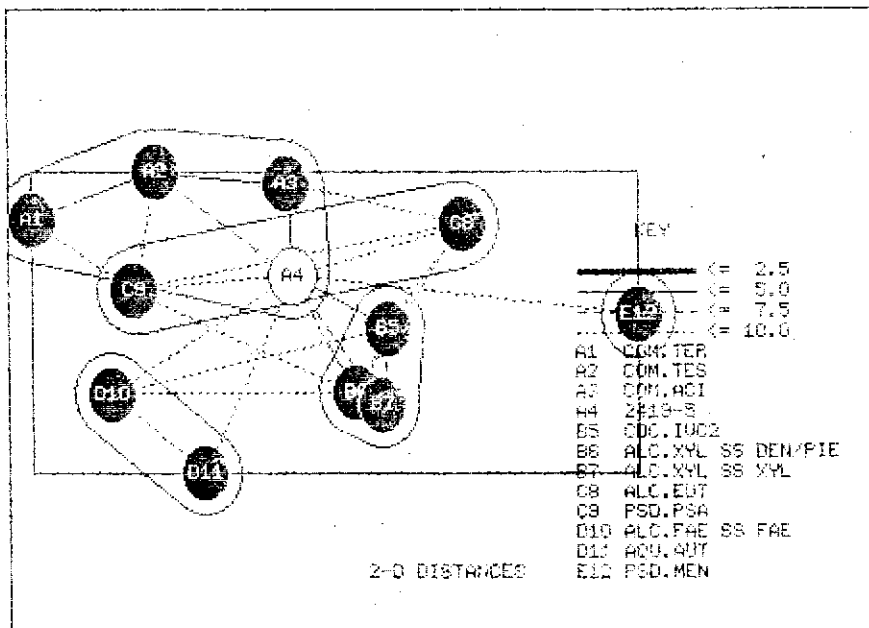
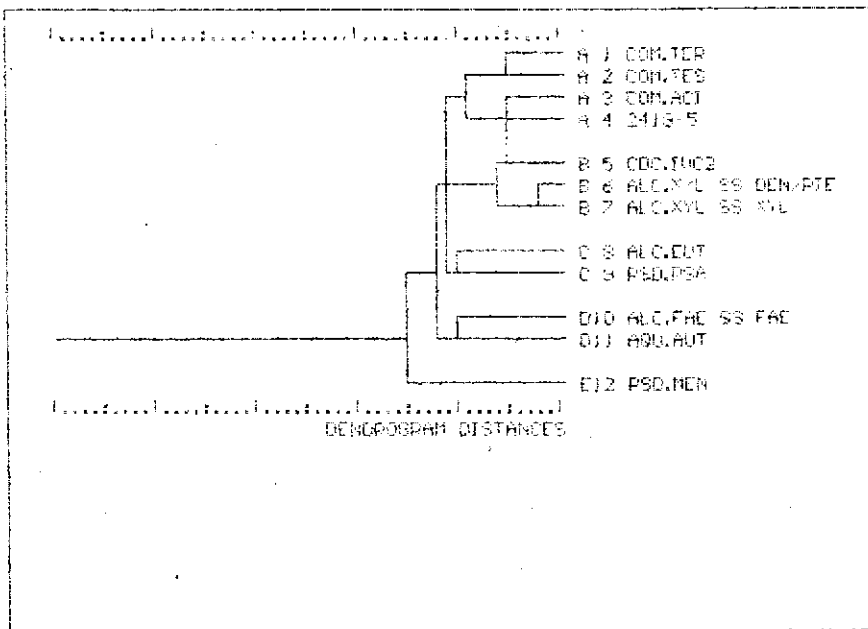
	1	2	3	4	5	6	7	8	9	10	11	12
A I	0	0	0	18	20	23	0	0	0	0	0	0
B I	0	0	0	0	0	0	0	0	0	0	0	0
C I	0	0	25	0	14	0	0	0	0	0	52	59
D I	18	18	11	77	0	0	0	0	0	25	100	0
E I	0	0	50	73	59	73	0	16	0	0	18	68
F I	14	52	0	0	0	7	0	41	43	77	0	0
G I	0	0	18	0	18	34	52	0	0	0	0	18
H I	48	0	0	0	7	0	0	9	7	7	0	0

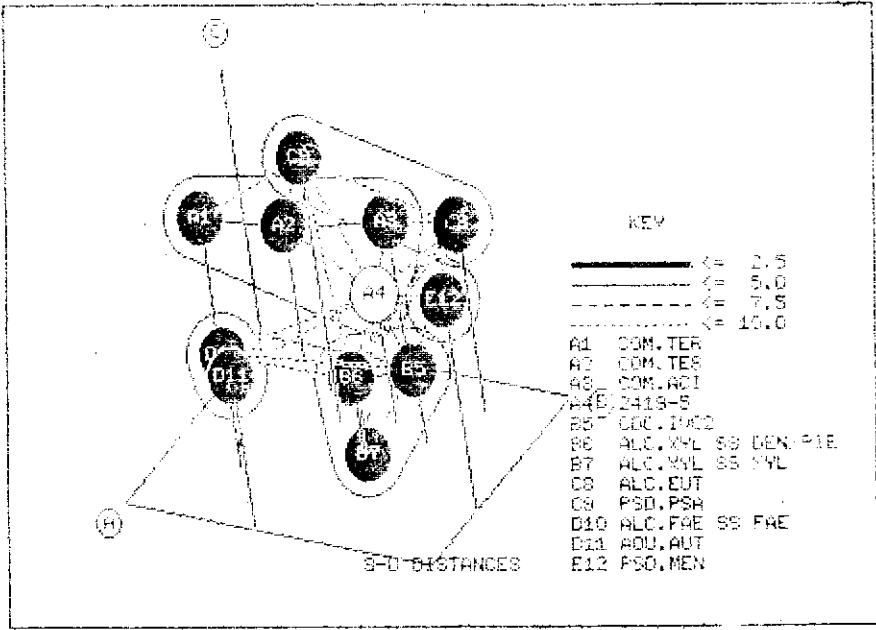
24 HOUR DATA :

	1	2	3	4	5	6	7	8	9	10	11	12
A I	0	0	0	7	77	82	0	0	0	0	0	0
B I	0	57	0	0	0	0	0	0	0	0	34	0
C I	0	0	55	0	0	0	0	0	0	0	100	100
D I	30	55	11	100	0	0	100	0	0	84	100	20
E I	93	41	100	84	75	100	32	50	23	7	100	100
F I	100	100	0	11	14	39	9	100	100	100	32	50
G I	77	7	100	0	100	55	100	0	14	59	0	80
H I	100	64	0	0	11	0	0	20	23	18	0	0

CLOSEST SPECIES :

- 1) 4.829 : COMAMONAS TESTOSTERONI
- 2) 9.836 : ACIDOVORAX KONJADI
- 3) 9.047 : ALCALIGENES EUTROPHUS
- 4) 8.711 : ACIDOVORAX FACILIS B
- 5) 10.672 : ALCALIGENES XYLOSOXYDANS SS DEN/PIE





National Registry of Environmental Professionals

ABSTRACT OF CODE OF ETHICAL AND PROFESSIONAL PRACTICE

WHEREAS, the goal of an Environmental Professional or Manager is to be of the highest moral principles in providing knowledgeable decisions relating to the planning and management of environmental activities in which industry, government and the public may place their complete confidence,

THEREFORE, this Code of Ethical Practice shall govern the professional activities of National Registry of Environmental Professionals (NREP) registrants:

- * To practice only in those areas of environmental science, safety, health or technology in which professional competence has been attained;*
- * To emblaze documents with the NREP seal, name or initials only when such documents are complete and contain only your work or work done under your personal, direct supervision and for which you can attest that all information is true and complete;*
- * To take all appropriate measures to prevent any conflict of interest that could compromise the planning and management of environmental activities;*
- * To perform assigned or contracted environmental planning and management duties always in a professional manner respectful of laws and regulations and the needs and concerns of others;*
- * To use the best principles of environmental science, health, safety and technology in planning and management to protect and enhance environmental quality;*
- * To cooperate with all levels of government in the furtherance and development of appropriate public policies supportive of environmental quality, occupational health and safety;*
- * To comply with applicable environmental quality, occupational health and safety, and product safety laws and regulations;*
- * To manage facilities in a manner to protect health and safety of employees and of individuals in surrounding communities;*
- * To fully disclose in writing to employers/clients all known positive and negative impacts to the environment of assigned activities, duties and/or responsibilities;*
- * To refrain from using the name of the National Registry of Environmental Professionals or its seal in any activity not previously approved by the Board of Directors.*

Knowingly violating this Code of Ethical Practice shall be grounds for revocation of NREP professional registration.

Warranty and Limits of Liability

In accepting analytical work, we warrant the accuracy of test results under the conditions employed in the laboratory. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied. We disclaim any other warranties, expressed or implied, including a Warranty of Fitness for Particular Purpose and Warranty of Merchantability. We accept no legal responsibility for the purposes for which the client uses the test results.