GW - 114

5/97

WORK PLANS

NATURAL ATTENUATION

INITIAL EVALUATION OF NATURAL ATTENUATION

DOWELL SCHLUMBERGER

ARTESIA, NEW MEXICO

May 1997

RECEIVED
JUN - 6 1997
Environmental Bureau
Oil Conservation Division

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Executive Summary

Dowell, a division of Schlumberger Technology Corporation (Dowell), has undertaken a study to evaluate the effects of natural attenuation and intrinsic bioremediation in groundwater at the Dowell facility located in Artesia, New Mexico. Intrinsic bioremediation is the process of contaminant destruction by indigenous microorganisms without engineered stimulation. Historical monitoring of dissolved-phase hydrocarbons and chlorocarbons at the Artesia site indicate that concentrations of these constituents are stable or declining in both mass and horizontal extent.

Measurements from groundwater wells were collected of microbial activity and geochemical parameters that provide information on biodegradation processes. These data were analyzed to determine the extent and effectiveness of natural biodegradation of dissolved-phase hydrocarbons and chlorocarbons. Results indicate that a sequential change in groundwater conditions has occurred over time that currently favors biodegradation of chlorocarbons and anaerobic degradation of residual hydrocarbons. A spatial pattern of groundwater chemistry across the site also suggests a subsurface environment conducive to the long term biodegradation of hydrocarbon and chlorinated constituents. Natural biodegradation of dissolved-phase constituents should be considered as an important element of corrective action at this site.

The current monitoring program will provide data to verify that the concentration of dissolved-phase constituents in groundwater will continue to decline , that natural biodegradation of dissolved-phase constituents continues to act as a remediation mechanism, and provide historical water quality data necessary to estimate a time frame for constituent destruction and attainment of closure.

Section 1
Introduction

Dowell has undertaken a study to evaluate the effects of natural attenuation with special attention to intrinsic bioremediation at the Dowell facility located in Artesia, New Mexico (Figure 1). This report describes the results of an evaluation of the mechanisms of natural attenuation and intrinsic bioremediation of hydrocarbons and chlorocarbons at the Artesia facility site. Remediation by natural attenuation (RNA) is a technology for reduction of dissolved-phase constituents in the environment. RNA depends upon natural physical processes such as dispersion, dilution, and adsorption to dissipate constituents and biodegradation to chemically transform constituents to achieve corrective action goals. Intrinsic bioremediation is the process of contaminant destruction by indigenous microorganisms without engineered stimulation.

1.1 Current Status

The Artesia facility (Facility) has provided specialty products and services to the regional petroleum extraction industry since 1969. Since 1989, the Facility has been the subject of various investigative and corrective action activities. These activities include site and hydrogeologic investigations, removal of underground storage tanks, and soil and groundwater sampling. A soil vapor extraction system (SVE) is currently operating at the site.

Since 1991, groundwater at the facility has been sampled on a quarterly basis from a series of up to 24 wells completed in the local surficial aquifer.

1.2 Local Geology and Hydrology

Site investigations have been carried out on behalf of Dowell by Western Water Consultants (WWC). The following review of local geology and hydrogeology is summarized from previous reports (WWC, 1995). Drilling at the site has reached a maximum depth of 68 feet below surface. All sediments encountered are Quarternary alluvial valley fill included in a unit locally referred to as the carbonate gravel unit which comprises a portion of the "shallow aquifer". An underlying quartzose unit has not been encountered. The sediments beneath the facility consist of red clay, silty clay, and clay interbedded with thin (2-4 inch) white or pinkish-cream carbonate or caliche layers. Zones where carbonate/caliche layers are common may be identified from drill cores, but individual carbonate/caliche layers are difficult to trace laterally between even closely-spaced groundwater monitoring wells.

The water-bearing zones in this interval are the carbonate/caliche layers in which the permeability apparently has been enhanced by solution of carbonate minerals. Below the water table, many, but not all, of he carbonate/caliche layers are saturated, whereas the clays and silts appear only damp to moist. Zones of unsaturated carbonate/caliche below the water table are present irregularly. Carbonate/caliche zones above and below these dry zones are saturated.

The groundwater flow direction has been consistently to the northeast during the 7 years that monitoring has been conducted at the facility. A potentiometric map prepared from water-level data obtained in December, 1996, indicates that groundwater flow is toward the northeast (Figure 2).

1.3 Constituent Status

The concentration and extent of dissolved-phase BTEX in groundwater has remained stable or declined since 1994 (Figure 3). BTEX constituents measured in wells completed immediately beneath the facility in October 1996 ranged from a maximum of 4.08 mg/l in MW-3 to non-detectable levels in most other wells. Low concentrations of BTEX (0.002 mg/l in MW-21, and 0.014 mg/l in MW-22) were also detected in the October 1996 sampling event.

The concentration and extent of dissolved -phase chlorocarbons in groundwater has remained stable since 1994 (Figure 4). MW-10 is the only well in which total chlorocarbon concentration has increased since 1994, changing from 0.051 mg/l in 1994 to 0.25 mg/l in 1996. This increase could be related to the excavation of the acid plant in the fall of 1994, since the value has subsequently fallen to 0.158 mg/l in April 1997. While the concentration of total chlorocarbons has remained stable, the composition of the total mixture of constituents has changed through time and will be discussed in a later section of this report.

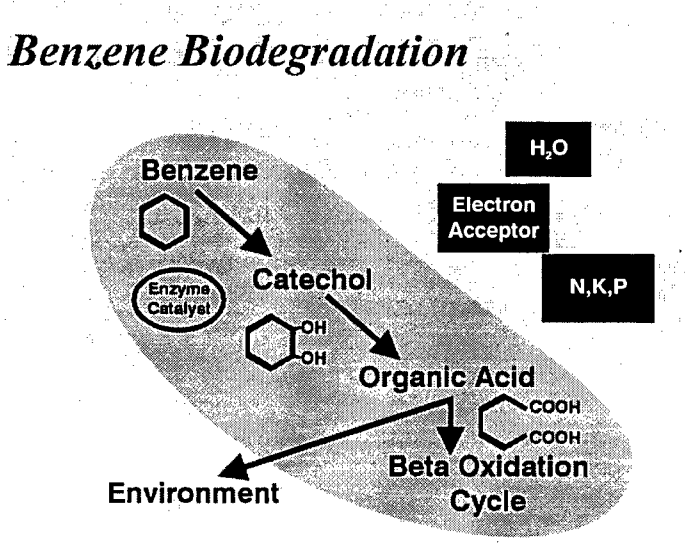
The lack of significant migration of dissolved-phase constituents over the past few years suggests that mechanisms of natural attenuation are active at this site and should be investigated. In addition, the pattern of chlorocarbon species distribution in the aquifer suggests that natural attenuation is occurring and should be investigated as a corrective action mechanism (Weaver et al., 1995; McCarty and Semprini, 1994).

Section 2
Natural Attenuation and Biodegradation

Many hydrocarbon and chlorocarbon constituents are now recognized to naturally biodegrade under both aerobic and anaerobic conditions (i.e., Chapelle 1993, Hinchee, Leeson, and Semprini 1995, and Hinchee, Wilson, and Downey 1995).

2.1 Biodegradation of Aromatic Hydrocarbons

Chemical pathways of biodegradation of aromatic hydrocarbons are well known and described in the scientific literature (i.e., Atlas 1983, Chapelle, 1993). Dissolved oxygen (D.O.), is the primary electron acceptor for benzene metabolism. Electron acceptors available for benzene metabolism under anaerobic conditions include nitrate, sulfate, and reduced iron species (i.e., Wiedemeier et al., 1995, Rifai et al., 1995).



Schematic pathway for biodegradation of benzene in groundwater.

2.2 Biodegradation of Chlorinated Hydrocarbons

In anaerobic aquifer environments chlorocarbons such as tetrachloroethene (PCE) and trichloroethene (TCE) and related daughter products have been shown to degrade through the microbial process of reductive dehalogenation (Weaver et al., 1995). Anaerobic conditions and the presence of a carbon source for microbial metabolism are required for this process. Under these conditions TCE may transform via a sequence of dechlorination reactions ultimately to CO_2 and chloride. An enzyme produced by indigenous microorganisms reduces TCE to

dichloroethene (DCE). Three isomers of DCE: 1,1-DCE, cis-1,2 DCE, and trans 1,2-DCE, are possible intermediates. The presence of these isomers in sampled groundwater is significant, because these chemicals have rarely been used on a large scale for industrial purposes, and their presence in groundwater is evidence of microbial degradation processes occurring in the aquifer (Weaver et al., 1995). DCE isomers are further degraded to vinyl chloride (VC) with the loss of another chlorine atom and ultimately, VC is degraded to ethene and chloride ion (McCarty and Semprini, 1994). Ethene is further degraded to CO_2 and H_2O.

In addition to the mechanism of reductive dehalogenation, certain chlorocarbons may be completely mineralized to carbon dioxide and water under aerobic conditions if methane or similar compound is present as a source of carbon for microbial use (Chapelle, 1993). The transformation occurs as the result of the microbial production of an enzyme that mediates the direct oxidation of the chlorinated compound. However, without a supply of non-chlorinated carbon the process becomes self limiting and stops.

Section 3
Evaluation of Natural Attenuation

3.1 Approach

Dowell has undertaken an evaluation of natural attenuation at this site to identify processes of biodegradation, to evaluate the chemical and environmental conditions of the aquifer in terms of biodegradation, and to assess the capability of the groundwater/microorganisms to degrade hydrocarbons and chlorocarbons.

3.2 Methods

Data from the investigation area have been collected to address the following issues:

- Chemical conditions of the aquifer including : electron acceptors for biodegradation, environmental parameters that control microbiological activity, and evidence of intermediate and end products of contaminant biodegradation
- Microbial community - identification of types, density, and distribution of microorganisms in the aquifer throughout the distribution of dissolved-phase constituents.
- Constituent transformation - identification of microbial degradation pathways and demonstration under controlled conditions of microbial transformation of constituent.

In November, 1996, water from selected locations was collected for geochemical and microbiological measurements. Sample locations, analytical methods, and parameters which were analyzed are presented in Table 1. Groundwater was sampled for pH, Eh, dissolved oxygen, nitrate, methane, carbon dioxide, chloride, and aerobic and anaerobic microorganisms. Microorganism species type was determined by carbon utilization tests and gas chromatographic analysis of cell wall constituents (Hemming 1988). Species density in each sampled well was determined by comparative plate counts and by light microscopy (Milke et al., 1993).

Additional investigations were carried out on each strain of collected microorganisms to determine their capability to degrade a mixture of gasoline, PCE, and TCE compounds detected in groundwater samples by measuring microbial respiration and/or oxidation (Hemming and Milke, 1996). Individual strains isolated from the investigation wells were tested for degradation capability under aerobic and anaerobic conditions. Methods details are included in Appendix B.

Section 4
Results

Chemical parameters of sampled groundwater generally showed evidence of microbial activity in the subsurface (Table 2). pH levels ranged from 6.3 to 7.2 standard units with a background average of 7.0 to 7.2. A pattern of slightly depressed values (below 7.0) occurred within the area of most-concentrated dissolved-phase constituents (Figure 5). Eh values ranged between -3.5 and +267 millivolts (mv). A distinct pattern of depressed Eh values centered around MW-3 was observed (Figure 6). Concentrations of dissolved oxygen (D.O.) in groundwater ranged from 0.6 to 7.4 mg/l (one anomalous reading of 19.0 mg/l was recorded at MW-19). Groundwater is essentially anaerobic in the area centered around MW-3 to MW-11. D.O. gradually increases in a radial pattern away from the anaerobic core to reach background levels of greater than 7 mg/l in MW-24 at the northernmost sampling point (Figure 7). Nitrate in groundwater ranges from <0.01 to 11.5 mg/l. Distribution of nitrate in groundwater shows a pattern similar to D.O. (Figure 8). Sulfate ranges from 481 - 2690 mg/l and phosphate occurred at essentially non-detectable levels (Table 2).

Methane, as a gas within groundwater, was detected in all fifteen wells sampled and ranged from 3 to 11,300 µg/l. Two distinct areas of elevated methane concentration were identified: 1) directly beneath the northwest corner of the facility and, 2) in the down-gradient area around MW-8 and MW-18 (Figure 9).

Carbon dioxide, measured as a gas in groundwater, was detected in 14 of the 15 sampled wells and ranged from 17 to 170 µg/l. A distribution pattern similar to that of methane was observed at the site (Figure 10). Elevated concentrations of CO_2 were observed in groundwater collected from MW-12, MW-13, MW-12, and MW-17 and gradually diminish in a radial pattern away from MW-12 and generally in the downgradient direction.

Chloride dissolved in groundwater ranged from 21 to 1620 mg/l. Background level ranged from 85 to 244 mg/l. Elevated levels of chloride were observed centered around MW-3, MW-12, and MW-17 (Figure 11). Chloride concentrations gradually diminished in a radial pattern away from MW-12 with slightly elevated levels evident in wells down-gradient from MW-12.

A diverse indigenous community of mixed aerobic and anaerobic bacteria was identified in water sampled from each of the eight investigation wells (Table 3). Fourteen types of aerobic bacteria were identified to the species level. The highest concentration of aerobic bacteria were found in water collected from MW-19 and in the near vicinity (Figure 12). Seven strains of anaerobes were isolated, five were identified to the species level, and two were not identified with the methods used in this investigation. Anaerobic bacteria were concentrated in the area around MW-7 and MW-3, but wells in the near vicinity also showed the presence of anaerobic

bacteria (Figure 13). Six of the aerobes and two anaerobes grew in the presence of the gasoline, PCE and TCE mixture over a 48 hour incubation period (Table 3, Appendix B for detail).

Section 5
Discussion

5.1 Biodegradation of Hydrocarbons

Several trends in the chemical data are especially relevant with regards to intrinsic bioremediation. pH is slightly depressed in the area of dissolved-phase constituents. Biodegradation of hydrocarbons typically produces organic acids and CO_2 as byproducts, both of which may serve to locally lower pH. Eh data describes the oxidation-reduction (REDOX) potential of the measured groundwater. REDOX reactions in organic-rich groundwater are usually the result of metabolic activity of microorganisms and the REDOX potential serves as a guide to interpreting the level and type of microbial activity in the sampled water (Wiedemeier et al., 1996). Oxidizing conditions were identified at the periphery of the dissolved phase constituents and are indicative of conditions appropriate for the aerobic degradation of BTEX constituents (Figure 6). In addition, reducing conditions measured in the center of the dissolved-phase constituent area indicate appropriate environmental conditions for the process of microbial reductive dehalogenation, a processes that results in the degradation of PCE, TCE and related daughter products.

Dissolved oxygen (D.O.), the primary electron acceptor for aerobic metabolism, shows a distinct inverse correlation with the concentration of dissolved-phase constituents. The central area of depressed D.O. concentrations correlate spatially with areas of elevated concentrations of dissolved-phase hydrocarbons (compare Figure 3 and Figure 7). The central area of the dissolved-phase constituents area is essentially anaerobic. The background level in the aquifer for D.O. was measured as 7.2 mg/l. As BTEX concentration declines towards the edge of the dissolved-phase constituent distribution, D.O. concentration increases until it reaches the background level at the extreme northern edge. This correlation represents some of the strongest evidence of aerobic microbial degradation of hydrocarbon within and at the edges of the area of dissolved-phase constituent.

Electron acceptors available for BTEX metabolism under anaerobic conditions include nitrate, sulfate, and reduced iron species. After oxygen, nitrate is the electron acceptor most readily utilized by hydrocarbon degrading bacteria. Nitrate concentrations also show an inverse correlation with hydrocarbon concentration. This area of depleted nitrate correlates closely with the area of anaerobic conditions identified in Figure 7 and suggests that nitrate has been used as a terminal electron acceptor in anaerobic microbial reactions. The general pattern of declining nitrate concentrations downgradient from the highest concentration, the correlation of anaerobic conditions with depressed nitrate concentrations, and the values of nitrate below measured background levels are data consistent with anaerobic biodegradation. Similar data

and spatial patterns of nitrate distribution have been recognized by other researchers at sites where natural biodegradation of hydrocarbon occurs (Weaver et al., 1995).

Sulfate is an electron acceptor for microbial use in anaerobic biodegradation and occurs in sufficient quantity at the facility to represent a potentially useful source of electron acceptor. However, the high concentrations of dissolved-phase sulfate and widely varying spatial distribution pattern of sulfate in the aquifer make interpretation of the role of sulfate in biodegradation difficult at this time. Future sampling events may provide data that helps in the interpretation of the role of sulfate, if any, in biodegradation of dissolved-phase constituents in the groundwater.

5.2 Biodegradation of Chlorocarbons

Multiple lines of evidence indicate that degradation of chlorocarbons is occurring in the center area of the dissolved-phase constituents and in the down-gradient area.

Methane may be produced by strictly anaerobic microorganisms. Methane is not a constituent of fuel hydrocarbons and the presence of elevated levels of methane above background levels is evidence of microbial degradation of fuels (Wiedemeier et al., 1996). Elevated methane levels near the center of the dissolve-phase constituents represent both an indicator of geochemical conditions and a source of carbon for microbial degradation of chlorocarbons. Methane concentrations in the vicinity of MW-3, MW-8, and MW-18 are direct evidence of highly reducing geochemical conditions required for the process of reductive dehalogenation. The methane also represents an appropriate carbon source for methanotrophic oxidation of chlorocarbons in the soil and groundwater where some aerobic conditions exist.

Carbon dioxide is an end product of biodegradation of hydrocarbons and certain chlorocarbons as previously described. Elevated CO_2 levels in the vicinity of the dissolved-phase constituents indicate greater microbial activity than in the surrounding monitoring wells. The inverse correlation between concentration of D.O. and CO_2 also indicates that aerobic metabolism is an important process in the subsurface in this area and contributes to the biodegradation of hydrocarbon and chlorocarbon constituents (compare Figure 3,4 and Figure 10).

During biodegradation of dissolved-phase chlorocarbons (especially reductive dehalogenation), chloride is released into groundwater, resulting in elevated chloride concentrations in the vicinity and down gradient of biodegradation activity (Wiedemeier et al., 1996). The concentration and distribution of chloride in the aquifer at the facility closely fits the pattern of chloride release resulting from reductive dehalogenation of chlorocarbons (see Figure 11).

Microorganisms collected from the groundwater at the facility were established in laboratory tests as having the capability to degrade both hydrocarbons and chlorocarbons. The distribution of these microorganisms in the groundwater at the facility indicate that the

subsurface microbial community has adapted to utilize fuel hydrocarbons as a source of carbon and to use chlorocarbons as electron acceptors under anaerobic conditions.

As previously described in the introduction section of this report, microbial degradation of chlorocarbons, such as PCE, via the process of reductive dechlorination results in the formation of daughter products TCE, isomers of DCE, VC, ethene, and finally CO_2 and H_2O. As previously noted, environmental conditions in the groundwater at the facility are favorable for the process of reductive dechlorination. A map illustrating the distribution of species of chloroethenes present in the groundwater at the facility indicate that this process is likely to be occurring (Figure 14). PCE occurs immediately beneath the facility site as a high percentage of the total chloroethenes present. Down gradient and in the area of the groundwater which is highly reducing and shows elevated concentrations of methane, the percentage of PCE declines significantly and TCE and isomers of DCE occur in increasing percentages of total chloroethenes. It should be noted that DCE isomers are recognized as biodegradation by-products and rarely occur as elements of industrial chemicals (Weaver et al., 1995). This pattern of chlorocarbon distribution suggests a sequential degradation of PCE by biodegradation pathways discussed in the introduction of this report.

In summary, the conditions listed above indicate that hydrocarbon and chlorocarbon concentrations are declining via microbial degradation processes and not solely dilution or volatilization.

Section 6
Conclusions

Geochemical measurements of groundwater indicate that a sequential change in groundwater conditions has occurred over time that currently favors biodegradation of chlorocarbons and anaerobic degradation of residual hydrocarbons. Spatial patterns of dissolved-phase constituents across the site also suggest a subsurface environment conducive to the long term biodegradation of hydrocarbon and chlorinated constituents.

Natural biodegradation of dissolved-phase constituents should be considered as an important element of corrective action at this site.

The current monitoring program will provide data to verify that concentration levels of dissolved-phase constituents will continue to decline, that natural biodegradation of dissolved-phase constituents continues to act as a remediation mechanism, and will provide historical water quality data necessary to estimate a time frame for destruction of dissolved-phase constituents and attainment of closure.

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Tables

Table 1
Intrinsic Biodegradation
Measurements

Parameter	Method	Wells
Dissolved oxygen	field instrument	MW-3, 4, 7, 8, 10, 11, 12, 13, 18, 19, 20, 21, 22, 23, 24
pH & Eh	field instrument	MW-3, 4, 7, 8, 10, 11, 12, 13, 18, 19, 20, 21, 22, 23, 24
Water chemistry Nitrate Sulfate o-Phosphorus TOC	lab	MW-3, 4, 7, 8, 10, 11, 12, 13, 18, 19, 20, 21, 22, 23, 24 MW-7,12,18,19
Dissolved gasses (methane, CO_2)	lab	MW-3, 4, 7, 8, 10, 11, 12, 13, 18, 19, 20, 21, 22, 23, 24
Anaerobic plate counts	lab - Std. methods	MW-7, 12, 18, 19, BH-1, BH-2, 90125
Strain ID	lab - GC FAME and database matching	MW-7, 12, 18, 19, BH-1, BH-2, 90125
Biodeg. of contaminants	lab - 24 hr. microtiter plate optical density	MW-7, 12, 18, 19, BH-1, BH-2, 90125

Location: Artesia, New Mexico
Monitoring and Sampling: Groundwater wells
Initial Sampling Data: October and November, 1996

Table 2
pH, Eh, and Dissolved Gasses

Well	Date	pH	Eh	Dissolved Oxygen	Dissolved CO2	Sulfate	Chloride	Nitrate	Ortho Phosphate	Methane	TOC
MW-3	11/20/96	6.3	-3.5	0.08	100	1000	1920	<0.10	0	11300	
MW-4	11/20/96	7.2	135.2	0.59	nd	481	21	0	0	6	
MW-7	11/20/96	7.2	207.7	nr	60	2190	857	7	0	104	66.9
MW-8	11/20/96	7.0	251.9	2.20	40	1920	889	6	0	3440	
MW-10	11/20/96	7.5	264.1	nr	25	2030	207	12	0	7	
MW-11	11/20/96	6.5	78.8	0.07	60	2270	1620	3	0	434	
MW-12	11/20/96	6.3	31.4	0.06	170	1490	1140	nd	0	890	201.0
MW-13	11/20/96	6.7	129.3	0.28	100	1160	93	0	0	17	
MW-18	11/20/96	7.2	202.8	nr	50	1980	814	2	0	1360	65.1
MW-19	11/20/96	6.8	266.9	19.20	45	2690	905	9	0	57	61.6
MW-20	11/20/96	7.0	136.4	4.30	17	2200	154	5	0	4	
MW-21	11/20/96	6.9	94.5	2.20	17	2040	244	5	0	9	
MW-22	11/20/96	6.9	92.1	3.50	30	2030	612	3	0	4	
MW-23	11/20/96	7.0	126.5	3.20	22	2420	85	6	1	4	
MW-24	11/20/96	7.1	136.5	7.40	18	1300	184	8	0	3	

Notes:
nr = no record
nd = no detection

Table 3
Identification and Degradation Capacity of Bacteria in Ground Water

Strain Number	Identification	Degradation Capability
		Gasoline, PCE, and TCE Mixture
• **Aerobic**		
4402-1	*Bacillus cereus*	No
4402-2	*Enterococcus faecium* GC subgroup A	No
4402-3	*Pseudomonas stutzeri*	No
4402-4	*Sphingomonas paucimobilis*	No
4402-5	*Aureobacterium barkeri*	No
4402-6	*Pseudomonas stutzeri*	No
4402-7	*Pseudomonas syringae pisi*	No
4402-8	*Aeromonas veronii*	Yes
4402-9	Insufficient growth to ID	Yes
4402-10	*Bacillus circulans*	Yes
4402-11	*Bacillus subtilis*	No
4402-12	Insufficient growth to ID	Yes
4402-13	*Brevibacterium acetylicum* subgroup B	Yes
4402-14	*Kluyvera cryocrescens*	Yes
• **Anaerobic**		
4402-1 AN	*Arcobacter cryaerophilus*	Yes
4402-2 AN	*Campylobacter coli*	No
4402-3 AN	*Arcobacter cryaerophilus*	No
4402-4 AN	*Arcobacter cryaerophilus*	No
4402-5 AN	*Arcobacter cryaerophilus*	No
4402-6 AN	Insufficient growth to ID	No
4402-7 AN	Insufficient growth to ID	Yes

Table 4
Population of Bacteria in Groundwater
By Well After 24 and 48 Hours of Incubation
December, 1996

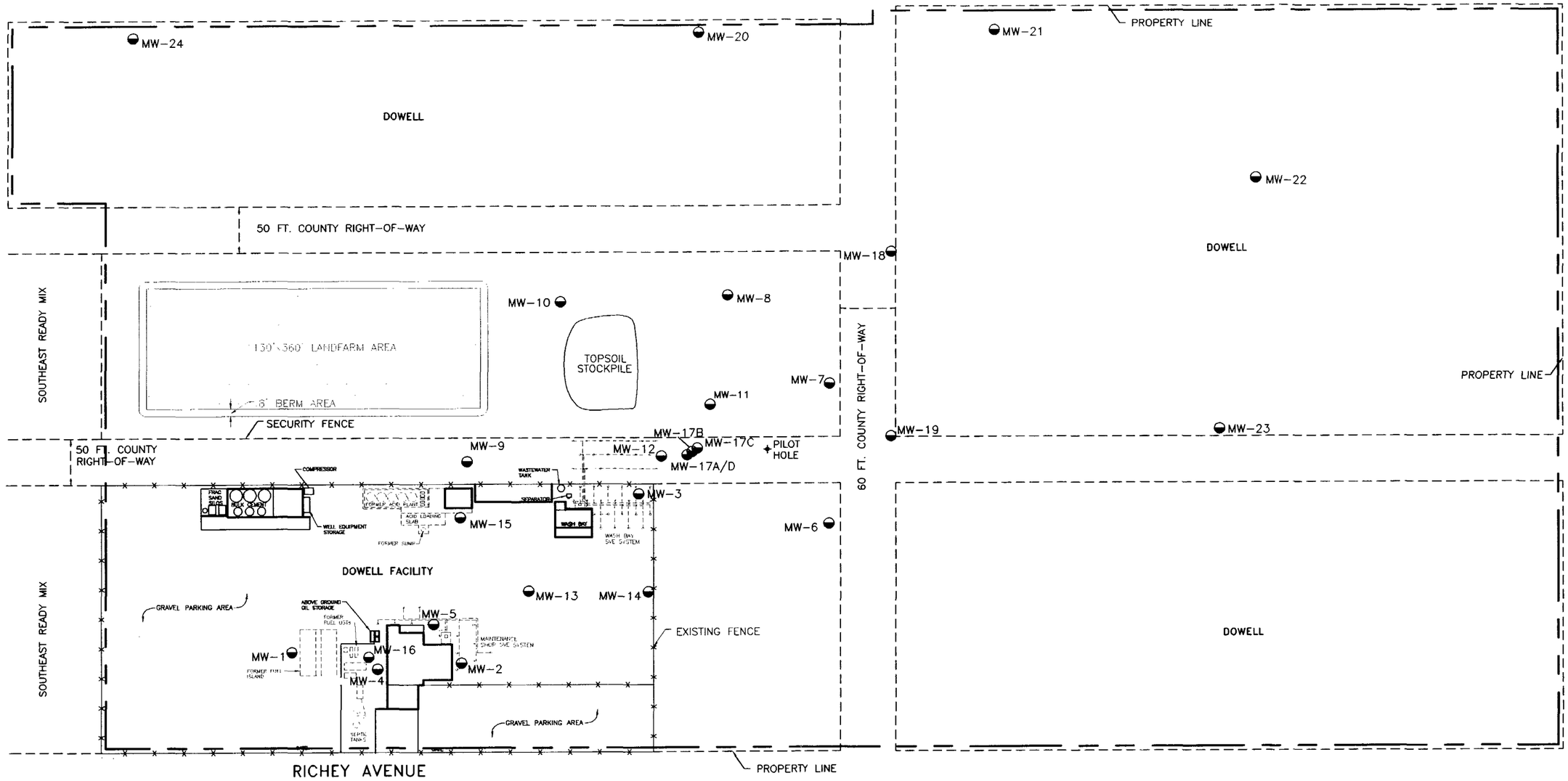
Total Heterophic Plate Count Results AEROBIC:

DATA: Direct Count: Colony Forming Units (CFU/ ml) on TSA			
Sample	**24 Hours**	**48 Hours**	**Types**
MW-12	3.01×10^3	1.90×10^4	5
MW-18	2.95×10^3	4.55×10^3	6
MW-19	3.32×10^5	6.54×10^5	5
MW-7	<10	540	4
BH-1	30	990	5
BH-2	<10	70	5
90125	4.21×10^3	8.63×10^3	5
Total morphologically different types among samples: 14			

Total Heterotrophic Plate Count Results ANAEROBIC:

DATA: Direct Count: Colony Forming Units (CFU/ ml) on TSA			
Sample	**24 Hours**	**48 Hours**	**Types**
MW-12	<10	100	2
MW-18	40	50	3
MW-19	1.36 x 104	1.59×10^4	3
MW-7	<10	1.56×10^4	2
BH-1	<100	<100	0
BH-2	100	600	1
90125	1.30 x 103	7.80×10^3	4
Total morphologically different types among samples: 7			

Figures



LEGEND

MW-13 MONITOR WELL LOCATION & NUMBER

SCALE IN FEET

0 120 240

N

BASE MAP MODIFIED FROM WESTERN WATER CONSULTANTS, INC.

FIGURE 1
BASE MAP OF FACILITY
DOWELL SCHLUMBERGER
ARTESIA, NEW MEXICO

RMT, INC.

DWN. BY:	D.W.H.
APPROVED BY:	F.H.
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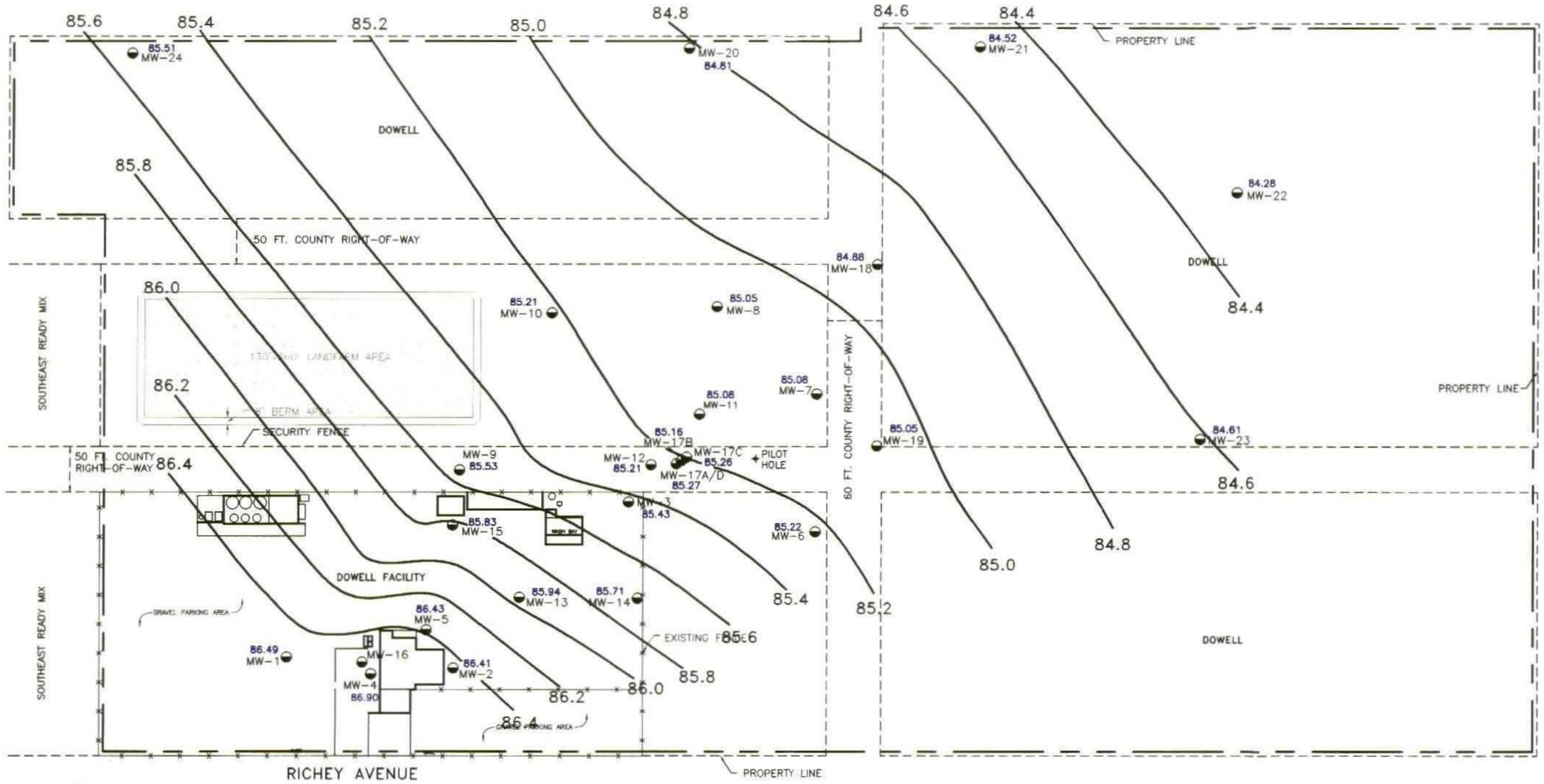

LEGEND

- MW-13 MONITOR WELL LOCATION & NUMBER
- 86.49 GROUND-WATER ELEVATION (FEET MSL)
- 85.5 CONTOUR OF GROUND-WATER ELEVATION (FEET MSL)

NOTE: POTENTIOMETRIC SURFACE WAS EXTRAPOLATED FROM A WESTERN WATER CONSULTANTS, INC. REPORT DATED JAN. 15, 1997

SCALE IN FEET
0 120 240

N

BASE MAP MODIFIED FROM WESTERN WATER CONSULTANTS, INC.

FIGURE 2
POTENTIOMETRIC SURFACE
OCTOBER 21, 1996
DOWELL SCHLUMBERGER
ARTESIA, NEW MEXICO

RMT, INC.

DWN. BY:	D.W.H.
APPROVED BY:	F.H.
DATE:	5/28/97
PROJ. #	50-01145.59
FILE #	11455901

PLOT DATA
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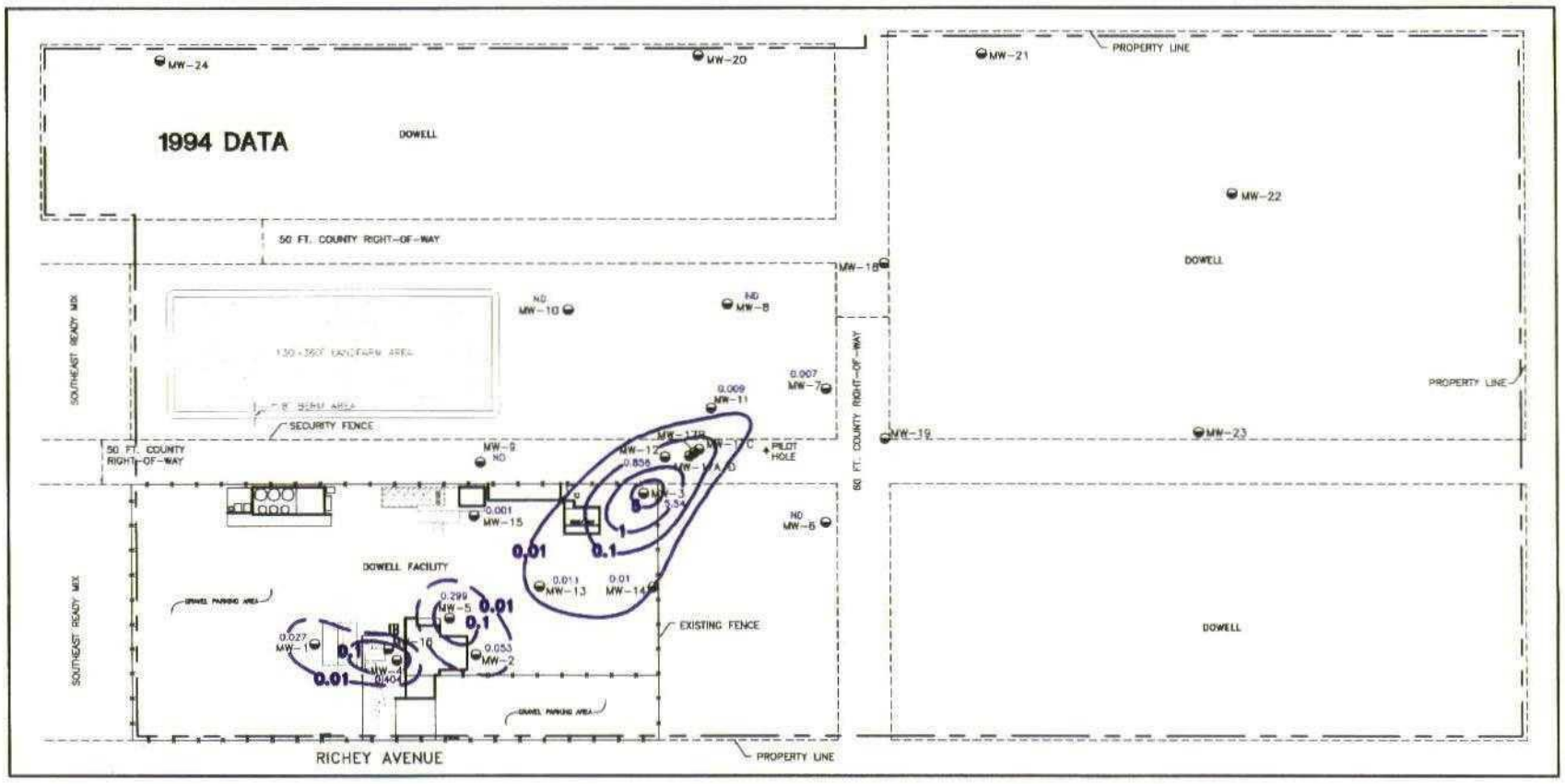
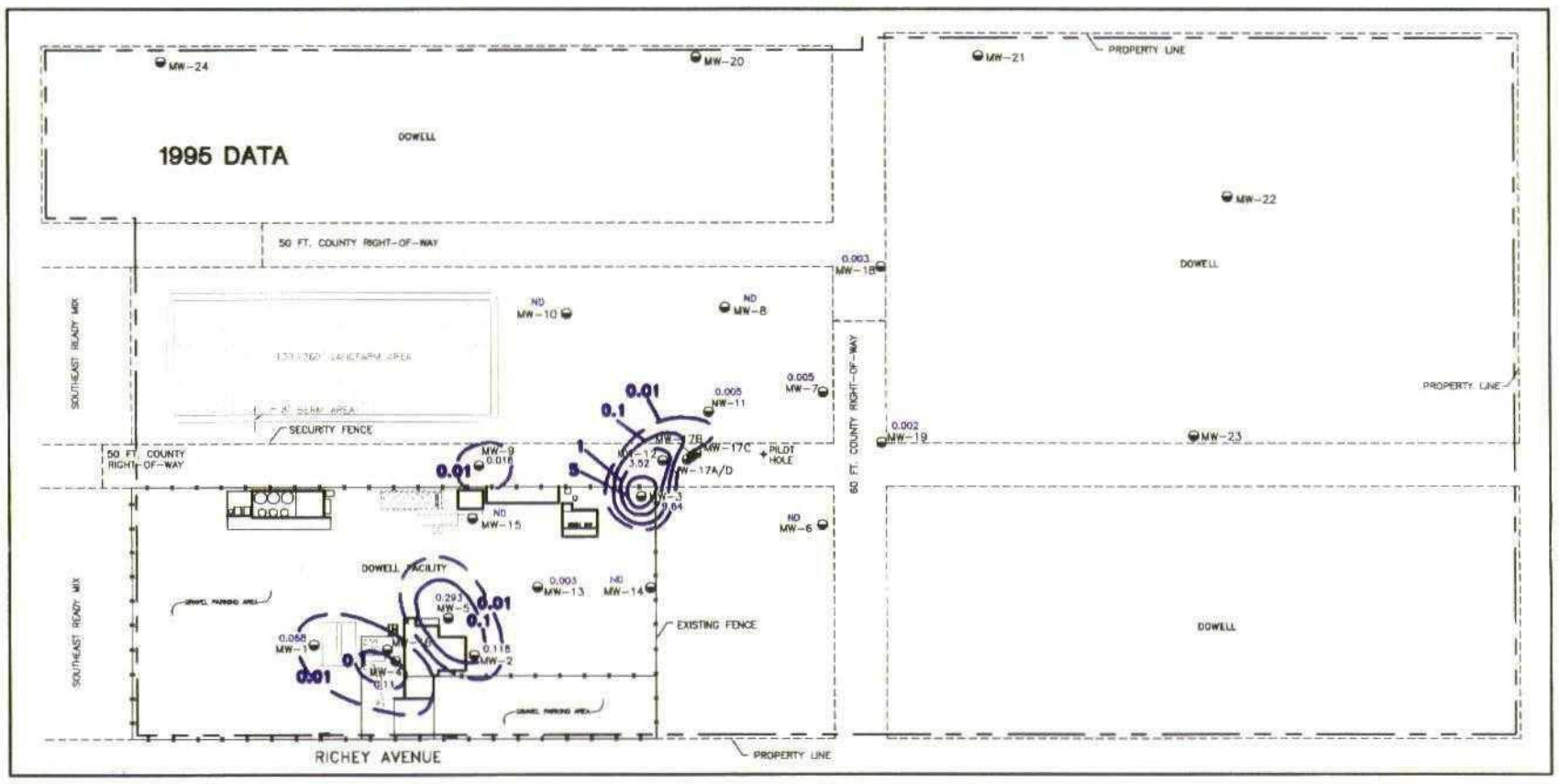
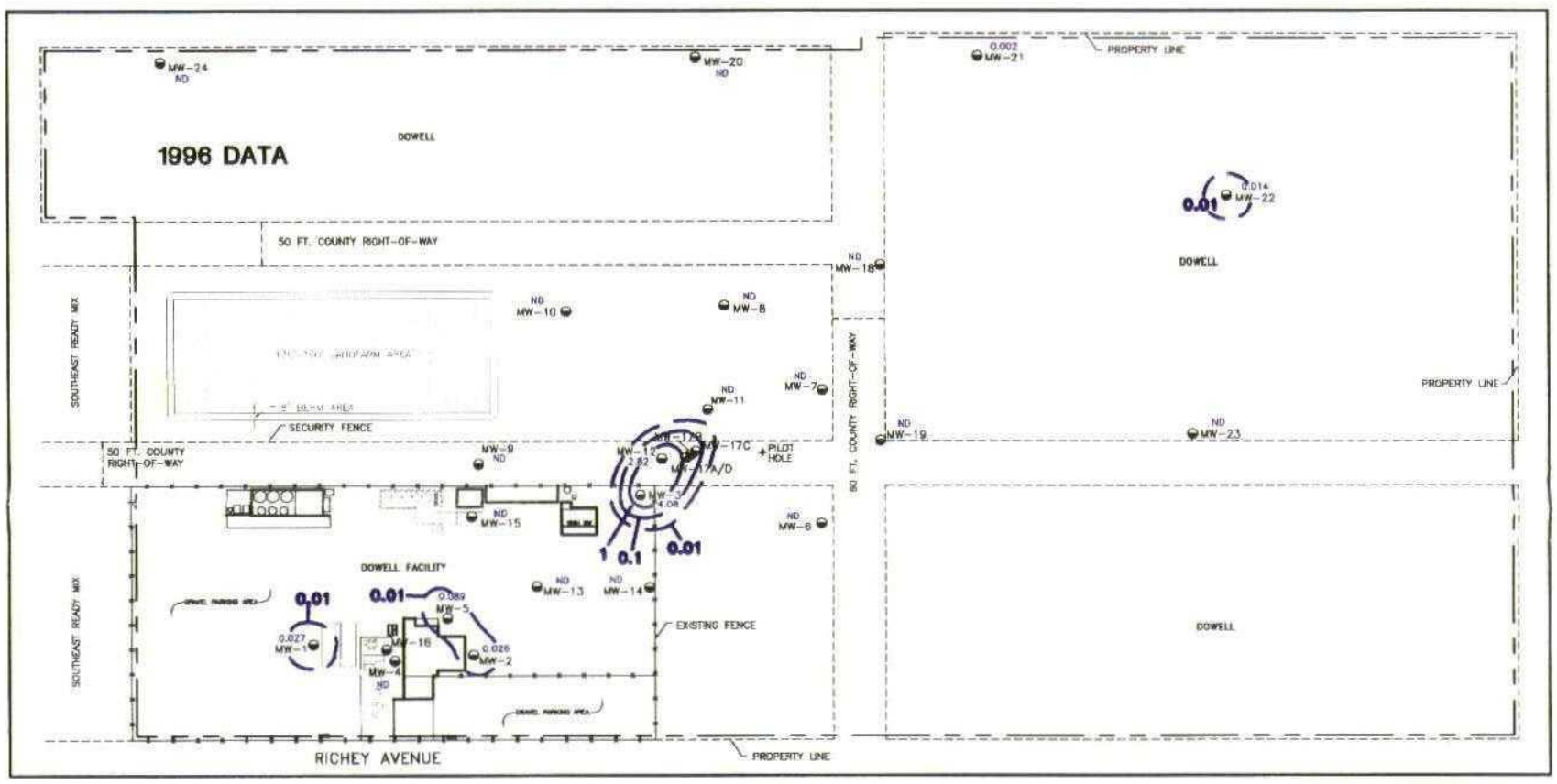
Plot Date: 5/28/97
Plot Time: 3:30P
Attached Xref's: x

PLOT DATA

Drawing Name:	11455902.DWG	Dwg Size:	1=1
Operator Name:	D.W.H.	Plot Date:	5/28/97
Scale:	17x11	Plot Time:	3:00P
		Attached Xref's:	11455901







LEGEND

- MW-1 MONITOR WELL LOCATION & NUMBER
- 5.54 TOTAL BTEX CONCENTRATION (mg/L)
- ND NOT DETECTED
- 0.1 CONTOUR OF TOTAL BTEX CONCENTRATIONS (mg/L)

FIGURE 3
TOTAL BTEX CONCENTRATIONS
1994, 1995 & 1996

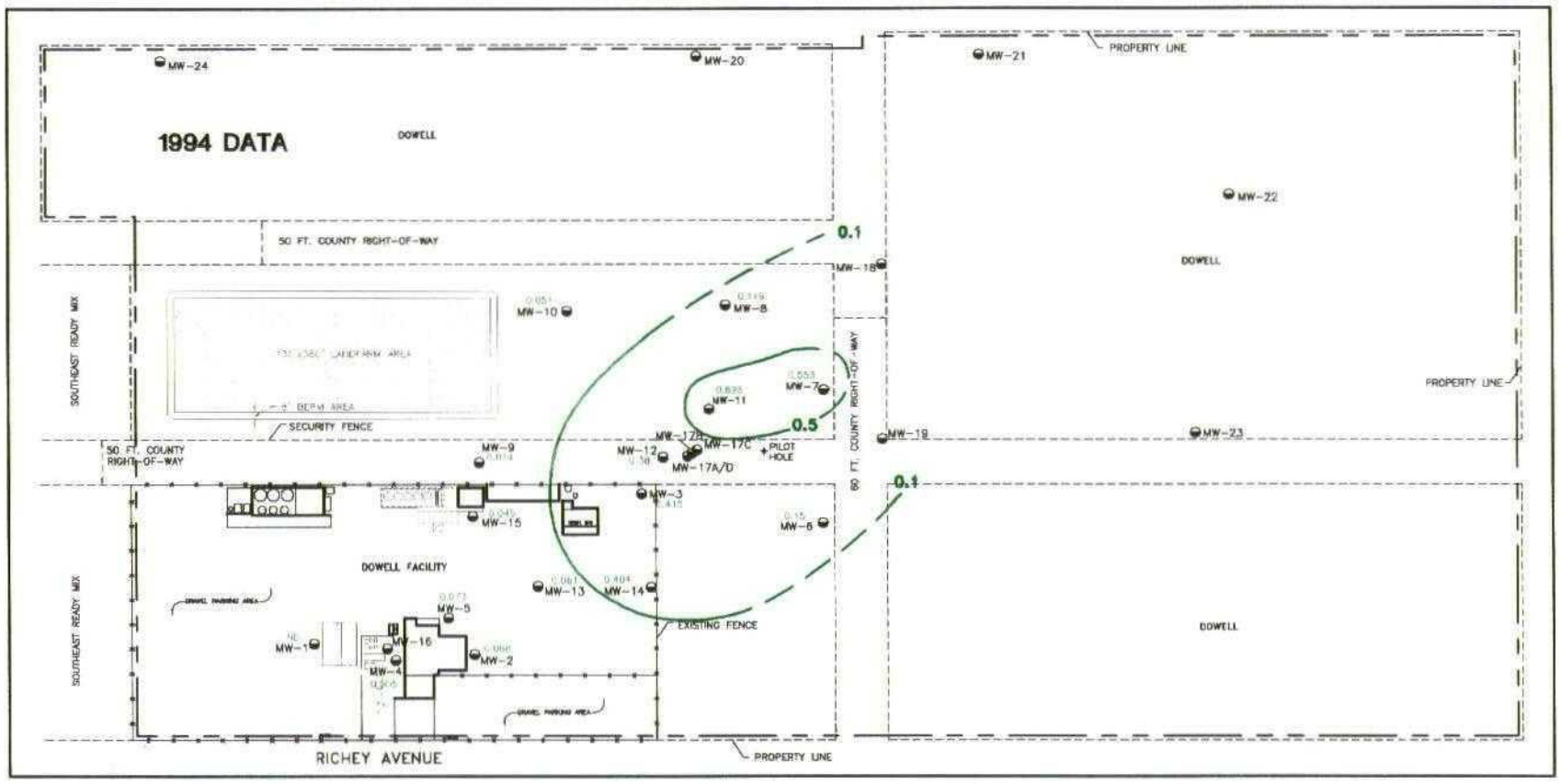
DOWELL SCHLUMBERGER
ARTRESIA, NEW MEXICO

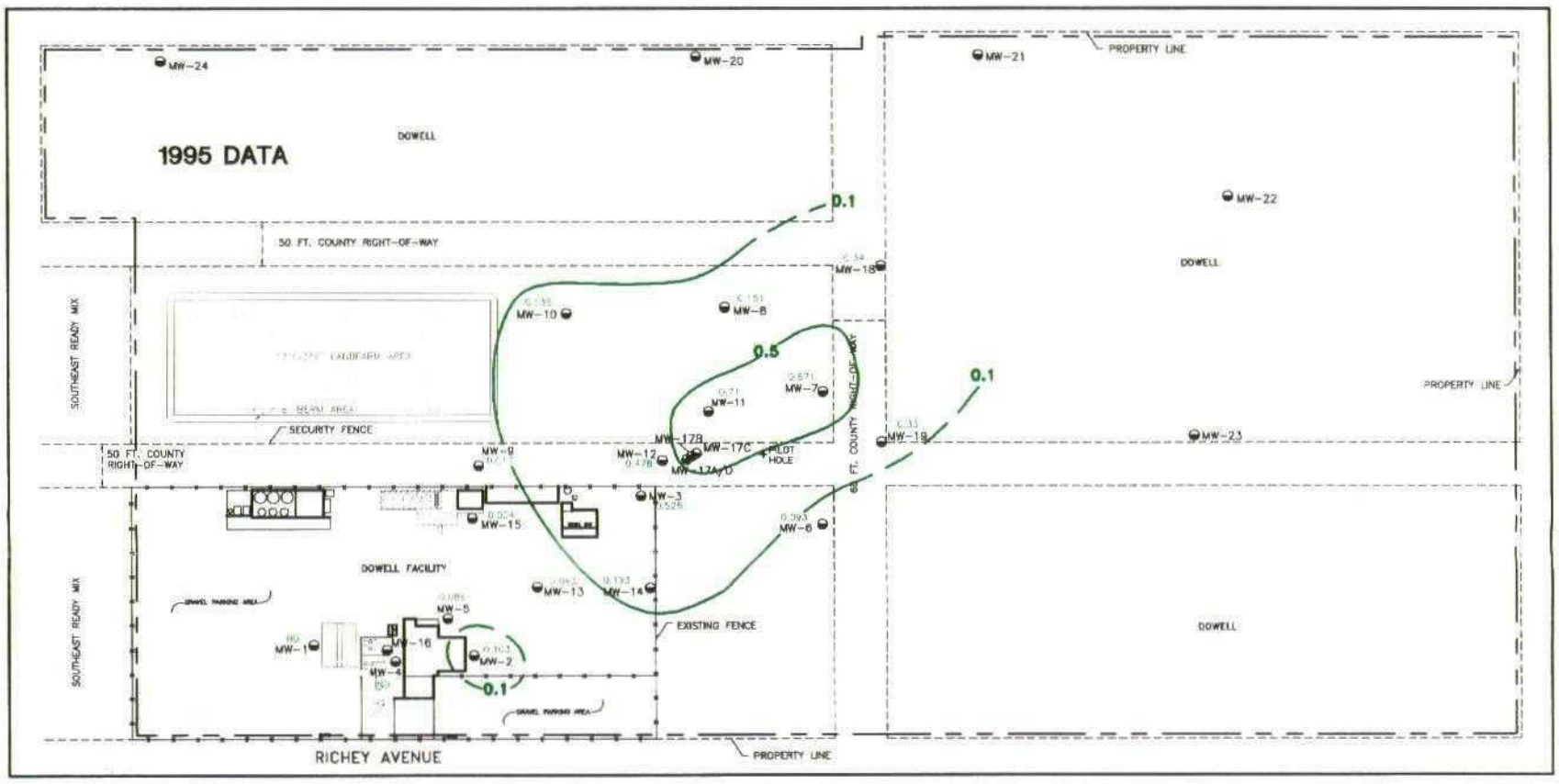
RMT INC.

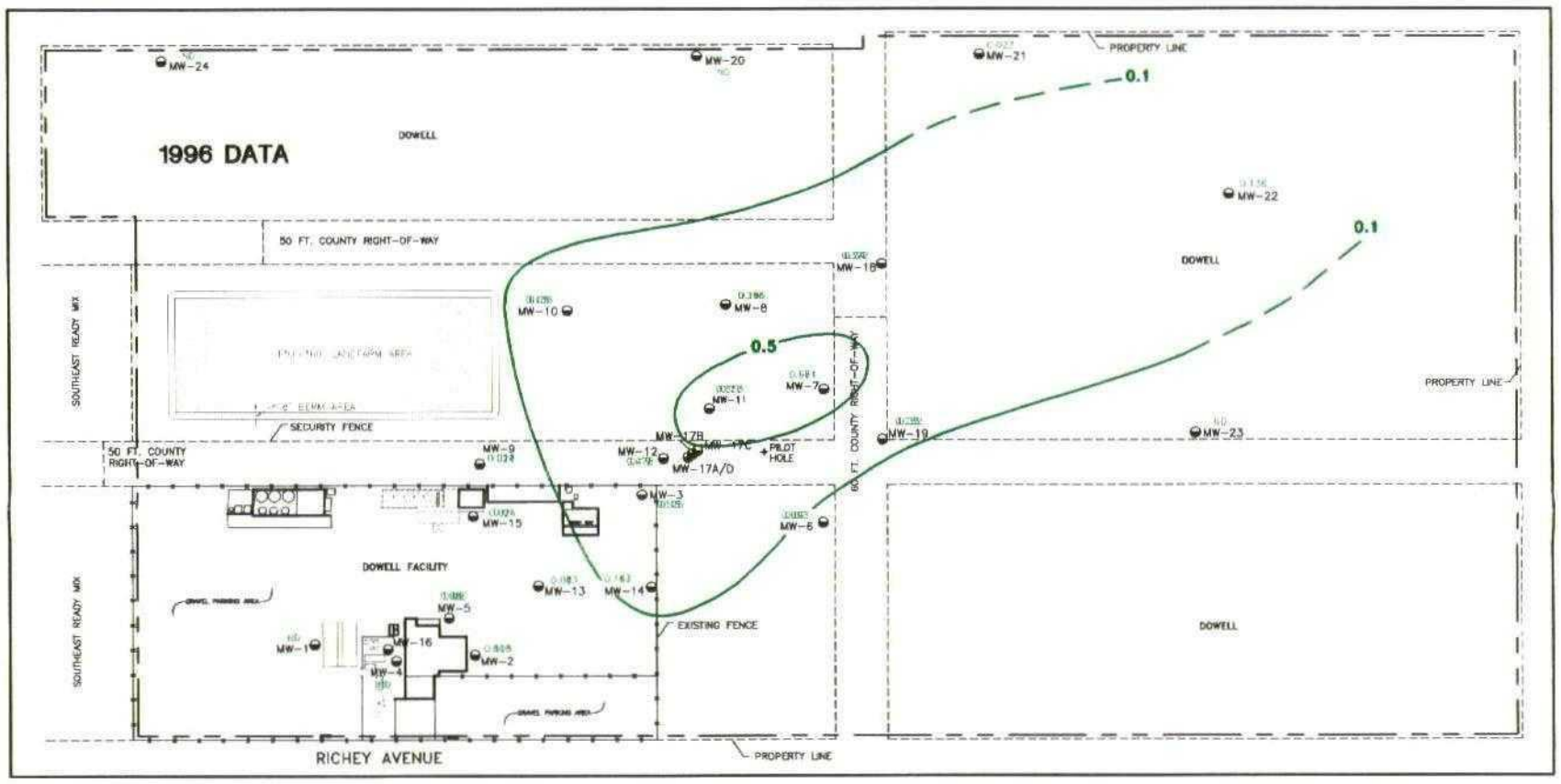
DWN. BY:	D.W.H.
APPROVED BY:	F.H.
DATE:	5/28/97
PROJ. #	50-01145.59
FILE #	11455902

PLOT DATA

Drawing Name:	11455902.DWG	Dwg Size:	1=1
Operator Name:	D.W.H.	Plot Date:	5/28/97
Scale:	17x11	Plot Time:	3:00P
		Attached Xref's:	11455901







LEGEND

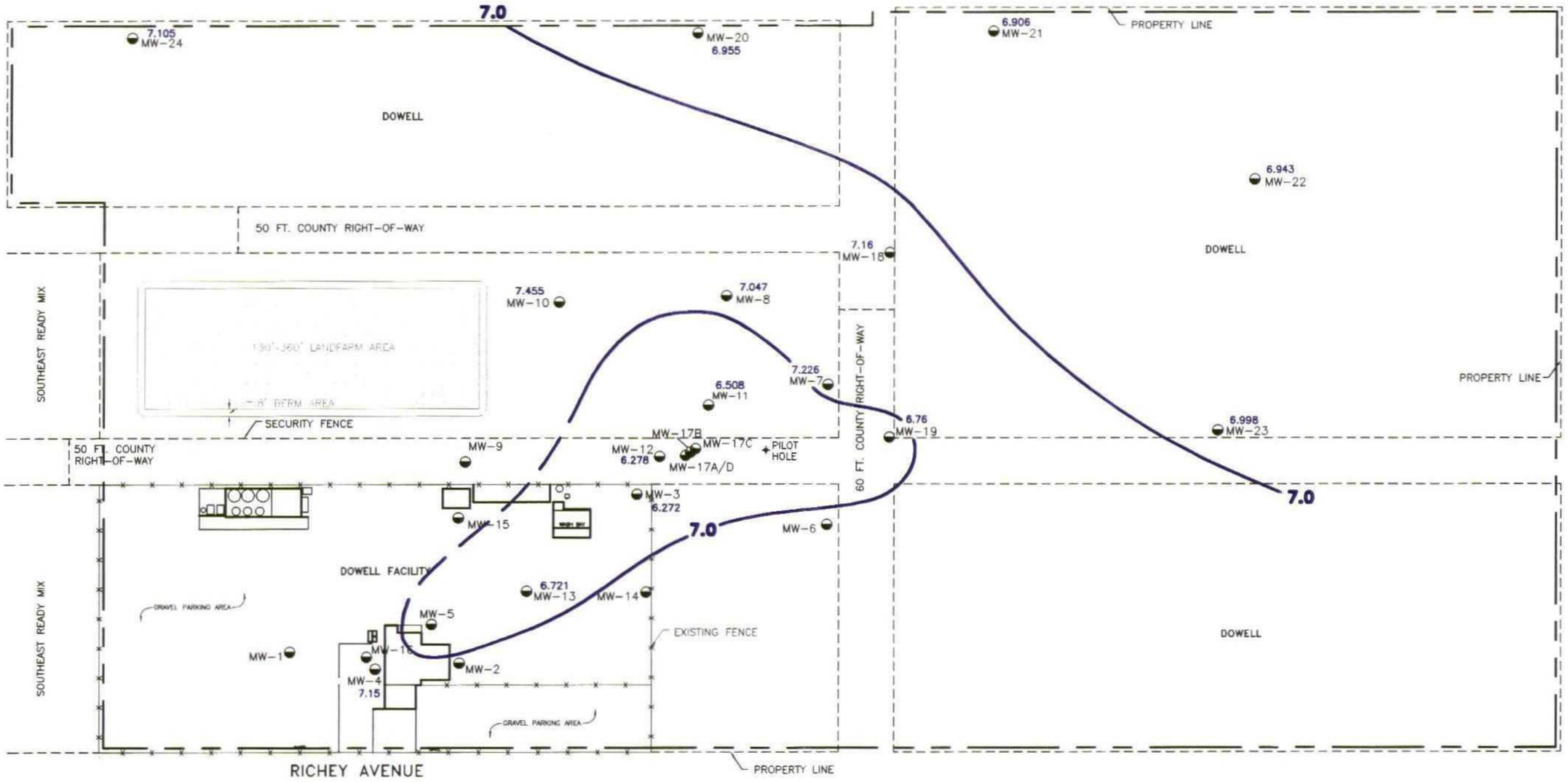
- MW-1 MONITOR WELL LOCATION & NUMBER
- 0.54 TOTAL CHLORCARBONS (mg/L)
- N.D. NOT DETECTED
- 0.1 CONTOUR OF TOTAL CHRLOCARBONS (mg/L)

FIGURE 4
TOTAL CHLOROCARBONS
1994, 1995 & 1996

DOWELL SCHLUMBERGER
ARTRESIA, NEW MEXICO

RMT INC.

DWN. BY:	D.W.H.
APPROVED BY:	F.H.
DATE:	5/28/97
PROJ. #	50-01145.59
FILE #	11455902



LEGEND

- MW-13 — MONITOR WELL LOCATION & NUMBER
- 6.721 — Ph VALUE (STANDARD UNITS)
- 7.0 — CONTOUR OF Ph VALUE (STANDARD UNITS)

SCALE IN FEET

0 120 240

N

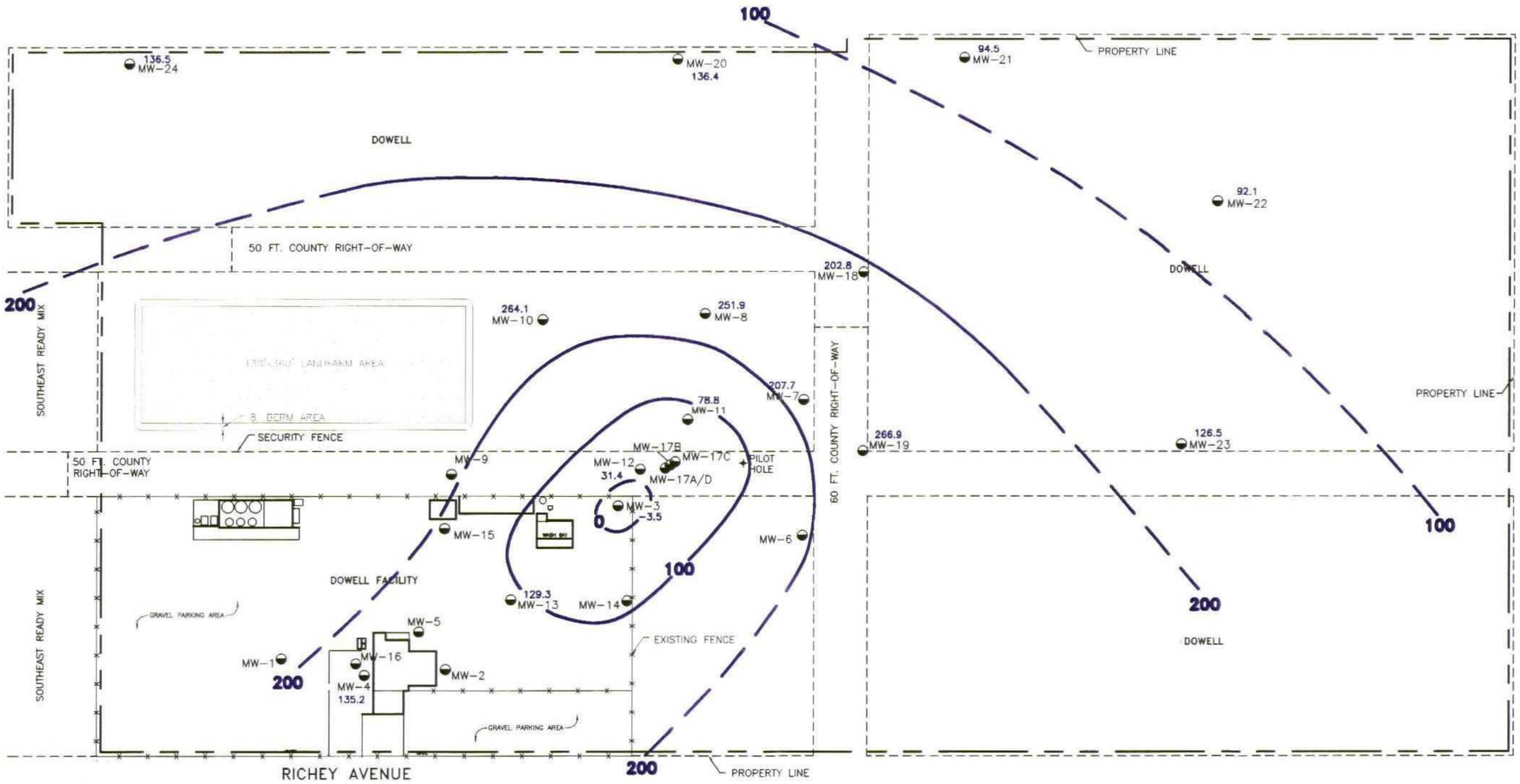
FIGURE 5
Ph VALUES
NOVEMBER 20, 1996
DOWELL SCHLUMBERGER
ARTESIA, NEW MEXICO

DWN. BY:	D.W.H.
APPROVED BY:	F.H.
DATE:	5/28/97
PROJ. #	50-01145.59
FILE#	11455901

RMT, INC.

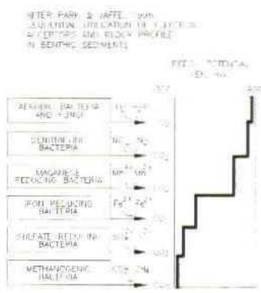
BASE MAP MODIFIED FROM WESTERN WATER CONSULTANTS, INC.

PLOT DATA
Drawing Name: 11455901.DWG
Operator Name: D.W.H.
Scale: 1=120
Dwg Size: 11x17
Plot Date: 5/28/97
Plot Time: 3:30P
Attached Xref's: x



LEGEND

- MW-13 MONITOR WELL LOCATION & NUMBER
- 78.8 Eh (Mv)
- 100 CONTOUR OF Eh (Mv)



SCALE IN FEET

0 120 240

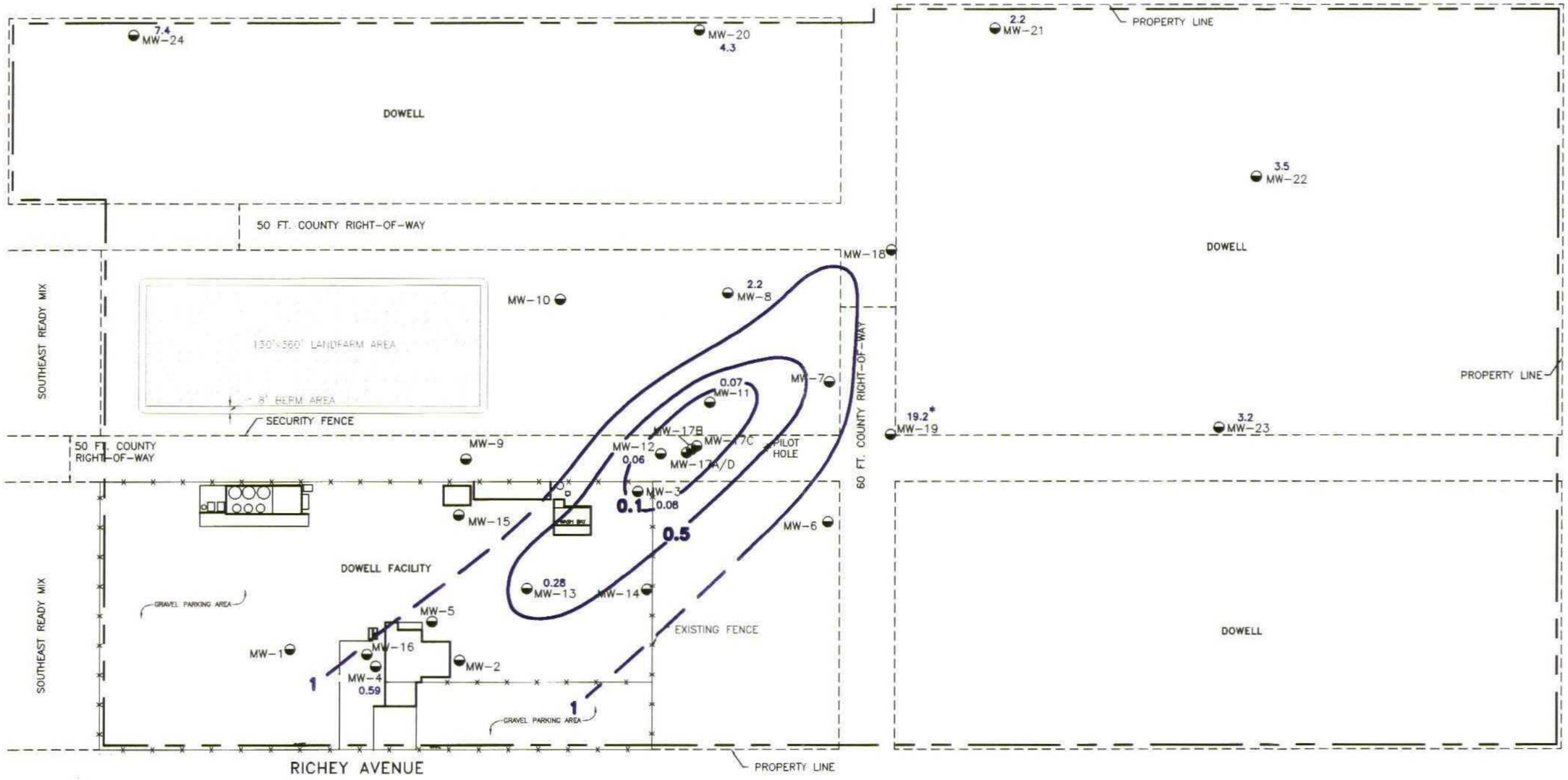
N

FIGURE 6
Eh (Mv)
DECEMBER 27, 1996
DOWELL SCHLUMBERGER
ARTESIA, NEW MEXICO

DWN. BY:	D.W.H.
APPROVED BY:	F.H.
DATE:	5/28/97
PROJ. #	50-01145.59
FILE#	11455901

BASE MAP MODIFIED FROM WESTERN WATER CONSULTANTS, INC.

PLOT DATA
Drawing Name: 11455901.DWG
Operator Name: D.W.H.
Scale: 1=120
Dwg Size: 11x17
Plot Date: 5/28/97
Plot Time: 3:30P
Attached Xref's: x



LEGEND

- MW-13 — MONITOR WELL LOCATION & NUMBER
- 2.2 — DISSOLVED OXYGEN CONCENTRATIONS (mg/L)
- * — SUSPECTED ANOMALY
- 0.1 — CONTOUR OF DISSOLVED CONCENTRATIONS (mg/L)

SCALE IN FEET

0 120 240

N

FIGURE 7
DISSOLVED OXYGEN CONCENTRATIONS
OCTOBER 22, 1996

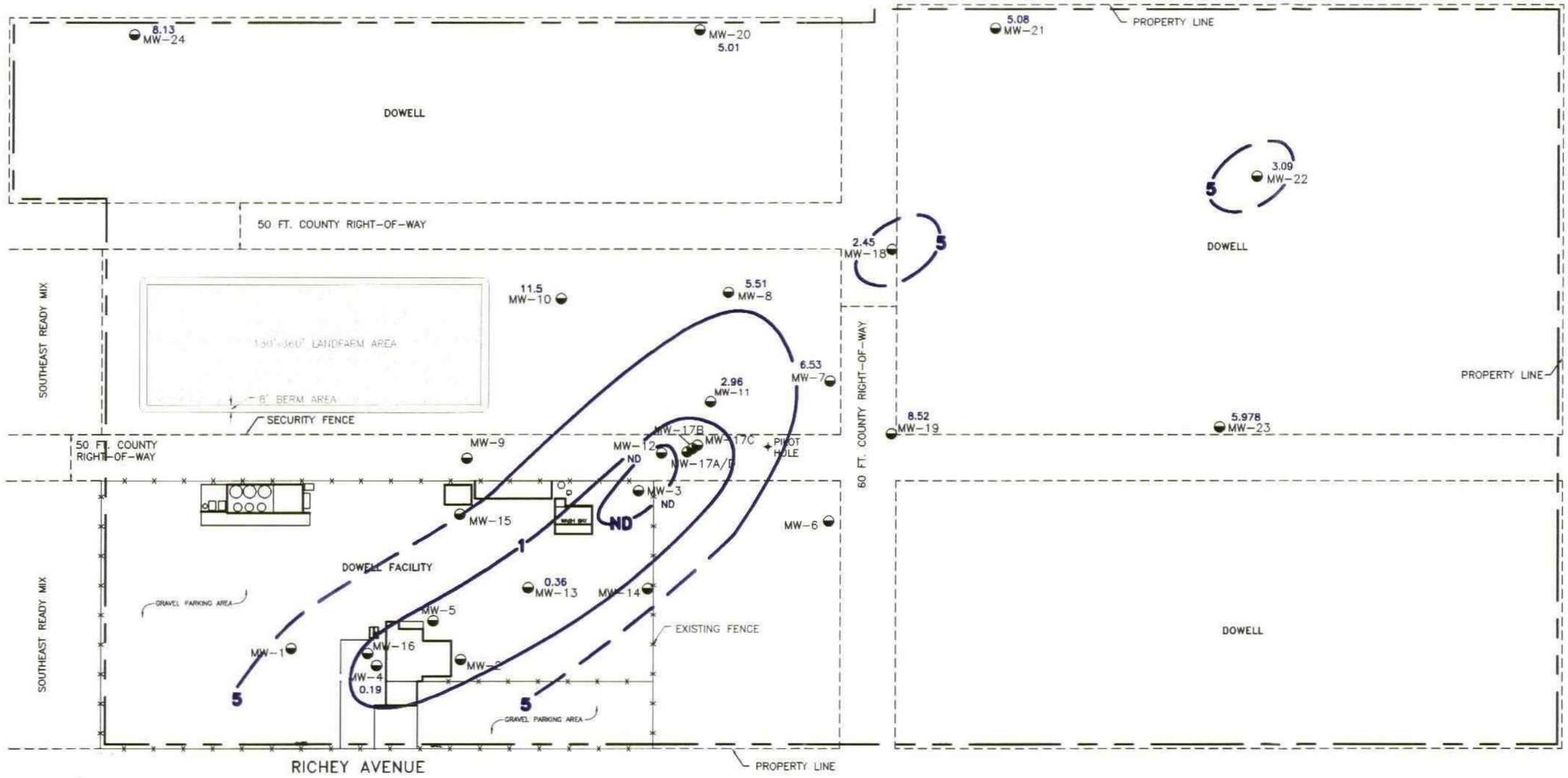
DOWELL SCHLUMBERGER
ARTESIA, NEW MEXICO

RMT, INC.

DWN. BY:	D.W.H.
APPROVED BY:	F.H.
DATE:	5/28/97
PROJ. #	50-01145.59
FILE#	11455901

BASE MAP MODIFIED FROM WESTERN WATER CONSULTANTS, INC.

PLOT DATA
Drawing Name: 11455901.DWG
Operator Name: D.W.H.
Scale: 1=120
Dwg Size: 11x17
Plot Date: 5/28/97
Plot Time: 3:30P
Attached Xref's: x



LEGEND

MW-13	MONITOR WELL LOCATION & NUMBER
5.51	NITRATE CONCENTRATIONS (mg/L)
ND	NOT DETECTED
5	CONTOUR OF NITRATE CONCENTRATIONS (mg/L)

SCALE IN FEET
0 120 240

N

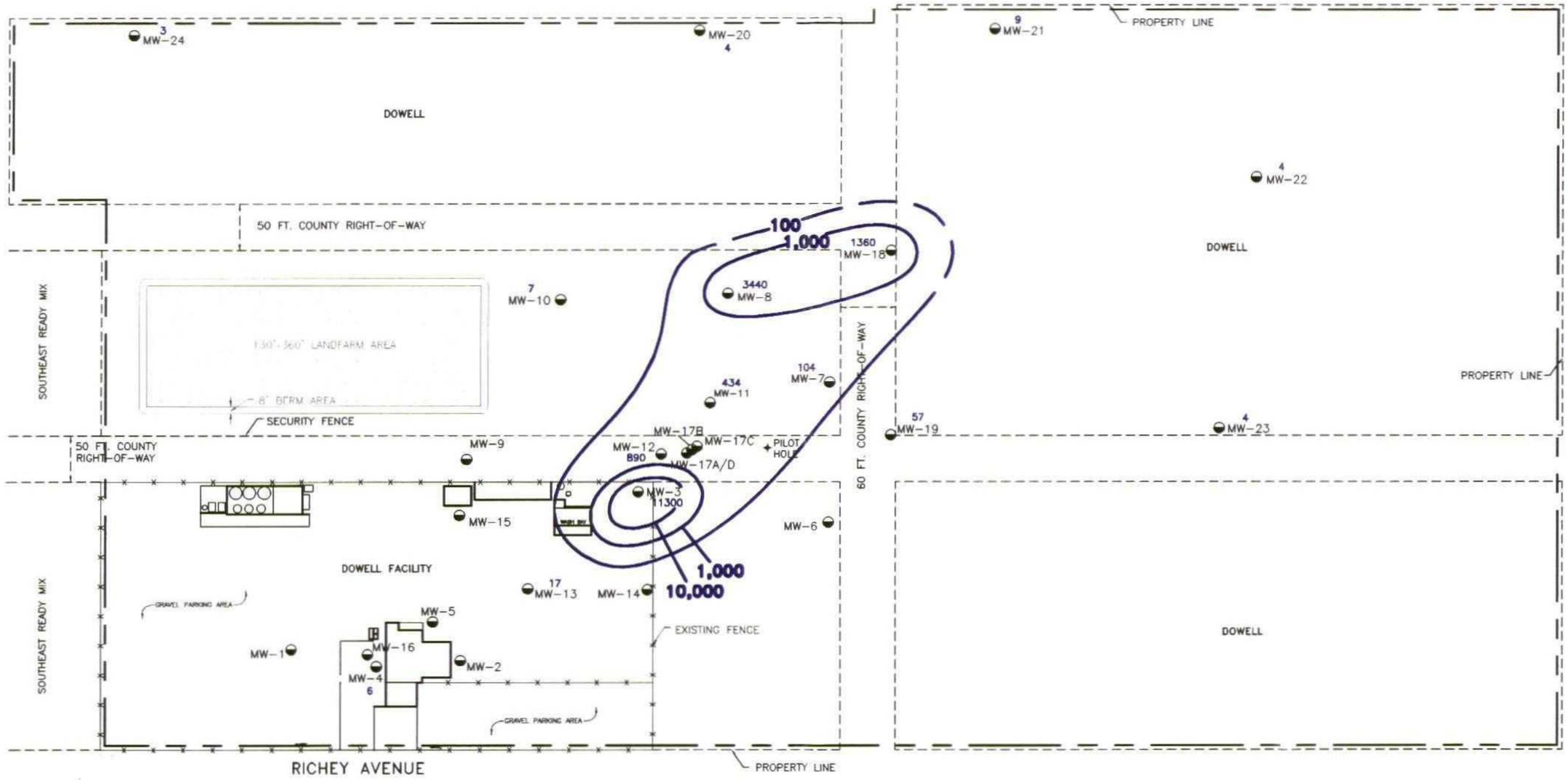
BASE MAP MODIFIED FROM WESTERN WATER CONSULTANTS, INC.

FIGURE 8
NITRATE CONCENTRATIONS
NOVEMBER 20, 1996
DOWELL SCHLUMBERGER
ARTESIA, NEW MEXICO

RMT, INC.

DWN. BY:	D.W.H.
APPROVED BY:	F.H.
DATE:	5/28/97
PROJ. #	50-01145.59
FILE#	11455901

PLOT DATA
Drawing Name: 11455901.DWG
Operator Name: D.W.H.
Scale: 1=120
Dwg Size: 11x17
Plot Date: 5/28/97
Plot Time: 3:30P
Attached Xref's: x



LEGEND

- MW-13 MONITOR WELL LOCATION & NUMBER
- 890 METHANE CONCENTRATIONS (ppm)
- 100 CONTOUR OF METHANE CONCENTRATIONS (ppm)

SCALE IN FEET

0 120 240

N

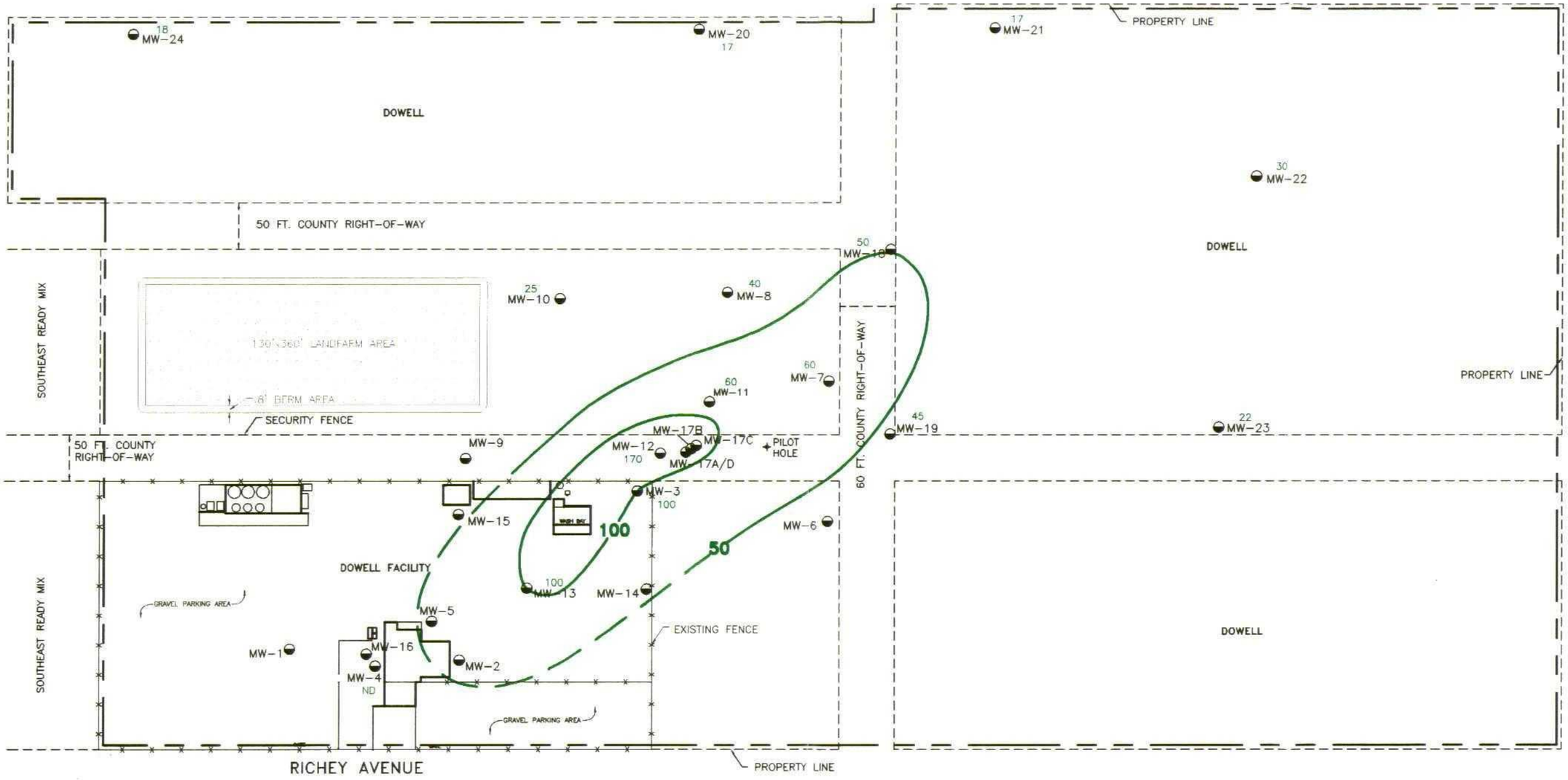
BASE MAP MODIFIED FROM WESTERN WATER CONSULTANTS, INC.

FIGURE 9
METHANE CONCENTRATIONS
NOVEMBER 20, 1996
DOWELL SCHLUMBERGER
ARTESIA, NEW MEXICO

RMT, INC.

DWN. BY:	D.W.H.
APPROVED BY:	F.H.
DATE:	5/28/97
PROJ. #	50-01145.59
FILE#	11455901

PLOT DATA
Drawing Name: 11455901.DWG
Operator Name: D.W.H.
Scale: 1=120
Dwg Size: 11x17
Plot Date: 5/28/97
Plot Time: 3:30P
Attached Xref's: x



LEGEND

- MW-13 — MONITOR WELL LOCATION & NUMBER
- 18 — CARBON DIOXIDE CONCENTRATIONS (mg/L)
- ND — NOT DETECTED
- 1 — CONTOUR OF CARBON DIOXIDE CONCENTRATIONS (mg/L)

SCALE IN FEET

0 120 240

N

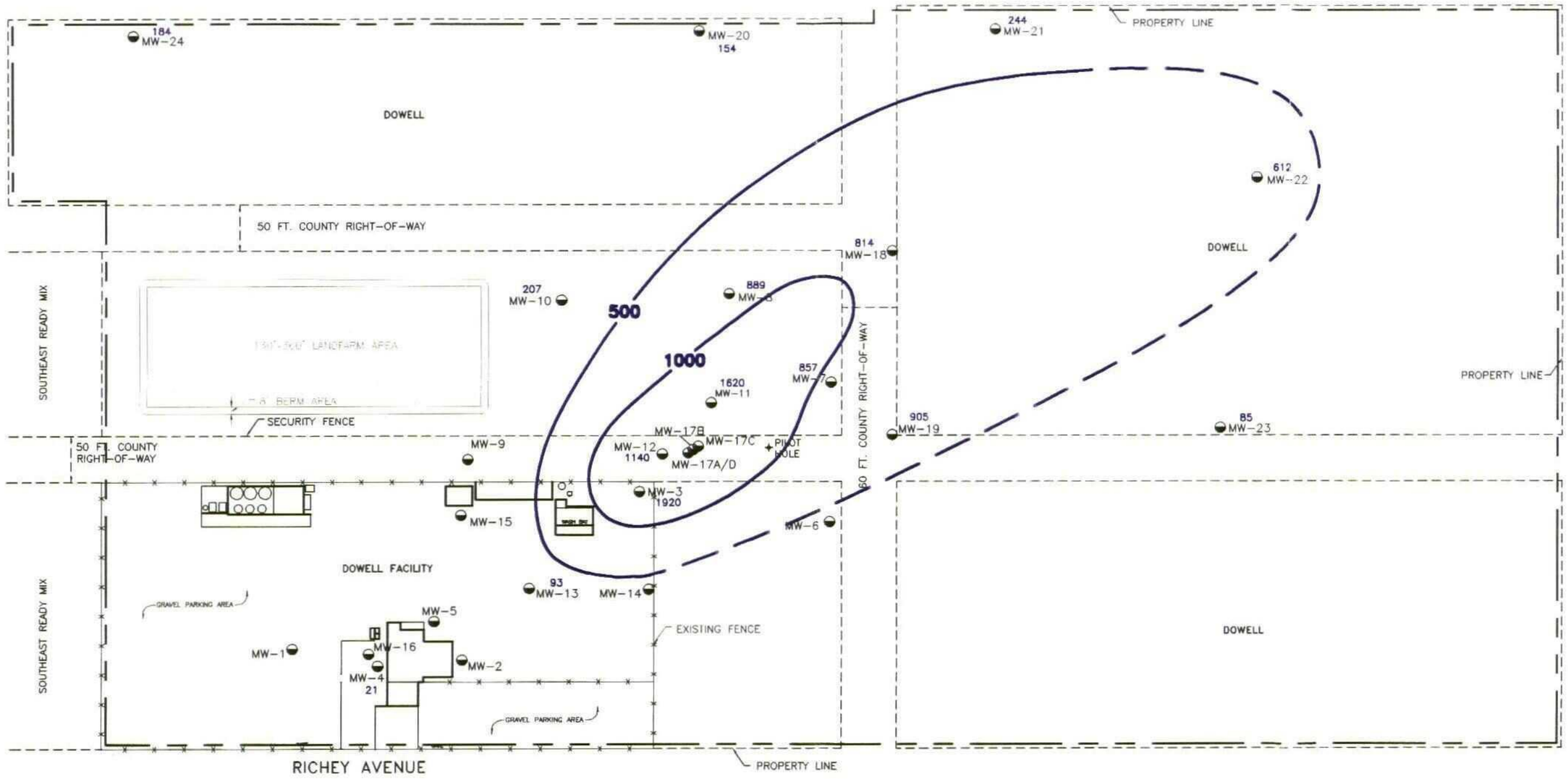
BASE MAP MODIFIED FROM WESTERN WATER CONSULTANTS, INC.

FIGURE 10
CARBON DIOXIDE CONCENTRATIONS
NOVEMBER 20, 1996
DOWELL SCHLUMBERGER
ARTESIA, NEW MEXICO

DWN. BY:	D.W.H.
APPROVED BY:	F.H.
DATE:	5/28/97
PROJ. #	50-01145.59
FILE#	11455901

RMT, INC.

PLOT DATA
Drawing Name: 11455901.DWG
Operator Name: D.W.H.
Scale: 1=120
Dwg Size: 11x17
Plot Date: 5/28/97
Plot Time: 3:30P
Attached Xref's: x



LEGEND

- MW-13 MONITOR WELL LOCATION & NUMBER
- 612 CHLORIDE CONCENTRATIONS (mg/L)
- 100 CONTOUR OF CHLORIDE CONCENTRATIONS (mg/L)

SCALE IN FEET
0 120 240

N

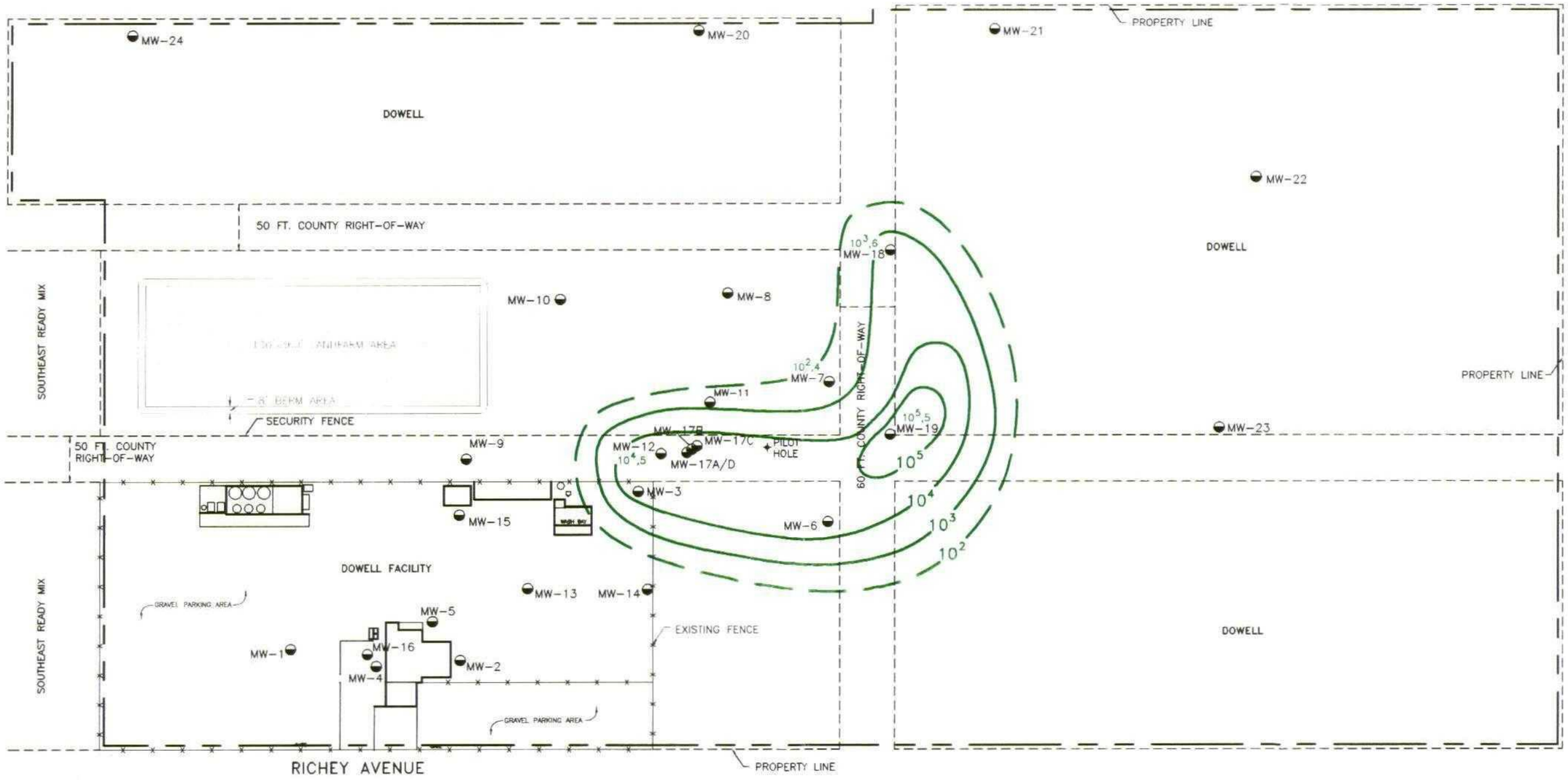
BASE MAP MODIFIED FROM WESTERN WATER CONSULTANTS, INC.

FIGURE 11
CHLORIDE CONCENTRATIONS
NOVEMBER 20, 1996
DOWELL SCHLUMBERGER
ARTESIA, NEW MEXICO

DWN. BY:	D.W.H.
APPROVED BY:	F.H.
DATE:	5/28/97
PROJ. #	50-01145.59
FILE#	11455901

RMT, INC.

Drawing Name: 11455901.DWG
Operator Name: D.W.H.
Scale: 1=120
Dwg Size: 11x17
Plot Date: 5/28/97
Plot Time: 3:30P
Attached Xref's: x



LEGEND

MW-13	MONITOR WELL LOCATION & NUMBER
$10^{2,2}$	AEROBIC MICROBAL POPULATION & DIVERSITY
10^2	AEROBIC MICROBAL POPULATION & DIVERSITY

SCALE IN FEET

0 120 240

N

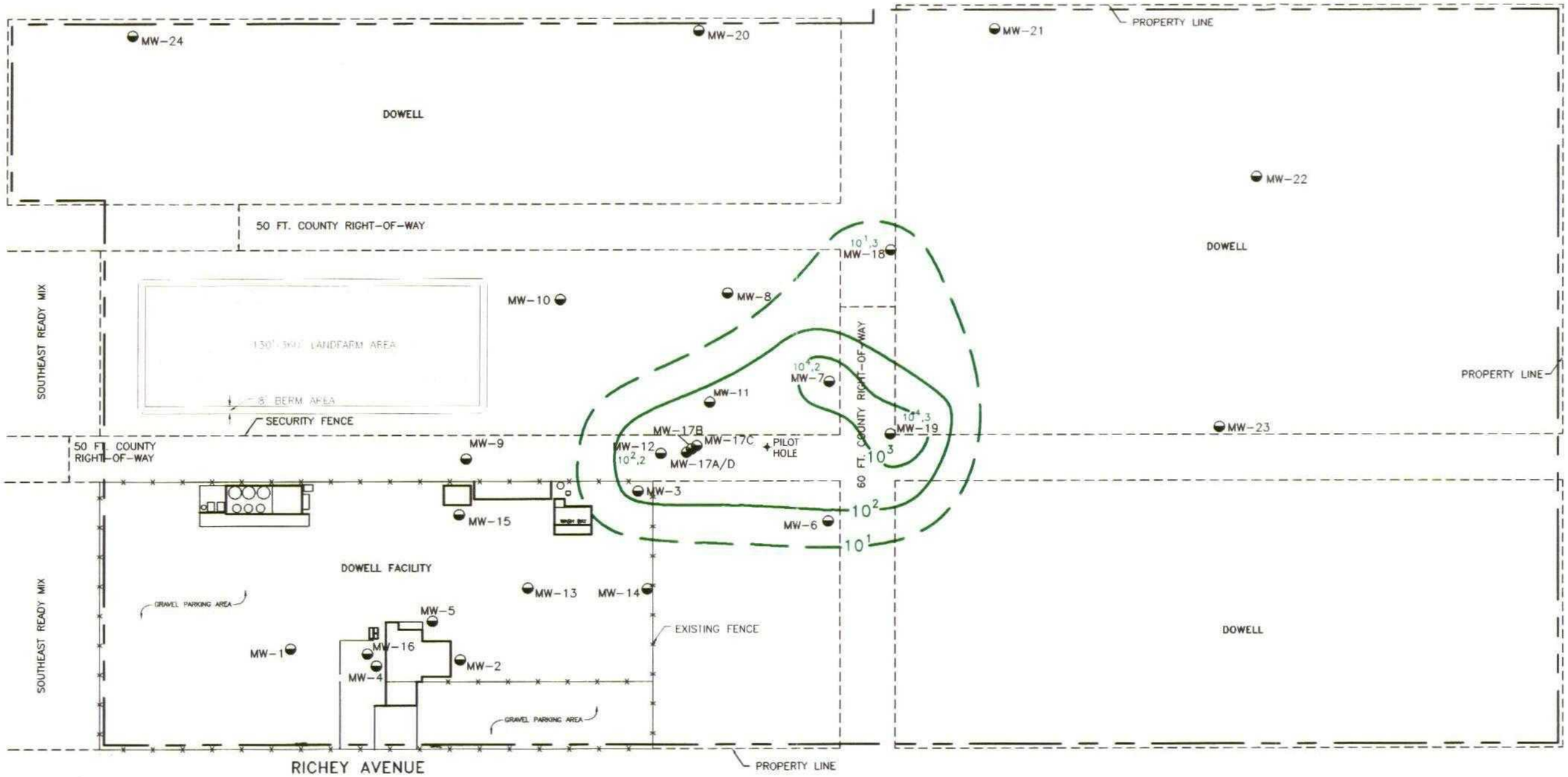
BASE MAP MODIFIED FROM WESTERN WATER CONSULTANTS, INC.

FIGURE 12
AEROBIC MICROBIAL POPULATION & DIVERSITY - DECEMBER 27, 1996
DOWELL SCHLUMBERGER
ARTESIA, NEW MEXICO

RMT, INC.

DWN. BY:	D.W.H.
APPROVED BY:	F.H.
DATE:	5/28/97
PROJ. #	50-01145.59
FILE#	11455901

PLOT DATA
Drawing Name: 11455901.DWG
Operator Name: D.W.H.
Scale: 1=120
Dwg Size: 11x17
Plot Date: 5/28/97
Plot Time: 3:30P
Attached Xref's: x



LEGEND

- MW-13 MONITOR WELL LOCATION & NUMBER
- 10^2,2 ANAEROBIC MICROBAL POPULATION & DIVERSITY
- 10^2 ANAEROBIC MICROBAL POPULATION & DIVERSITY

SCALE IN FEET
0 120 240

N

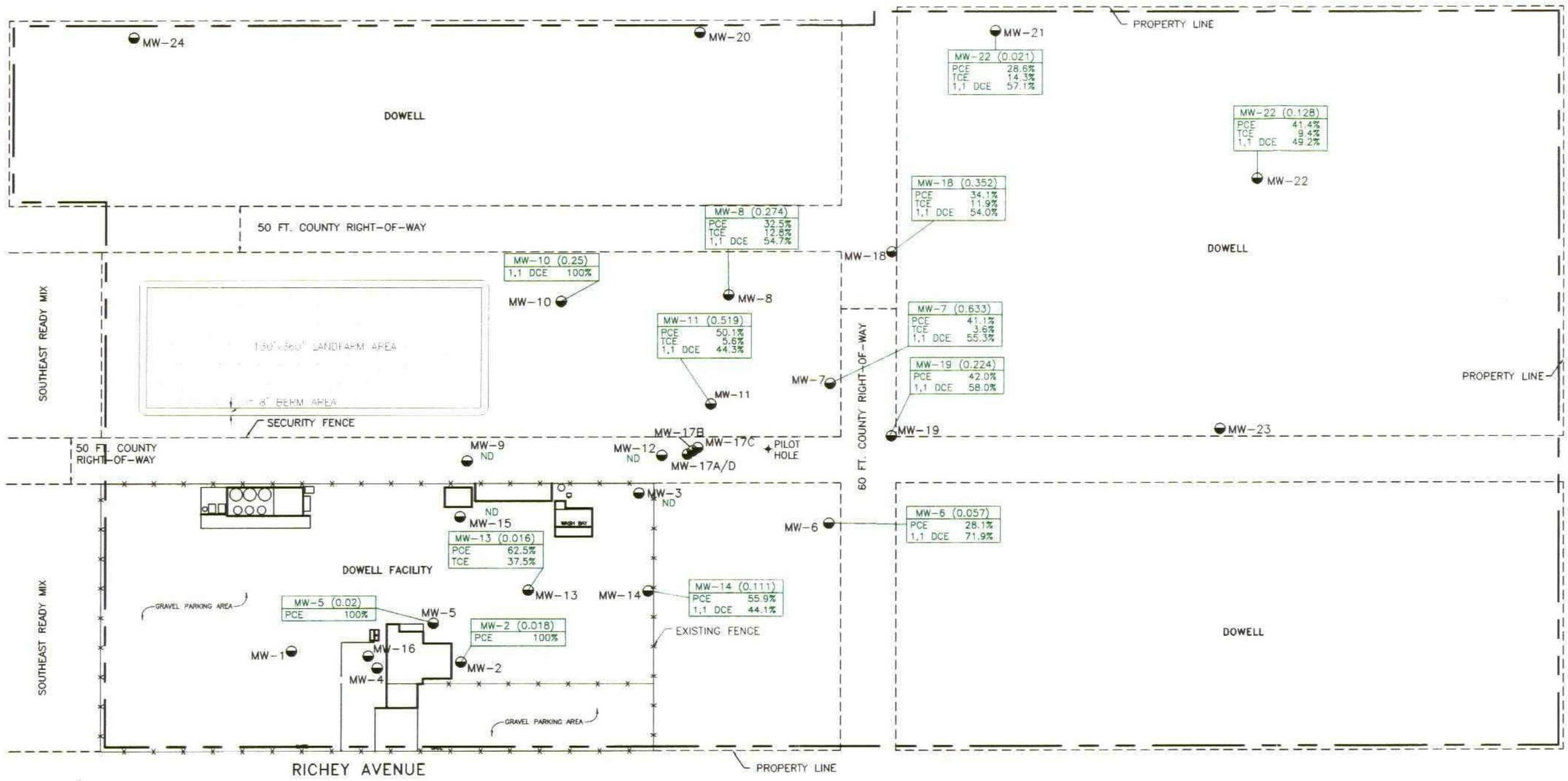
BASE MAP MODIFIED FROM WESTERN WATER CONSULTANTS, INC.

FIGURE 13
ANAEROBIC MICROBIAL POPULATION & DIVERSITY - DECEMBER 27, 1996
DOWELL SCHLUMBERGER
ARTESIA, NEW MEXICO

DWN. BY:	D.W.H.
APPROVED BY:	F.H.
DATE:	5/28/97
PROJ. #	50-01145.59
FILE#	11455901

RMT, INC.

PLOT DATA
Drawing Name: 11455901.DWG
Operator Name: D.W.H.
Scale: 1=120
Dwg Size: 11x17
Plot Date: 5/28/97
Plot Time: 3:30P
Attached Xref's: x



LEGEND

- MW-13 — MONITOR WELL LOCATION & NUMBER
- MW-22 (0.128) — CHLOROETHENE CONCENTRATION (ug/L)
- ND — NOT DETECTED

SCALE IN FEET
0 120 240

N

BASE MAP MODIFIED FROM WESTERN WATER CONSULTANTS, INC.

FIGURE 14
DISTRIBUTION OF CHLOROETHENES
OCTOBER 22, 1996
DOWELL SCHLUMBERGER
ARTESIA, NEW MEXICO

RMT, INC.

DWN. BY:	D.W.H.
APPROVED BY:	F.H.
DATE:	5/28/97
PROJ. #	50-01145.59
FILE#	11455901

PLOT DATA
Drawing Name: 11455901.DWG
Operator Name: D.W.H.
Scale: 1=120
Dwg Size: 11x17
Plot Date: 5/28/97
Plot Time: 3:30P
Attached Xref's: x

Appendix A
Historical Analytical Data

Appendix A
Historical Analytical Data

Well	Date	Benzene	Ethylbenzene	Toluene	Xylenes	1,1-DCA	1,2-DCA	1,1-DCE	1,1,1-TCA	1,1,2-TCA	TCE	PCE
MW-1	1/26/91	0.033	nd	0.029	0.130	nd	nd	nd	nd	nd	nd	nd
	9/15/91	nd	nd	0.002	0.009	nd	nd	nd	nd	nd	nd	nd
	11/22/91	0.026	nd	0.007	0.014	nd	nd	nd	nd	nd	nd	nd
	3/16/93	0.016	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	1/10/94	0.006	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	4/19/94	0.035	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/20/94	0.008	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	10/25/94	0.027	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	1/25/95	0.025	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	4/3/95	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	8/1/95	0.082	0.008	nd	nd	nd	nd	nd	nd	nd	nd	nd
	10/18/95	0.064	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	1/10/96	0.076	0.007	nd	nd	nd	nd	nd	nd	nd	nd	nd
	4/13/96	0.048	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/21/96	0.040	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	10/22/96	0.027	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW-2	1/26/91	0.210	0.590	0.071	1.700	0.048	nd	nd	nd	nd	nd	0.110
	9/15/91	0.120	0.050	0.006	0.690	0.100	nd	0.005	0.023	nd	nd	0.150
	11/22/91	0.033	0.001	0.001	0.088	0.110	nd	0.007	0.016	nd	nd	0.064
	3/16/93	0.019	nd	nd	nd	0.060	nd	0.002	0.003	nd	nd	0.028
	1/10/94	0.024	nd	0.001	nd	0.039	nd	nd	nd	nd	0.001	0.079
	4/19/94	0.045	nd	nd	nd	0.028	nd	nd	nd	nd	nd	0.048
	7/20/94	0.022	nd	nd	nd	0.026	nd	nd	nd	nd	nd	0.021
	10/25/94	0.045	0.008	nd	nd	0.030	nd	nd	nd	nd	nd	0.037
	1/25/95	0.057	0.022	nd	nd	0.024	nd	nd	nd	nd	nd	0.079
	4/3/95	0.050	nd	nd	nd	0.026	nd	nd	nd	nd	nd	0.035
	8/1/95	0.032	0.021	nd	nd	0.027	nd	nd	nd	nd	nd	0.033
	10/18/95	0.078	0.040	nd	nd	0.015	nd	nd	nd	nd	nd	0.088
	1/11/96	0.220	0.200	nd	nd	0.010	nd	nd	nd	nd	nd	0.260
	4/13/96	0.095	0.130	nd	0.110	nd	nd	nd	nd	nd	nd	0.140

Appendix A
Historical Analytical Data

Well	Date	Benzene	Ethylbenzene	Toluene	Xylenes	1,1-DCA	1,2-DCA	1,1-DCE	1,1,1-TCA	1,1,2-TCA	TCE	PCE
	7/21/96	0.092	0.079	nd	nd	nd	nd	nd	nd	nd	nd	0.061
	10/22/96	0.014	0.012	nd	nd	nd	nd	nd	nd	nd	nd	0.018
MW-3	9/15/91	0.200	1.200	1.200	14.000	nd	nd	nd	0.330	nd	nd	nd
	11/22/91	0.110	0.680	0.530	6.800	0.094	0.004	0.190	0.110	0.002	0.150	0.057
	3/16/93	nd	1.000	0.650	8.600	nd	nd	nd	0.260	nd	nd	nd
	7/1/93	0.140	1.000	0.520	9.100	0.140	nd	nd	0.160	nd	nd	nd
	1/10/94	0.140	1.000	0.700	11.000	0.190	nd	nd	0.210	nd	nd	nd
	7/20/94	0.092	0.460	0.160	3.000	0.077	nd	0.036	0.069	nd	0.064	0.011
	10/25/94	0.130	0.960	0.250	4.200	0.200	nd	0.064	nd	nd	0.130	nd
	1/25/95	nd	nd	nd	7.100	nd	nd	nd	nd	nd	nd	nd
	4/3/95	0.047	0.450	nd	1.300	0.100	nd	0.110	nd	nd	0.150	nd
	8/1/95	0.088	0.950	0.190	6.500	0.230	nd	0.089	nd	nd	0.081	nd
	10/18/95	0.100	1.100	0.240	8.200	0.280	nd	0.066	nd	nd	0.089	nd
	1/11/96	0.054	0.620	0.081	4.990	0.150	nd	0.076	nd	nd	0.100	nd
	4/13/96	0.039	0.480	nd	3.900	0.051	nd	nd	nd	nd	nd	nd
	7/22/96	0.060	0.190	0.056	0.890	0.130	nd	0.009	0.009	nd	0.054	0.014
	10/22/96	nd	0.580	nd	3.500	0.150	nd	nd	nd	nd	nd	nd
MW-4	1/26/91	0.098	0.011	nd	0.025	nd	nd	nd	nd	nd	nd	nd
	9/15/91	0.260	nd	nd	0.015	0.006	nd	nd	nd	nd	nd	nd
	11/22/91	0.180	0.100	0.001	0.037	nd	nd	0.019	nd	nd	nd	nd
	3/16/93	0.072	0.051	nd	nd	0.001	nd	nd	nd	nd	nd	nd
	1/10/94	0.064	0.074	nd	nd	nd	nd	nd	nd	nd	nd	nd
	4/19/94	0.074	0.085	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/20/94	0.100	0.053	nd	0.005	nd	nd	nd	nd	nd	nd	nd
	10/25/94	0.140	0.260	nd	nd	nd	nd	nd	nd	nd	nd	0.005
	1/25/95	0.150	0.400	nd	nd	nd	nd	nd	nd	nd	nd	nd
	4/3/95	0.100	0.190	nd	nd	nd	nd	nd	nd	nd	nd	nd
	8/1/95	0.069	0.570	nd	nd	nd	nd	nd	nd	nd	0.005	nd
	10/18/95	nd	0.110	nd	nd	nd	nd	nd	nd	nd	nd	nd
	1/11/96	nd	0.036	nd	nd	nd	nd	nd	nd	nd	nd	nd

Appendix A
Historical Analytical Data

Well	Date	Benzene	Ethylbenzene	Toluene	Xylenes	1,1-DCA	1,2-DCA	1,1-DCE	1,1,1-TCA	1,1,2-TCA	TCE	PCE
	4/13/96	nd	0.008	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/21/96	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	10/22/96	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW-5	1/26/91	0.014	nd	nd	nd	0.004	nd	0.002	0.001	nd	nd	0.010
	9/15/91	nd	0.001	nd	nd	0.005	nd	nd	nd	nd	nd	0.018
	11/22/91	nd	nd	nd	nd	0.005	nd	nd	nd	nd	nd	0.018
	3/16/93	0.078	0.007	nd	nd	0.013	nd	0.003	nd	nd	0.001	0.026
	1/10/94	0.025	nd	nd	nd	0.008	nd	nd	nd	nd	nd	0.026
	4/19/94	0.070	0.011	nd	nd	0.008	nd	nd	nd	nd	nd	0.015
	7/20/94	0.220	0.041	nd	nd	0.011	nd	nd	nd	nd	nd	0.025
	10/25/94	0.240	0.059	nd	nd	0.020	nd	nd	nd	nd	nd	0.043
	1/25/95	0.460	0.130	nd	nd	0.023	nd	nd	nd	nd	0.018	0.093
	4/3/95	0.390	0.087	nd	nd	nd	nd	nd	nd	nd	0.015	0.062
	8/1/95	0.170	0.082	nd	nd	0.013	nd	nd	nd	nd	0.018	0.049
	10/18/95	0.200	0.093	nd	nd	0.011	nd	nd	nd	nd	0.021	0.054
	1/11/96	0.078	0.012	nd	nd	nd	nd	nd	nd	nd	0.008	0.025
	4/13/96	0.068	0.037	nd	0.027	nd	nd	nd	nd	nd	nd	0.025
	7/21/96	0.092	0.057	nd	nd	nd	nd	nd	nd	nd	nd	0.025
	10/22/96	0.066	0.023	nd	nd	nd	nd	nd	nd	nd	nd	0.020
MW-6	1/26/91	nd	nd	nd	nd	0.007	nd	0.170	0.007	nd	nd	0.083
	9/15/91	nd	nd	nd	nd	0.006	nd	0.084	nd	nd	nd	0.043
	11/22/91	nd	nd	nd	nd	0.005	nd	0.064	nd	nd	nd	0.035
	3/16/93	nd	nd	nd	nd	0.007	nd	0.098	0.001	nd	nd	0.056
	1/10/94	nd	nd	nd	nd	0.017	nd	0.140	0.002	nd	nd	0.120
	4/19/94	nd	nd	nd	nd	0.013	nd	0.070	nd	nd	nd	0.072
	7/20/94	nd	nd	nd	nd	0.009	nd	0.098	nd	nd	nd	0.065
	10/25/94	nd	nd	nd	nd	0.012	nd	0.079	nd	nd	nd	0.059
	1/25/95	nd	nd	nd	nd	0.012	nd	0.065	nd	nd	nd	0.057
	4/3/95	nd	nd	nd	nd	0.015	nd	0.074	nd	nd	nd	0.048
	8/1/95	nd	nd	nd	nd	0.013	nd	0.060	nd	nd	nd	0.030

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Historical Analytical Data

Well	Date	Benzene	Ethylbenzene	Toluene	Xylenes	1,1-DCA	1,2-DCA	1,1-DCE	1,1,1-TCA	1,1,2-TCA	TCE	PCE
	10/18/95	nd	nd	nd	nd	0.013	nd	0.051	nd	nd	nd	0.029
	1/11/96	nd	nd	nd	nd	0.011	nd	0.042	nd	nd	nd	0.022
	4/13/96	nd	nd	nd	nd	0.012	nd	0.047	nd	nd	nd	0.021
	7/22/96	nd	nd	nd	nd	0.011	nd	0.037	nd	nd	nd	0.016
	10/22/96	nd	nd	nd	nd	0.013	nd	0.041	nd	nd	nd	0.016
MW-7	1/26/91	0.006	nd	nd	nd	0.021	nd	0.260	0.010	nd	0.068	0.200
	9/15/91	0.009	nd	nd	nd	0.038	nd	0.320	0.005	nd	0.069	0.270
	11/22/91	0.009	nd	nd	nd	0.035	nd	0.360	nd	nd	0.053	0.310
	3/16/93	0.007	nd	nd	nd	0.027	nd	0.280	0.002	nd	0.050	0.160
	1/10/94	0.005	nd	nd	nd	0.023	nd	0.210	0.004	nd	0.046	0.160
	4/19/94	nd	nd	nd	nd	0.021	nd	0.120	nd	nd	0.038	0.120
	7/20/94	0.006	nd	nd	nd	0.018	nd	0.220	nd	nd	0.040	0.160
	10/25/94	0.007	nd	nd	nd	0.033	nd	0.230	nd	nd	0.050	0.240
	1/25/95	0.005	nd	nd	nd	0.027	nd	0.210	nd	nd	0.041	0.330
	4/3/95	0.006	nd	nd	nd	0.029	nd	0.290	nd	nd	0.038	0.260
	8/1/95	nd	nd	nd	nd	0.038	nd	0.300	nd	nd	0.051	0.250
	10/18/95	0.005	nd	nd	nd	0.024	nd	0.300	nd	nd	0.045	0.300
	1/11/96	0.006	nd	nd	nd	0.027	nd	0.260	nd	nd	0.035	0.250
	4/13/96	0.006	nd	nd	nd	0.027	nd	0.370	nd	nd	0.030	0.260
	7/22/96	0.006	nd	nd	nd	0.029	nd	0.280	nd	nd	0.026	0.220
	10/22/96	nd	nd	nd	nd	0.028	nd	0.350	nd	nd	0.023	0.260
MW-8	1/26/91	nd	nd	nd	0.005	nd	nd	0.015	0.004	nd	0.001	0.003
	9/15/91	0.007	nd	nd	nd	0.170	nd	0.101	0.007	nd	0.039	0.050
	11/22/91	0.004	nd	nd	nd	0.020	nd	0.087	0.003	nd	0.045	0.063
	3/16/93	nd	nd	nd	nd	0.004	nd	0.054	0.005	nd	0.006	0.009
	1/10/94	nd	nd	nd	nd	0.004	nd	0.054	0.004	nd	0.006	0.006
	4/19/94	nd	nd	nd	nd	nd	nd	0.039	nd	nd	nd	0.007
	7/20/94	nd	nd	nd	nd	nd	nd	0.069	0.005	nd	0.006	0.011
	10/25/94	nd	nd	nd	nd	0.008	nd	0.082	nd	nd	0.010	0.019
	1/25/95	nd	nd	nd	nd	0.007	nd	0.076	0.006	nd	0.011	0.022

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Well	Date	Benzene	Ethylbenzene	Toluene	Xylenes	1,1-DCA	1,2-DCA	1,1-DCE	1,1,1-TCA	1,1,2-TCA	TCE	PCE
	4/3/95	nd	nd	nd	nd	0.006	nd	0.074	nd	nd	0.008	0.017
	8/1/95	nd	nd	nd	nd	0.015	nd	0.110	nd	nd	0.023	0.053
	10/18/95	nd	nd	nd	nd	0.009	nd	0.081	nd	nd	0.015	0.044
	1/11/96	nd	nd	nd	nd	nd	nd	0.069	nd	nd	0.006	0.019
	4/13/96	nd	nd	nd	nd	0.007	nd	0.099	nd	nd	0.011	0.036
	7/22/96	nd	nd	nd	nd	0.006	nd	0.087	nd	nd	0.010	0.035
	10/22/96	nd	nd	nd	nd	0.022	nd	0.150	nd	nd	0.035	0.089
MW-9	1/26/91	nd	nd	nd	nd	0.022	nd	0.002	nd	nd	nd	0.001
	9/15/91	0.002	0.032	nd	nd	0.035	nd	0.002	nd	nd	nd	nd
	11/22/91	0.004	0.170	nd	nd	0.029	nd	0.002	nd	nd	nd	0.001
	3/16/93	nd	nd	nd	nd	0.012	nd	0.001	nd	nd	nd	nd
	1/10/94	nd	nd	0.002	nd	0.012	nd	nd	nd	nd	nd	nd
	4/19/94	nd	nd	nd	nd	0.010	nd	nd	nd	nd	nd	nd
	7/20/94	nd	nd	nd	nd	0.017	nd	nd	nd	nd	nd	nd
	10/25/94	nd	nd	nd	nd	0.014	nd	nd	nd	nd	nd	nd
	1/25/95	nd	nd	nd	nd	0.014	nd	nd	nd	nd	nd	nd
	4/3/95	nd	nd	nd	nd	0.015	nd	nd	nd	nd	nd	nd
	8/1/95	nd	nd	nd	nd	0.022	nd	nd	nd	nd	nd	nd
	10/18/95	nd	0.016	nd	nd	0.017	nd	nd	nd	nd	nd	nd
	1/10/96	nd	0.032	nd	nd	0.020	nd	nd	nd	nd	nd	nd
	4/13/96	nd	nd	nd	nd	0.020	nd	nd	nd	nd	nd	nd
	7/22/96	nd	nd	nd	nd	0.021	nd	nd	nd	nd	nd	nd
	10/22/96	nd	nd	nd	nd	0.024	nd	nd	nd	nd	nd	nd
MW-10	1/26/91	nd	nd	nd	nd	nd	nd	0.004	nd	nd	nd	nd
	9/15/91	nd	nd	nd	nd	nd	nd	0.012	0.002	nd	nd	nd
	11/22/91	nd	nd	nd	nd	nd	nd	0.029	0.005	nd	nd	nd
	3/16/93	nd	nd	nd	nd	nd	nd	0.025	0.001	nd	nd	nd
	1/10/94	nd	nd	nd	nd	nd	nd	0.021	nd	nd	nd	nd
	4/19/94	nd	nd	nd	nd	nd	nd	0.022	nd	nd	nd	nd
	7/20/94	nd	nd	nd	nd	nd	nd	0.052	nd	nd	nd	nd

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Well	Date	Benzene	Ethylbenzene	Toluene	Xylenes	1,1-DCA	1,2-DCA	1,1-DCE	1,1,1-TCA	1,1,2-TCA	TCE	PCE
	10/25/94	nd	nd	nd	nd	nd	nd	0.051	nd	nd	nd	nd
	1/25/95	nd	nd	nd	nd	nd	nd	0.042	nd	nd	nd	nd
	4/3/95	nd	nd	nd	nd	nd	nd	0.070	nd	nd	nd	nd
	8/1/95	nd	nd	nd	nd	nd	nd	0.130	0.007	nd	nd	nd
	10/18/95	nd	nd	nd	nd	nd	nd	0.130	0.006	nd	nd	nd
	1/10/96	nd	nd	nd	nd	nd	nd	0.063	nd	nd	nd	nd
	4/13/96	nd	nd	nd	nd	nd	nd	0.170	nd	nd	nd	nd
	7/22/96	nd	nd	nd	nd	nd	nd	0.170	nd	nd	nd	nd
	10/22/96	nd	nd	nd	nd	nd	nd	0.250	nd	nd	nd	nd
MW-11	1/26/91	0.010	nd	nd	nd	0.045	nd	0.310	nd	nd	0.140	0.360
	9/15/91	0.056	nd	nd	nd	0.068	nd	0.470	0.017	nd	0.120	0.330
	11/22/91	0.048	nd	nd	nd	0.052	nd	0.390	0.018	nd	0.110	0.320
	3/16/93	0.005	nd	nd	nd	0.040	nd	0.220	0.004	nd	0.074	0.160
	1/10/94	0.005	nd	nd	nd	0.042	nd	0.250	nd	nd	0.083	0.320
	4/19/94	0.009	nd	nd	nd	0.042	nd	0.170	0.006	nd	0.079	0.170
	7/20/94	nd	nd	nd	nd	0.057	nd	0.460	nd	nd	0.120	0.360
	10/25/94	0.009	nd	nd	nd	0.067	nd	0.220	nd	nd	0.110	0.300
	1/25/95	0.012	nd	nd	nd	0.072	nd	0.240	0.014	nd	0.120	0.360
	4/3/95	0.009	nd	nd	nd	0.062	nd	0.410	0.013	nd	0.100	0.430
	8/1/95	0.007	nd	nd	nd	0.050	nd	0.360	0.014	nd	0.063	0.330
	10/18/95	nd	nd	nd	nd	0.043	nd	0.270	0.010	nd	0.057	0.330
	1/11/96	nd	nd	nd	nd	0.033	nd	0.230	0.011	nd	0.043	0.310
	4/13/96	nd	nd	nd	nd	nd	nd	0.240	nd	nd	0.020	0.230
	7/22/96	nd	nd	nd	nd	0.035	nd	0.200	0.008	nd	0.036	0.260
	10/22/96	nd	nd	nd	nd	0.034	nd	0.230	nd	nd	0.029	0.260
MW-12	1/26/91	0.260	0.950	0.230	4.500	0.140	nd	nd	0.057	nd	0.073	0.042
	9/15/91	0.150	0.620	0.630	2.200	0.120	nd	0.300	0.110	nd	0.200	0.061
	11/22/91	0.110	0.430	0.034	0.810	0.110	0.002	0.240	0.100	nd	0.260	0.051
	3/16/93	0.160	0.800	0.014	1.000	0.120	nd	0.039	0.055	nd	0.036	0.018
	1/10/94	0.160	0.870	0.026	0.990	0.150	nd	0.075	0.053	nd	0.070	0.024

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Well	Date	Benzene	Ethylbenzene	Toluene	Xylenes	1,1-DCA	1,2-DCA	1,1-DCE	1,1,1-TCA	1,1,2-TCA	TCE	PCE
	4/19/94	0.110	0.110	0.049	0.250	0.110	nd	0.064	0.065	nd	0.073	0.033
	7/20/94	0.160	0.720	0.071	0.610	0.150	nd	0.073	0.075	nd	0.086	nd
	10/25/94	0.096	0.660	nd	0.100	0.160	nd	0.085	nd	nd	0.120	nd
	1/25/95	0.160	0.680	0.089	0.660	0.190	nd	0.120	0.095	nd	0.076	0.069
	4/3/95	0.150	0.790	0.200	1.100	0.160	nd	0.110	0.096	nd	0.043	0.056
	8/1/95	0.130	0.700	0.280	1.400	0.170	nd	0.150	0.079	nd	0.098	0.059
	10/18/95	0.140	0.990	0.360	2.030	0.170	nd	0.100	0.100	nd	0.058	0.050
	1/11/96	0.100	0.680	0.180	1.840	0.140	nd	0.097	0.059	nd	0.060	0.048
	4/13/96	0.098	0.620	0.180	0.690	0.150	nd	nd	nd	nd	nd	0.023
	7/22/96	0.130	0.920	0.310	1.790	0.160	nd	0.087	0.170	nd	0.045	0.046
	10/22/96	nd	0.830	0.190	1.800	0.190	nd	nd	nd	nd	nd	nd
MW-13	9/15/91	nd	nd	nd	nd	0.030	0.002	0.038	0.005	nd	0.004	0.240
	11/22/91	0.430	nd	nd	nd	0.016	0.001	0.025	0.002	nd	0.002	0.110
	3/16/93	0.033	nd	nd	nd	0.013	nd	0.014	nd	nd	0.002	0.062
	1/10/94	0.022	nd	nd	nd	0.016	nd	0.007	nd	nd	0.003	0.055
	4/19/94	0.013	nd	nd	nd	0.011	nd	nd	nd	nd	nd	0.032
	7/20/94	0.016	nd	nd	nd	0.016	nd	nd	nd	nd	nd	0.034
	10/25/94	0.011	nd	nd	nd	0.013	nd	nd	nd	nd	nd	0.040
	1/22/95	0.008	nd	nd	nd	0.015	nd	nd	nd	nd	0.005	0.029
	4/3/95	nd	nd	nd	nd	0.013	nd	nd	nd	nd	nd	0.022
	8/1/95	nd	nd	nd	nd	0.017	nd	nd	nd	nd	0.007	0.025
	10/18/95	nd	nd	nd	nd	0.015	nd	nd	nd	nd	0.008	0.020
	1/11/96	nd	nd	nd	nd	0.011	nd	nd	nd	nd	0.005	0.015
	4/13/96	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.011
	7/21/96	nd	nd	nd	nd	0.009	nd	nd	nd	nd	0.007	0.013
	10/22/96	nd	nd	nd	nd	0.007	nd	nd	nd	nd	0.006	0.010
MW-14	9/15/91	0.022	nd	nd	nd	0.130	0.002	0.300	0.014	0.001	0.002	0.460
	11/22/91	0.002	nd	nd	nd	0.140	0.002	0.310	0.009	nd	0.002	0.400
	3/16/93	0.020	nd	nd	nd	0.080	0.001	0.180	0.004	nd	0.002	0.210
	1/10/94	0.011	nd	nd	nd	0.057	nd	0.100	nd	nd	0.002	0.300

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Well	Date	Benzene	Ethylbenzene	Toluene	Xylenes	1,1-DCA	1,2-DCA	1,1-DCE	1,1,1-TCA	1,1,2-TCA	TCE	PCE
	4/19/94	0.005	nd	nd	nd	0.058	nd	0.056	nd	nd	nd	0.160
	7/20/94	nd	nd	nd	nd	0.072	nd	0.110	nd	nd	nd	0.210
	10/25/94	0.010	nd	nd	nd	0.079	nd	0.094	nd	nd	nd	0.230
	1/25/95	nd	nd	nd	nd	0.083	nd	0.070	nd	nd	nd	0.022
	4/3/95	nd	nd	nd	nd	0.063	nd	0.058	nd	nd	nd	0.130
	8/1/95	nd	nd	nd	nd	0.074	nd	0.072	nd	nd	nd	0.098
	10/18/95	nd	nd	nd	nd	0.062	nd	0.044	nd	nd	nd	0.087
	1/11/96	nd	nd	nd	nd	0.051	nd	0.038	nd	nd	nd	0.061
	4/13/96	nd	nd	nd	nd	0.051	nd	0.045	nd	nd	nd	0.057
	7/21/96	nd	nd	nd	nd	0.048	nd	0.037	nd	nd	nd	0.055
	10/22/96	nd	nd	nd	nd	0.056	nd	0.049	nd	nd	nd	0.062
MW-15	9/15/91	0.002	0.010	nd	0.006	0.026	0.001	0.005	nd	nd	nd	0.004
	11/22/91	nd	nd	nd	nd	0.033	0.001	0.009	nd	nd	0.003	0.006
	3/16/93	0.001	0.002	nd	nd	0.082	0.001	0.013	nd	nd	0.006	0.009
	1/10/94	nd	0.008	nd	nd	0.048	nd	0.009	nd	nd	0.004	0.013
	4/19/94	nd	nd	nd	nd	0.027	nd	nd	nd	nd	nd	0.008
	7/20/94	nd	nd	nd	nd	0.049	nd	0.006	nd	nd	nd	0.005
	10/25/94	nd	nd	nd	nd	0.029	nd	0.006	nd	nd	nd	0.006
	1/25/95	nd	nd	nd	nd	0.027	nd	0.006	nd	nd	0.005	0.008
	4/3/95	nd	nd	nd	nd	0.020	nd	nd	nd	nd	nd	nd
	8/1/95	nd	nd	nd	nd	0.022	nd	0.006	nd	nd	nd	nd
	10/18/95	nd	nd	nd	nd	0.015	nd	nd	nd	nd	nd	nd
	1/10/96	nd	nd	nd	nd	0.013	nd	nd	nd	nd	nd	nd
	4/13/96	nd	nd	nd	nd	0.009	nd	nd	nd	nd	nd	nd
	7/21/96	nd	nd	nd	nd	0.011	nd	nd	nd	nd	nd	nd
	10/22/96	nd	nd	nd	nd	0.010	nd	nd	nd	nd	nd	nd
MW-17D	4/3/95	nd	nd	nd	nd	0.062	nd	0.018	0.012	nd	0.019	0.014
	8/1/95	0.013	nd	nd	nd	0.095	nd	0.058	0.020	nd	0.052	0.028
	10/18/95	0.007	nd	nd	nd	0.067	nd	0.044	0.015	nd	0.047	0.054
	1/11/96	0.006	nd	nd	nd	0.066	nd	0.036	0.012	nd	0.046	0.043

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Well	Date	Benzene	Ethylbenzene	Toluene	Xylenes	1,1-DCA	1,2-DCA	1,1-DCE	1,1,1-TCA	1,1,2-TCA	TCE	PCE
	4/13/96	nd	nd	nd	nd	0.064	nd	0.046	0.009	nd	0.049	0.032
	7/22/96	nd	nd	nd	nd	0.077	nd	0.053	0.009	nd	0.060	0.037
	10/22/96	0.007	nd	nd	nd	0.066	nd	0.041	nd	nd	0.059	0.033
MW-17A	4/3/95	0.009	nd	nd	nd	0.079	nd	0.061	0.029	nd	0.025	0.066
	8/1/95	0.010	nd	nd	nd	0.085	nd	0.075	0.025	nd	0.037	0.064
	10/18/95	0.009	nd	nd	nd	0.073	nd	0.059	0.019	nd	0.041	0.090
	1/11/96	0.009	nd	nd	nd	0.077	nd	0.068	0.019	nd	0.042	0.076
	4/13/96	0.006	nd	nd	nd	0.075	nd	0.069	nd	nd	0.043	0.065
	7/22/96	0.008	nd	nd	nd	0.076	nd	0.069	0.012	nd	0.051	0.077
	10/22/96	0.006	nd	nd	nd	0.069	nd	0.058	nd	nd	0.050	0.054
MW-17B	4/3/95	nd	nd	nd	nd	0.036	nd	0.180	0.019	nd	nd	0.180
	8/1/95	0.006	nd	nd	nd	0.040	nd	0.190	0.020	nd	0.026	0.180
	10/18/95	0.006	nd	nd	nd	0.046	nd	0.210	0.024	nd	0.034	0.370
	1/11/96	nd	nd	nd	nd	0.034	nd	0.170	0.014	nd	0.022	0.190
	4/13/96	nd	nd	nd	nd	0.030	nd	0.160	nd	nd	0.013	0.270
	7/22/96	nd	nd	nd	nd	0.030	nd	0.150	nd	nd	0.016	0.250
	10/22/96	nd	nd	nd	nd	0.038	nd	0.190	nd	nd	0.030	0.250
MW-17C	4/3/95	0.032	0.060	0.005	0.054	0.058	nd	0.099	nd	nd	0.091	0.013
	8/1/95	0.022	0.047	nd	nd	0.073	nd	0.140	nd	nd	0.120	0.012
	10/18/95	0.019	0.026	nd	nd	0.063	nd	0.120	nd	nd	0.140	0.024
	1/11/96	0.020	0.035	nd	nd	0.058	nd	0.120	nd	nd	0.120	0.015
	4/13/96	0.011	0.009	nd	nd	0.057	nd	0.130	nd	nd	0.100	0.013
	7/22/96	0.016	nd	nd	nd	0.058	nd	0.130	nd	nd	0.120	0.014
	10/22/96	0.015	nd	nd	nd	0.045	nd	0.120	nd	nd	0.100	0.012
MW-18	4/3/95	nd	nd	nd	nd	0.017	nd	0.093	nd	nd	0.034	0.071
	8/1/95	nd	nd	nd	nd	0.024	nd	0.170	nd	nd	0.039	0.087
	10/18/95	nd	nd	nd	nd	0.018	nd	0.150	nd	nd	0.042	0.130
	1/11/96	nd	nd	nd	nd	0.017	nd	0.130	nd	nd	0.037	0.097
	4/13/96	nd	nd	nd	nd	0.016	nd	0.170	nd	nd	0.034	0.120
	7/22/96	nd	nd	nd	nd	nd	nd	0.170	nd	nd	0.043	0.120

Appendix A
Historical Analytical Data

Well	Date	Benzene	Ethylbenzene	Toluene	Xylenes	1,1-DCA	1,2-DCA	1,1-DCE	1,1,1-TCA	1,1,2-TCA	TCE	PCE
	10/22/96	nd	nd	nd	nd	0.020	nd	0.190	nd	nd	0.042	0.120
MW-19	4/3/95	nd	nd	nd	nd	0.011	nd	0.150	nd	nd	nd	0.110
	8/1/95	nd	nd	nd	nd	0.014	nd	0.170	nd	nd	nd	0.140
	10/18/95	nd	nd	nd	nd	0.010	nd	0.170	nd	nd	nd	0.150
	1/11/96	nd	nd	nd	nd	0.010	nd	0.110	nd	nd	nd	0.100
	4/13/96	nd	nd	nd	nd	nd	nd	0.150	nd	nd	nd	0.100
	7/22/96	nd	nd	nd	nd	0.009	nd	0.150	nd	nd	nd	0.110
	10/22/96	nd	nd	nd	nd	0.008	nd	0.130	nd	nd	nd	0.094
MW-20	11/20/96	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW-21	11/20/96	0.002	nd	nd	nd	0.002	nd	0.012	nd	nd	0.003	0.006
MW-22	11/20/96	0.014	nd	nd	nd	0.010	nd	0.063	nd	nd	0.012	0.053
MW-23	11/20/96	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW-24	11/20/96	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Appendix B
Reports of Analyses

Report Of Analyses

Prepared by:

Microbe Inotech Laboratories

the MiL, Inc.

MICROBE INOTECH LABORATORIES, INC. • 12133 BRIDGETON SQUARE DRIVE • SAINT LOUIS MO 63044
800-688-9144 FAX: 314-344-3031

Summary Report of Analysis
[MILB 4402]

Franz Hiebert
RMT/JN
912 Capital of Texas Hwy., Ste. 300
Austin, TX 78746-5210

December 27, 1996

Description and Chain of Custody Record Information:
Thu, Nov 21, 1996 -9:05 AM: Received by Fedex one small cooler containing four water and two soil samples for aerobic and anaerobic biofeasibility studies with chemistry.
Fri. Nov 22, 1996- 10:00 AM: Recieved one water sample for aerobic and anaerobic counts.
MiL, Inc. REPORT & Invoice No: 4402
Purchase Order No. 6370
Project Name: Schlumberger-Artesia, NM
Project Number: 50-01145.59

Processing:
[Standard Bacterial Plate Count 9215- standard spread plate method] Within 20 minutes of reception an aliquot from each sample is checked for weight or volume and serially diluted. The dilutions are aseptically transferred in a laminar flow biological cabinet and plated onto previously prepared and dried TSA medium in Petri plates. Observations for colony forming units (CFU) are made after 24 and 48 hours of incubation at 28°C.

Total Heterotrophic Plate Count Results:

DATA:Direct Count: Colony Forming Units (CFU/ ml or g) on TSA			
Sample	**24 Hours**	**48 Hours**	**Types**
Aerobic Count			
MW-12	3.01×10^3	1.90×10^4	5
MW-18	2.95×10^3	4.55×10^3	6
MW-19	3.32×10^5	6.54×10^5	5
MW-7	<10	540	4
BH1	30	990	5
BH2	<10	70	5
90125	4.21×10^3	8.63×10^3	5
Total morphologically different types among samples: 14			
Anaerobic Count			
MW-12	<10	100	2
MW-18	40	50	3
MW-19	1.36×10^4	1.59×10^4	3
MW-7	<10	1.56×10^4	2
BH1	<100	<100	0
BH2	100	600	1
90125	1.30×10^3	7.80×10^3	4
Total morphologically different types among samples: 7			

Percentage of Strain Types in Each Sample:

Sample→ Strain ↓	MW - 12	MW- 18	MW- 19	MW- 7	BH 1	BH 2	90215
AEROBES							
4402-1	60	5	5		10	35	
4402-2	20	30	80	20	5		
4402-3	10	15	5				20
4402-4	5	5					
4402-5	5						20
4402-6		15					
4402-7		30		20			
4402-8			10	10			10
4402-9				50	10	15	20
4402-10						5	
4402-11					25		
4402-12					50	20	
4402-13						25	
4402-14							30
ANAEROBES							
4402-1 AN	50	10					
4402-2 AN	50		30				10
4402-3 AN		80	60	30			60
4402-4 AN		10					
4402-5 AN			10				10
4402-6 AN				70		100	
4402-7 AN							20

GC-FAME Processing:

Following isolation, the strains are individually streaked onto TSA. The strains are incubated for 24 hours and then processed by standard GC-FAME Method 1. The processed strains are examined against both the Aerobe (TSBA [rev. 3.90]) and Clinical Aerobe (CLIN [rev.3.90]) GC-FAME databases.

The client is strongly urged to examine the data sheets accompanying the chromatogram of the strain for alternate possible identities not summarized here. Should a question be raised on the basis of sample history, ecology and source, this additional information may be enlightening.

GC-FAME Summary AEROBIC:

Strain	Primary ID by GC-FAME	Sim. Coef.	Dist. Coef.
4402-1	*Bacillus cereus*	.702	2.989
4402-2	*Enterococcus faecium* GC subgroup A	.308	5.453
4402-3	*Pseudomonas stutzeri*	.867	2.018
4402-4	*Sphingomonas paucimobilis*	.786	2.614
4402-5	*Aureobacterium barkeri*	.848	2.041
4402-6	*Pseudomonas stutzeri*	.871	1.869
4402-7	*Pseudomonas syringae pisi*	.143	7.003
4402-8	*Aeromonas veronii*	.162	6.777
4402-9	Insufficient growth to ID	--	--
4402-10	*Bacillus circulans*	.061	8.400
4402-11	*Bacillus subtilis*	.865	1.913
4402-12	Insufficient growth to ID	--	--
4402-13	*Brevibacterium acetylicum* subgroup B	.288	5.602
4402-14	*Kluyvera cryocrescens*	.595	3.840

ANAEROBIC:

Strain	Primary ID by GC-FAME	Sim. Coef.	Dist. Coef.
4402-1 AN	*Arcobacter cryaerophilus*	.258	6.205
4402-2 AN	*Campylobacter coli*	.215	6.611
4402-3 AN	*Arcobacter cryaerophilus*	.296	5.888
4402-4 AN	*Arcobacter cryaerophilus*	.145	7.409
4402-5 AN	*Arcobacter cryaerophilus*	.303	5.827
4402-6 AN	Insufficient growth to ID	--	--
4402-7 AN	Insufficient growth to ID	--	--

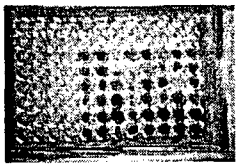
Disclaimer: The MiL, Inc. is not a human clinical diagnostic laboratory and makes no warranty to the fitness of this data for such purposes.

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.**

Endpoint Assay Processing



REPRESENTITIVE MICROPLATE

The bacterial strains to be tested are grown overnight (18 hours) on trypticase soy broth agar at 28°C, and then suspended in sterile saline to a turbidity of 40%-50%T. The strains are then placed into 96-well microtiter plate wells that contain an undisclosed growth medium of mineral salts, vitamins and buffer without a major carbon source. The wells also contained a tetrazolium dye, redox indicator system. Bacterial growth (metabolic respiration, or oxidation of carbon sources) is monitored by tetrazolium reduction as measured at 590 nm in a microplate reader.
A mixture of **Gasoline, Tetrachloroethylene and Trichloroethylene** was added, in a 10µl volume to selected wells, to serve as the major carbon source. Trypticase soy broth served as a positive growth control and water served as a negative growth control.

Total growth is measured after 24 hours incubation at 28 °C. The data is processed and given with background blank values subtracted. A Bar-chart interpretation of the data is provided on the following page. The design template of the experiment is located in the raw data section of this report. The template shows the arrangement and position of strains in the matrix.

Final Results:

Contaminant ⇒ Strain ⇓	Solvent Mix	Contaminant ⇒ Strain ⇓	Solvent Mix
4402-1	Inhibited	**4402-1 AN**	**Fair**
4402-2	Inhibited	**4402-2 AN**	Inhibited
4402-3	Inhibited	**4402-3 AN**	**No Effect**
4402-4	Inhibited	**4402-4 AN**	**No Effect**
4402-5	Inhibited	**4402-5 AN**	Inhibited
4402-6	Inhibited	**4402-6 AN**	Inhibited
4402-7	Inhibited	**4402-7 AN**	**Fair**
4402-8	**Good**		
4402-9	**Good**		
4402-10	**Good**		
4402-11	Inhibited		
4402-12	**Minimal**		
4402-13	**Fair**		
4402-14	**Minimal**		

Chemistry Results: (mg/L except as noted)

Sample → Analyte ↓	MW-7	MW-12	MW-18	MW-19	Method Number
Ammonia	<0.100	<0.100	<0.100	<0.100	4500-NH3 F
Nitrate	0.59	0.04	1.42	4.90	4500-NO3 E
Nitrite	<0.01	<0.01	<0.01	0.01	4500-NO2 B
Sulfate	2400	1880.0	2090.0	3030.0	4500-SO4-2E
o Phosphorous	<0.010	<0.010	<0.010	<0.010	4500- P E
pH	8.07	6.90	7.77	7.43	4500- H+B
Total Organic Carbon	66.9	201.0	65.1	61.6	5310-C
Total Iron	13.5	10.3	4.4	0.66	3500-Fe B

All tests performed at Teklab IEPA#100226 IDPH#17584

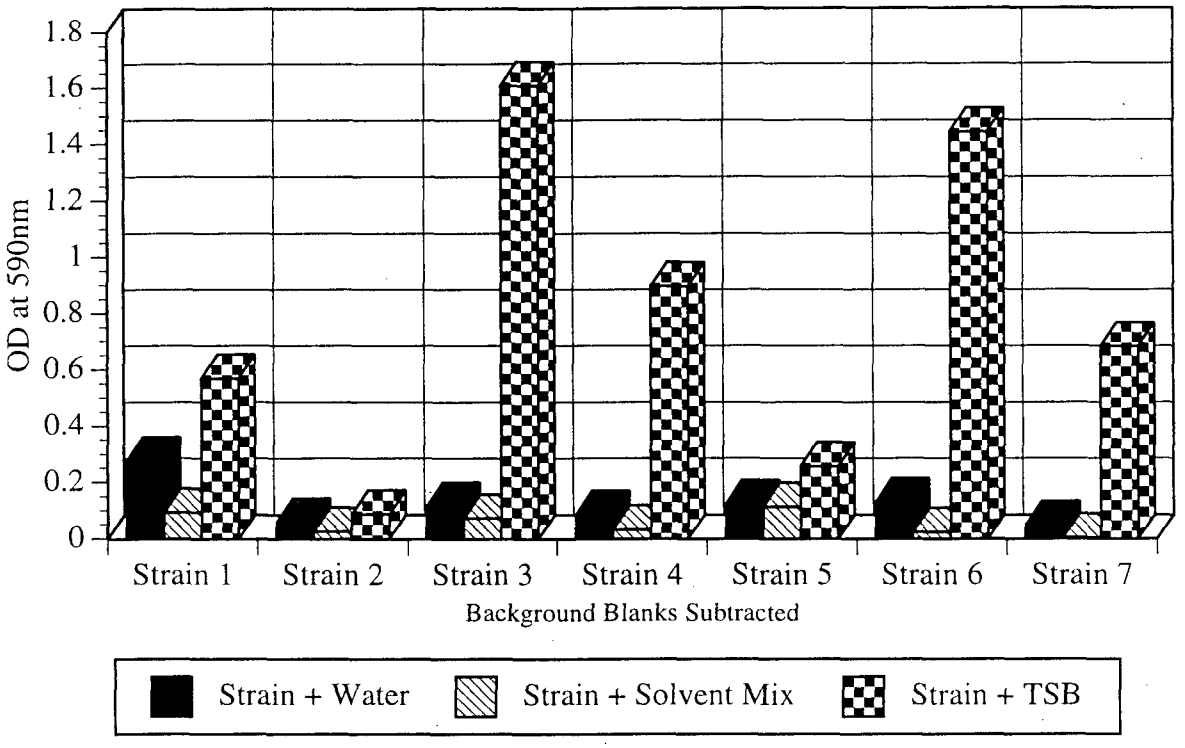
Thank you from the staff on project:

Julie Milke - Laboratory Manager

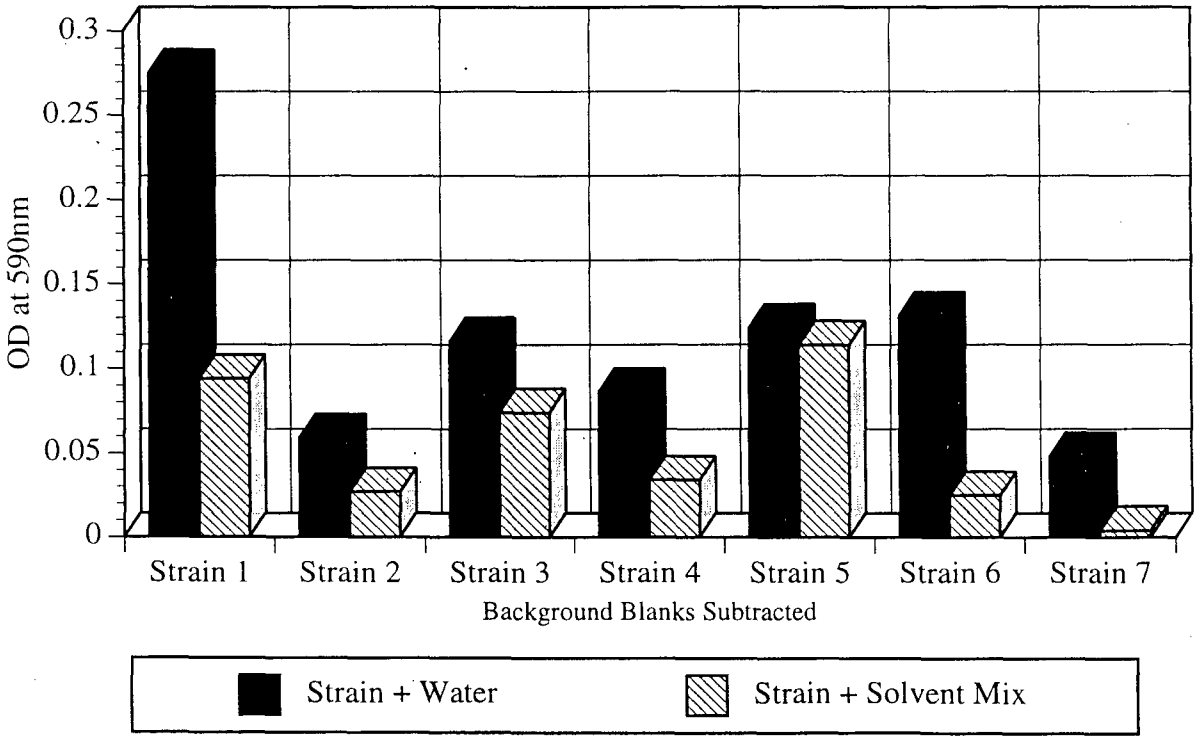
Bruce C. Hemming Ph.D., Operations Director

4402-1

24 Hour Endpoint Assay On Strains 1-7 Using Hydrocarbon Solvent Mix

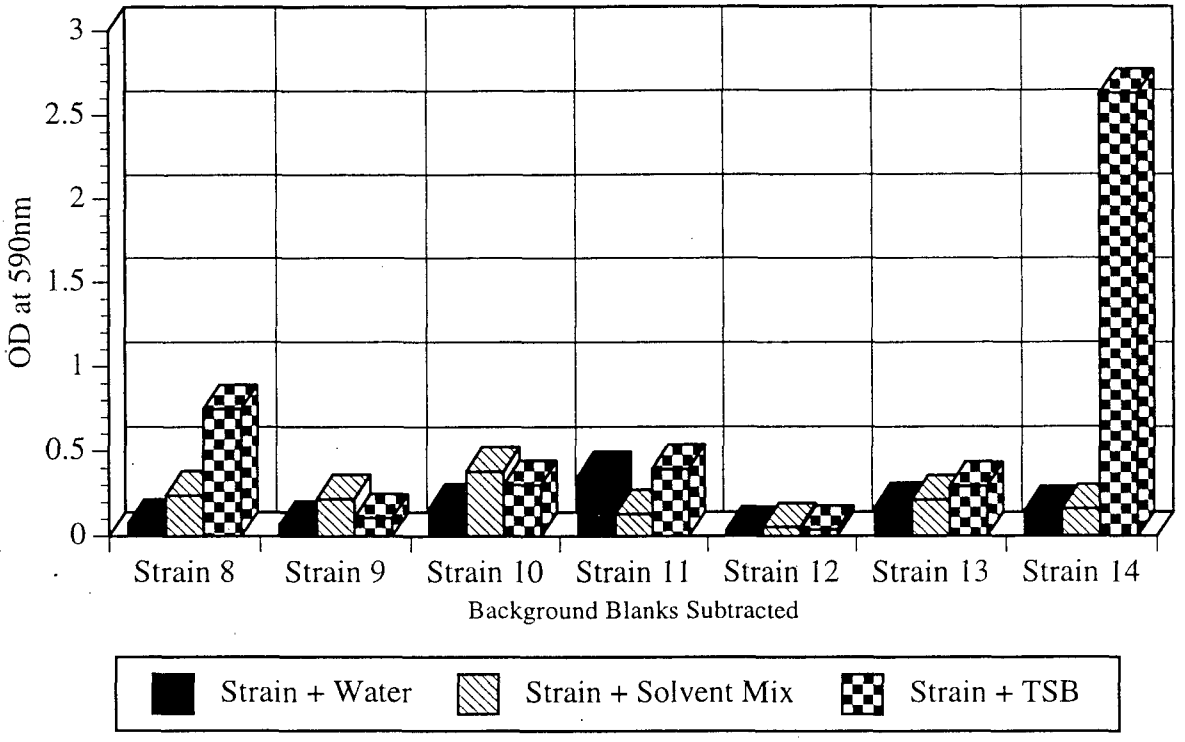


Same data as above without positive growth control

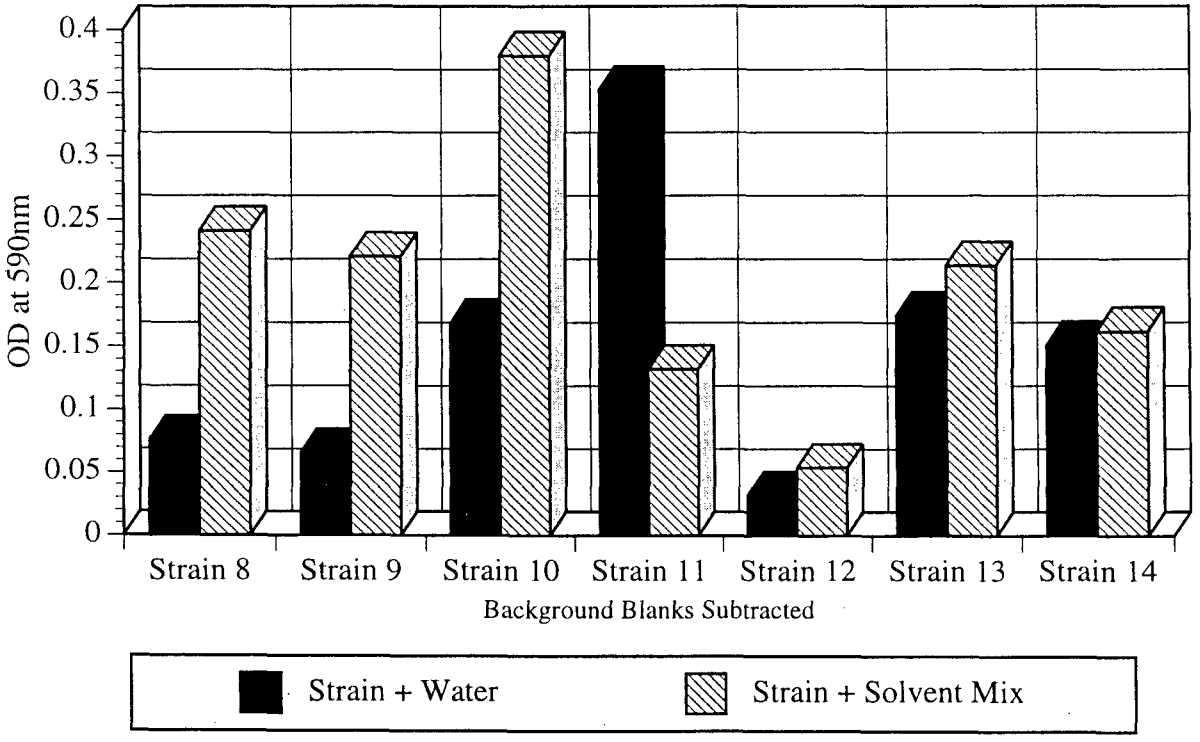


4402-2

24 Hour Endpoint Assay On Strains 8-14 Using Hydrocarbon Solvent Mix

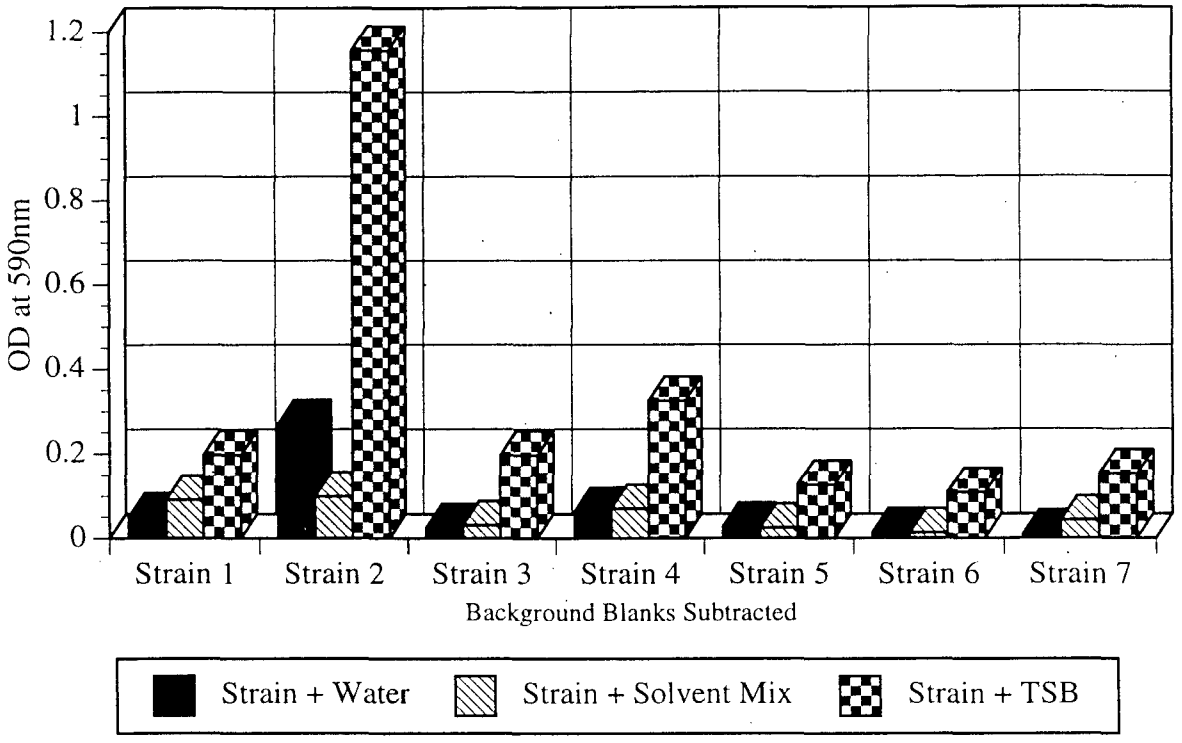


Same data as above without positive growth control

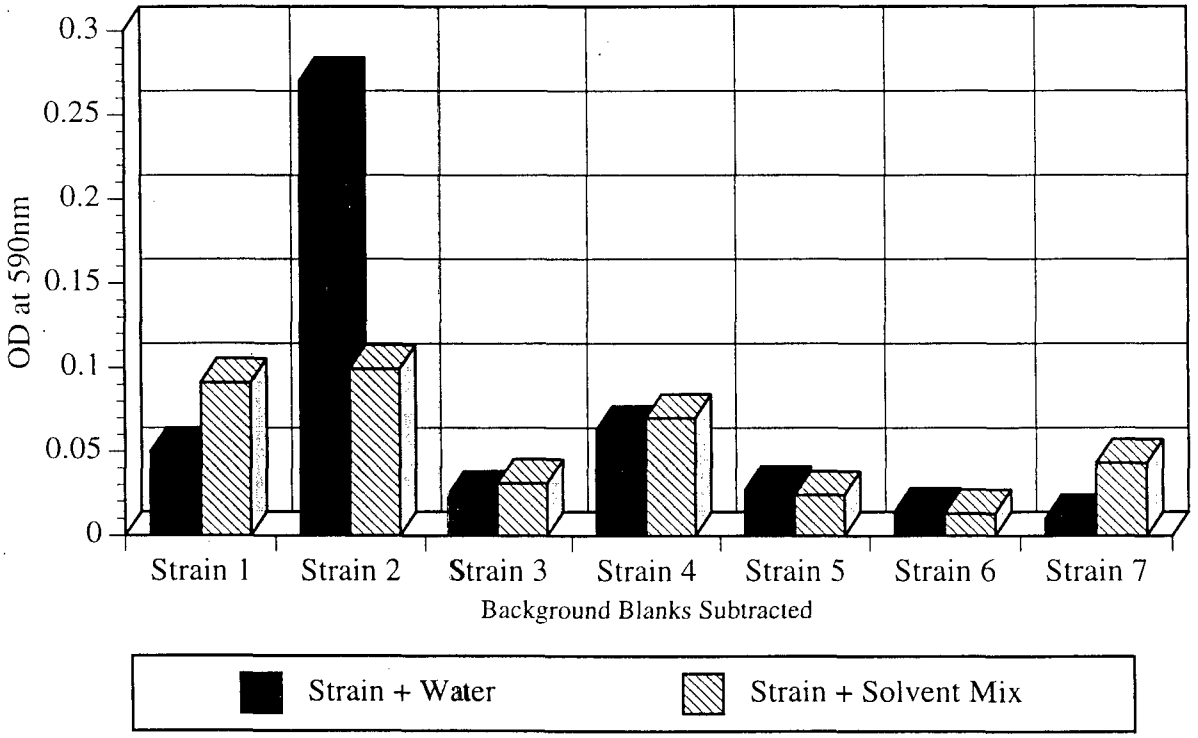


4402-AN

24 Hour Endpoint Assay On 7 Anaerobic Strains with Hydrocarbon Solvent Mix



Same data as above without positive growth control



MICROBE INOTECH LABORATORIES, INC. Analysis Request For

SEND REPORT TO:
ATTENTION: Franz K. Hiebert, PhD.
COMPANY: RMT
ADDRESS: 912 Capital of Texas Hwy. South
Austin, Texas 78746

PHONE: (512) 327-9840
FAX: (512) 327-6163

SEND INVOICE TO:
ATTN: ACCOUNTS PAYABLE
Mr. John A Miller
Remediation Manager
Schlumberger Oilfield Services
P. O. Box 2727
Houston, Texas 77852-2727

PURCHASE ORDER NUMBER: 6370
PROJECT NUMBER: 50 01145.59
PROJECT NAME: Schlumberger - Artesia

AUTHORIZED SIGNATURE: [signature]
DATE: 11/20/96
PRINTED: Franz K. Hiebert

TERMS: NET 30 DAYS
FINIANCE CHARGES OF 1.5% WILL BE ADDED TO ALL OVERDUE INVOICES

[SIGNATURE AND/OR SAMPLE SUBMISSION INDICATES ACCEPTANCE OF MiL, INC.'S STANDARD TERMS & CONDITIONS]

SOIL OR WATER SAMPLES

❶ TOTAL HETEROTROPHIC PLATE COUNT WITH PHONE CALL.
❷ TOTAL PLATE COUNT AND GC-FAME/BIOLOG™ IDENTIFICATIONS.
❸ BIOREMEDIATION FEASIBILITY STUDY (NOTE WITH OR W/O CHEM)
❹ CUSTOM MICROBIOLOGY

ANALYSIS TYPE CIRCLE NUMBER(S)	SAMPLE NAME	CUSTOM TESTS	SAMPLE DESCRIPTION/ SIZE	COLLECTION DATE/TIME
1 2 3 4	see Chain of Custody Record for Analysis request			11/21/96
1 2 3 4				
1 2 3 4				
1 2 3 4				
1 2 3 4				
1 2 3 4				
1 2 3 4				
1 2 3 4				
1 2 3 4				
1 2 3 4				
1 2 3 4				
1 2 3 4				

➪ LIST SUBSTRATE(S) TO BE USED IN THE ENDPOINT ASSAY: Schlumberger mixed chlor/hydro carbon mix

ATTACH A SEPARATE SHEET FOR ADDITIONAL SAMPLES

[ ] I WOULD LIKE TO RECEIVE THE SUMMARY REPORT ONLY, NOT THE FULL SET OF DATA (FIRST TIME CLIENTS WILL RECEIVE ALL DATA)
[ ] RESULTS TO BE SENT OVERNIGHT - EXTRA SHIPPING CHARGE
[ ] SUMMARY TO BE FAXED, DATA SENT BY REGULAR MAIL
[ ] REPORT TO BE MAILED REGULAR MAIL
[ ] SUMMARY TO BE FAXED, DATA SENT OVERNIGHT - SHIPPING CHARGE

Send 4oz samples (16 oz for chemistry) and this form to:
the MiL, Inc. 12133 BRIDGETON SQUARE DR. ST. LOUIS, MO 63044-2616
PHONE: (800) 688-9144 FAX: (314) 344-3031

AR REV. 6

CHAIN OF CUSTODY RECORD № 060704

RMT INC LABORATORIES

744 Heartland Trail, P.O. Box 8923 • Madison, WI 53708-8923 • Phone (608) 831-4444 • FAX (608) 831-7530

Project No.	Project/Client:
50 01145.59	DS Artesia

Project Manager/Contact Person: Franz Hiebert 512 327 9840

Lab No.	Yr.___ Date	Time	Sample Station ID	Total Number Of Containers	MATRIX	Filtered (Yes/No)	Preserved (Code)	Analyses Requested: Aerobic Frac	Anaerobic Frac	Water chem nutrients	Comments:
			MW-7 VOA	1	H_2O		X				
			" 40z.	1	"	X					
			" 1 l water chem	1	"			X			
			Soil boring 1 unsaturated	1	Soil	X	X	—	1		large plastic jar
			" " 2 3' below saturated	1	Soil	X	X	—	2		glass jars

PRESERVED CODES
A - NONE
B - HNO_3
C - H_2SO_4
D - NaOH
E - HCl
F - METHANOL
G - _____

SPECIAL INSTRUCTIONS

SAMPLER Relinquished by (Sig.)	Date/Time	Received by (Sig.)	Date/Time
F. Hiebert	11/21/96 12:30		
Relinquished by (Sig.)	Date/Time	Received by (Sig.)	Date/Time
Relinquished by (Sig.)	Date/Time	Received by (Sig.)	Date/Time

HAZARDS ASSOCIATED WITH SAMPLES
- ☐ Flammable
- ☐ Corrosive
- ☐ Highly Toxic
- ☐ Other (list) _____

Turn Around (circle one) Normal Rush

Report Due_____

(For Lab Use Only)

Receipt Temp:

Temp Blank Y N

Receipt pH (Wet/Metals)

Custody Seal: Present/Absent Intact/Not Intact Seal #'s

F-268 (R6/95) WHITE - LABORATORY COPY YELLOW - REPORT APPENDIX PINK - SAMPLER/SUBMITTER

CHAIN OF CUSTODY RECORD № 060703

RMT INC. LABORATORIES

744 Heartland Trail, P.O. Box 8923 • Madison, WI 53708-8923 • Phone (608) 831-4444 • FAX (608) 831-7530

Project No.	Project/Client:
50 01145.59	DS Artesia

Project Manager/Contact Person: Franz Hiebert 512 327 9840

Lab No.	Yr.____ Date	Time	Sample Station ID	Total Number Of Containers	MATRIX	Filtered (Yes/No)	Preserved (Code)	Analyses Requested: aerobic Fecs	Anaerobic Fecs	Nutrient Water Chem					Comments:
			MW-12 VOA	1	H_2O				X						
			" Aerobic (402.)	1	"	X									
			" Water chem 1ℓ	1	"					X					
			MW-18 VOA	1	"										
			" aerobic (402)	1	"										
			" Water chem 1ℓ	1	"										
			MW 19 VOA	1	"										
			aerobic	1	"										
			Water chem	1	"										

PRESERVED CODES
A - NONE
B - HNO_3
C - H_2SO_4
D - NaOH
E - HCl
F - METHANOL
G - _____

SPECIAL INSTRUCTIONS

SAMPLER Relinquished by (Sig.)	Date/Time	Received by (Sig.)	Date/Time
[signature]	11/21/96 12:30		
Relinquished by (Sig.)	Date/Time	Received by (Sig.)	Date/Time
Relinquished by (Sig.)	Date/Time	Received by (Sig.)	Date/Time

HAZARDS ASSOCIATED WITH SAMPLES
- ☐ Flammable
- ☐ Corrosive
- ☐ Highly Toxic
- ☐ Other (list) _____

Turn Around (circle one) Normal Rush

Report Due_____

(For Lab Use Only)

Receipt Temp: Receipt pH (Wet/Metals)

Temp Blank Y N

Custody Seal: Present/Absent Intact/Not Intact Seal #'s

GC-FAME

BOTTLE: 26 ID#: 25WED 27-NOV-96 05:42:30

FILE DATA:F96826557

4402-1 RMT

RUN # 29 NOV 27, 1996 18:39:51
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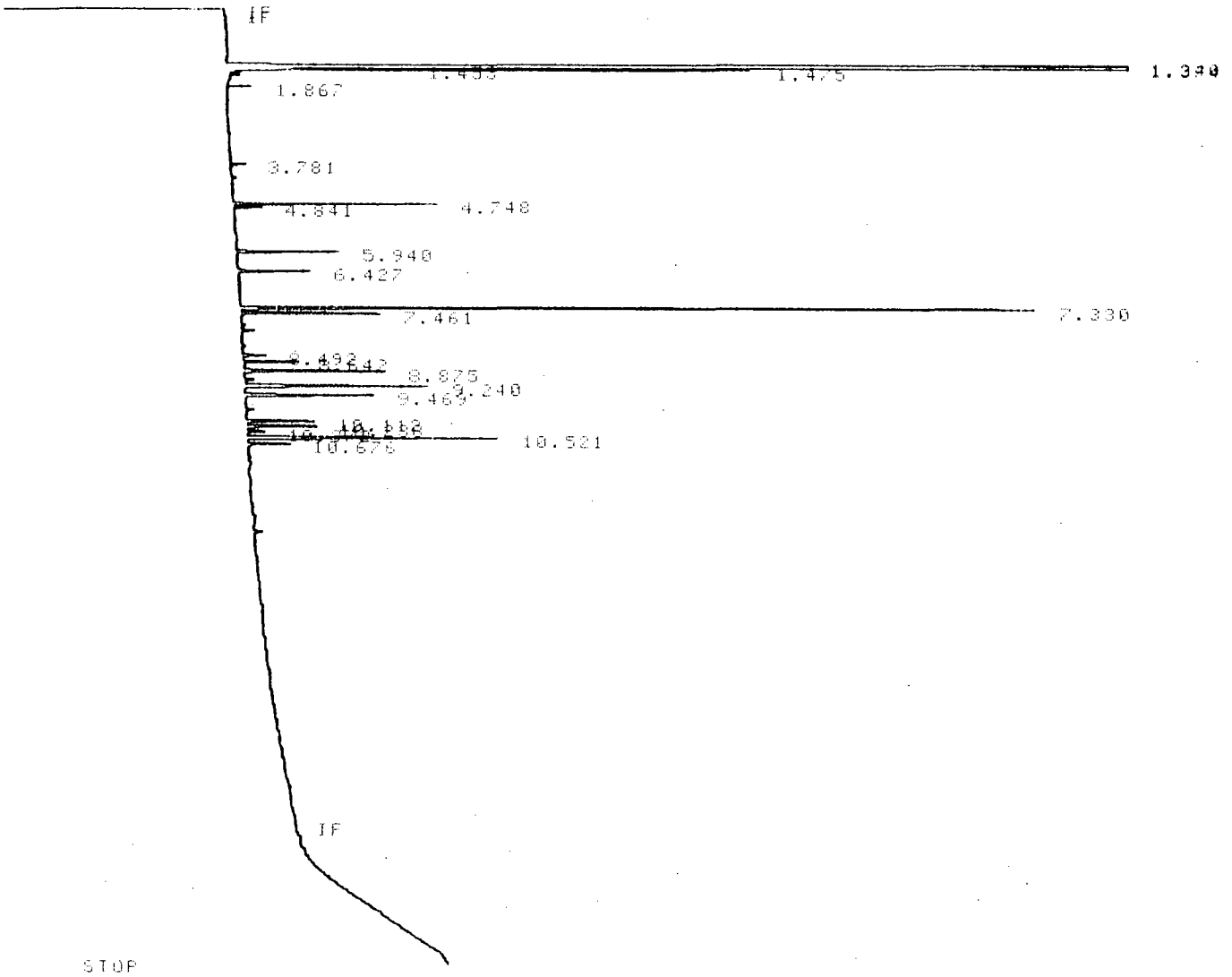

STOP

RUN # 29 NOV 27, 1996 18:39:51
START No plot
END OF SIGNAL

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BOTTLE: 25 ID#: 24WED 27-NOV-96 05:12:35

FILE DATA:F96B26557

4402-2 RMT

RUN # 28 NOV 27, 1996 18:09:34

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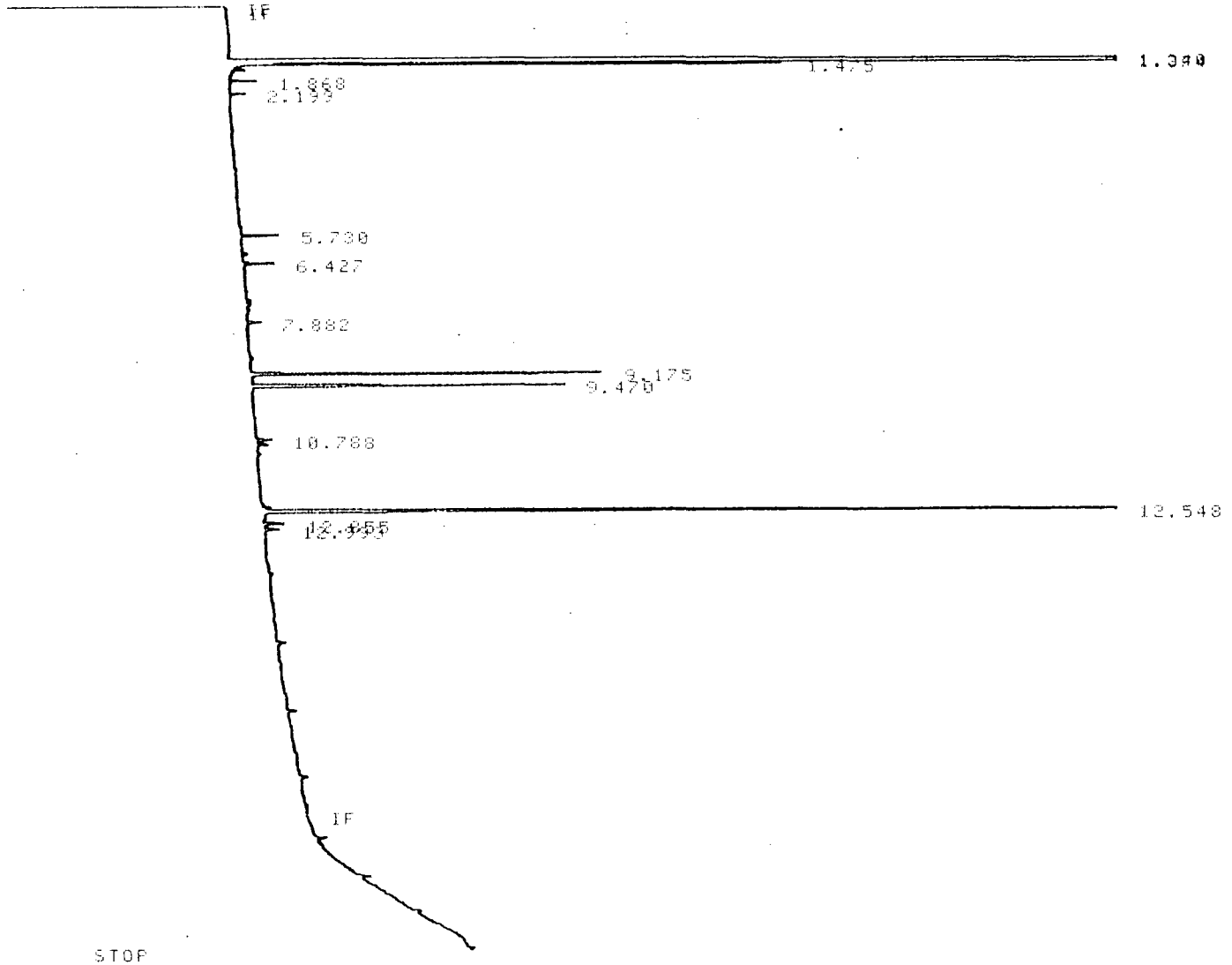

STOP

RUN # 28 NOV 27, 1996 18:09:34

START-No plot

END OF SIGNAL

#

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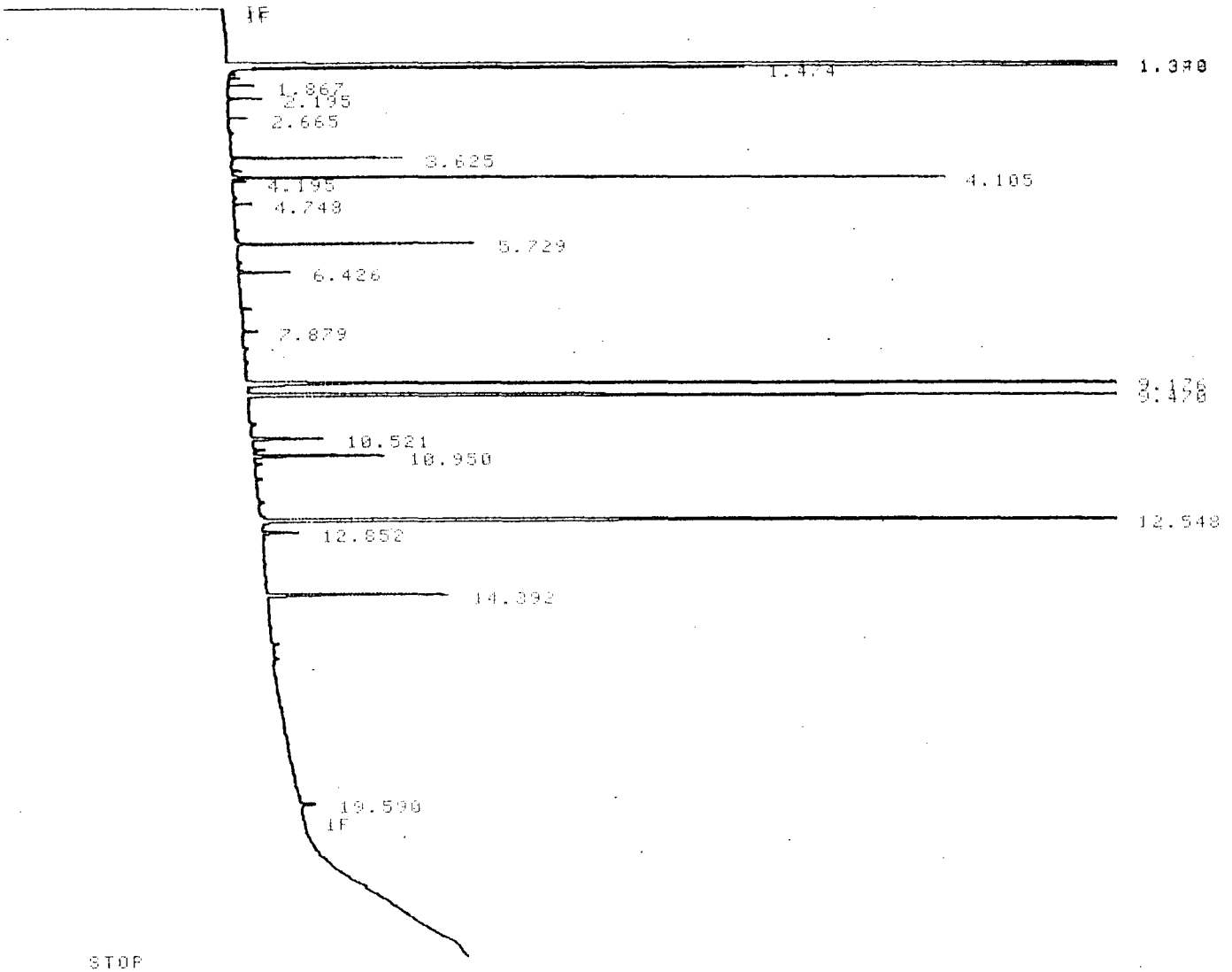
BOTTLE: 24 ID#: 23WED 27-NOV-96 04:41:41

FILE DATA:F96B26557

4402-3 RMT

RUN # 27 NOV 27, 1996 17:39:08

START



STOP

RUN # 27 NOV 27, 1996 17:39:08

START-No plot

END OF SIGNAL

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BOTTLE: 1 ID#: 1WED 27-NOV-96 04:11:44

FILE DATA:F96826557

CALIBRATION STANDARD

RUN # 26 NOV 27, 1996 17:08:53

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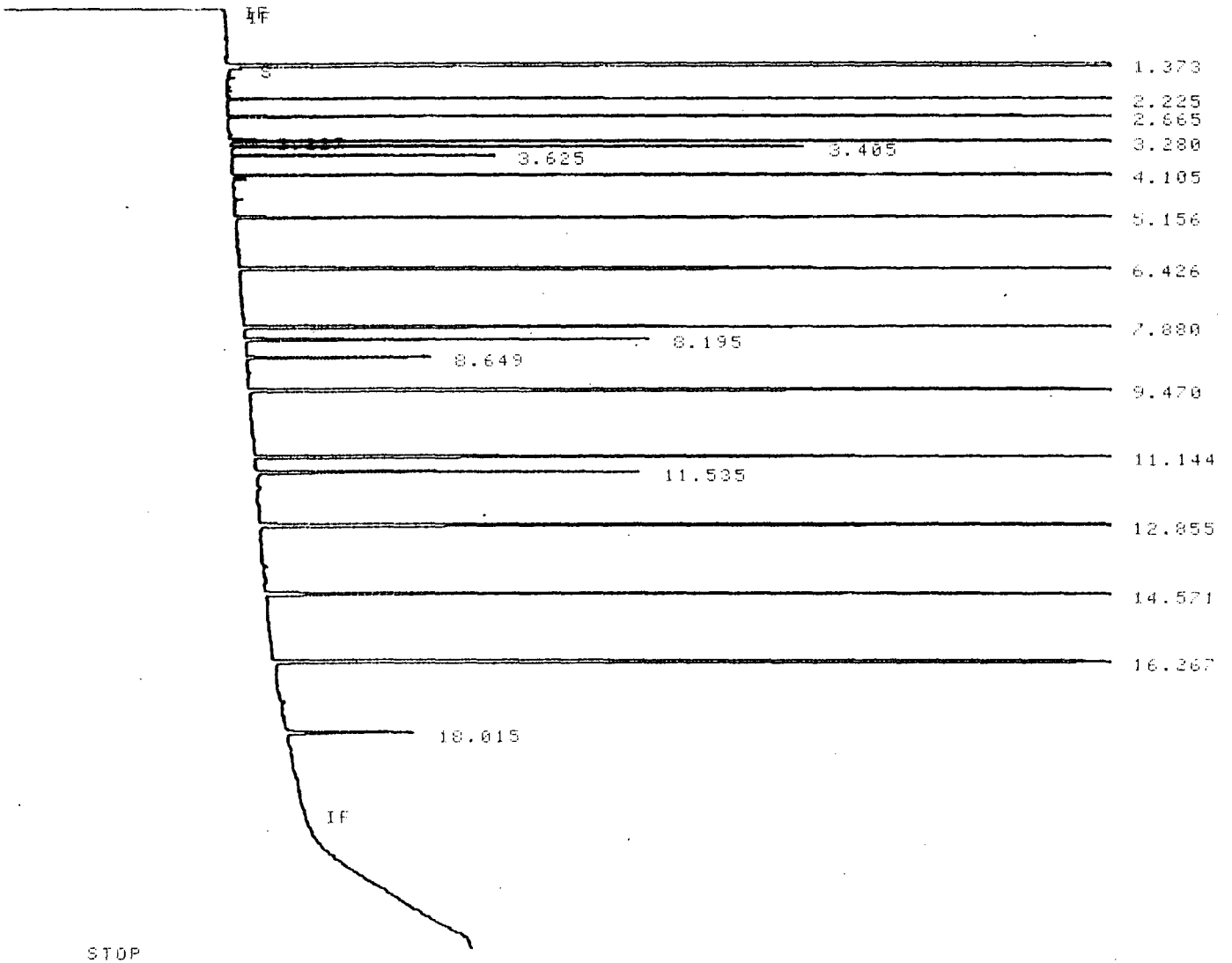

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RUN # 26 NOV 27, 1996 17:08:53

START-No plot

END OF SIGNAL

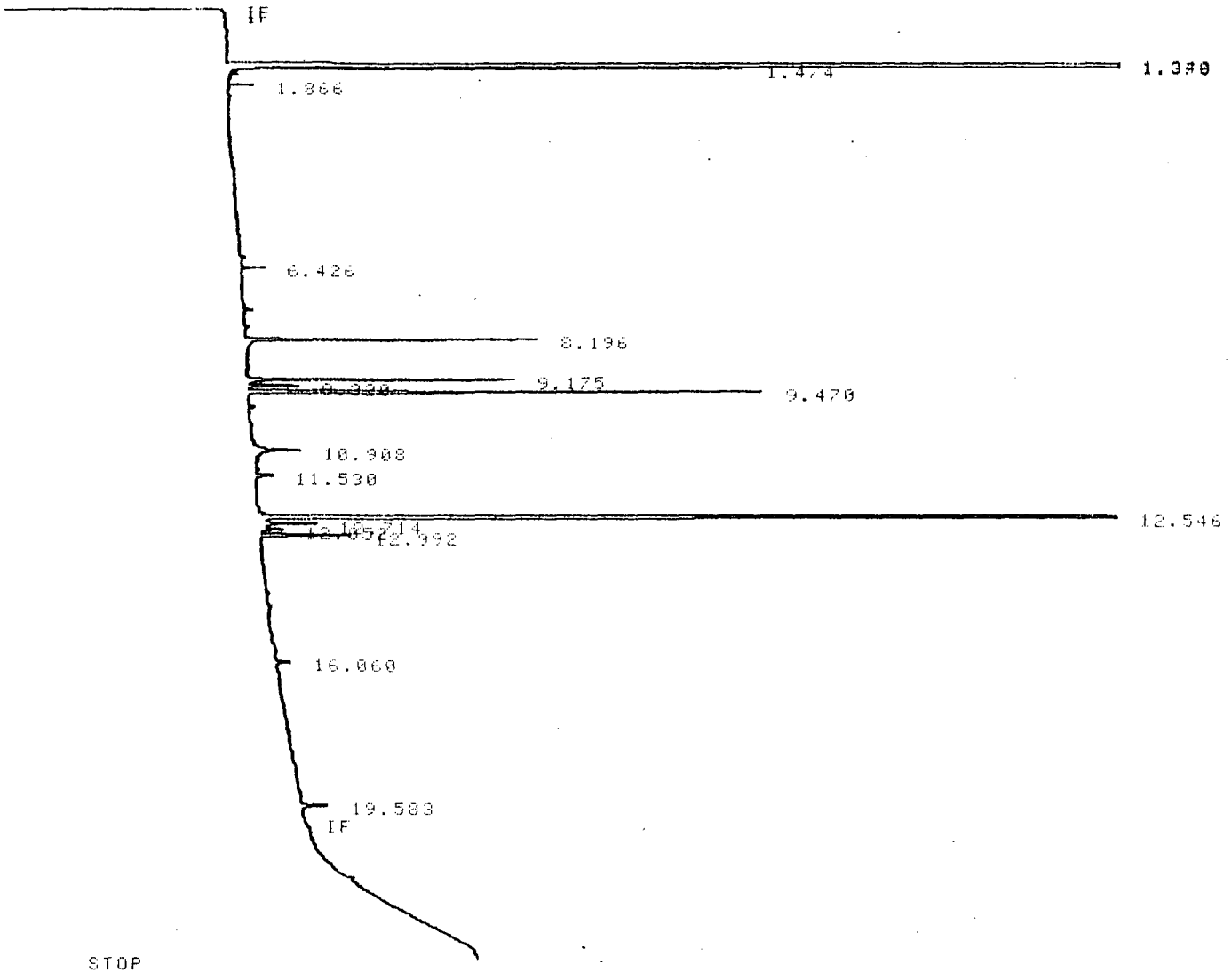
BOTTLE: 23 ID#: 22WED 27-NOV-96 03:41:03

FILE DATA:F96B26557

4402-4 RMT

RUN # 25 NOV 27, 1996 16:38:33

START



STOP

RUN # 25 NOV 27, 1996 16:38:33

START-No plot

END OF SIGNAL

BOTTLE: 22 ID#: 21WED 27-NOV-96 03:11:04

FILE DATA:F96B26557

4402-5 RMT

RUN # 24 NOV 27, 1996 16:08:17

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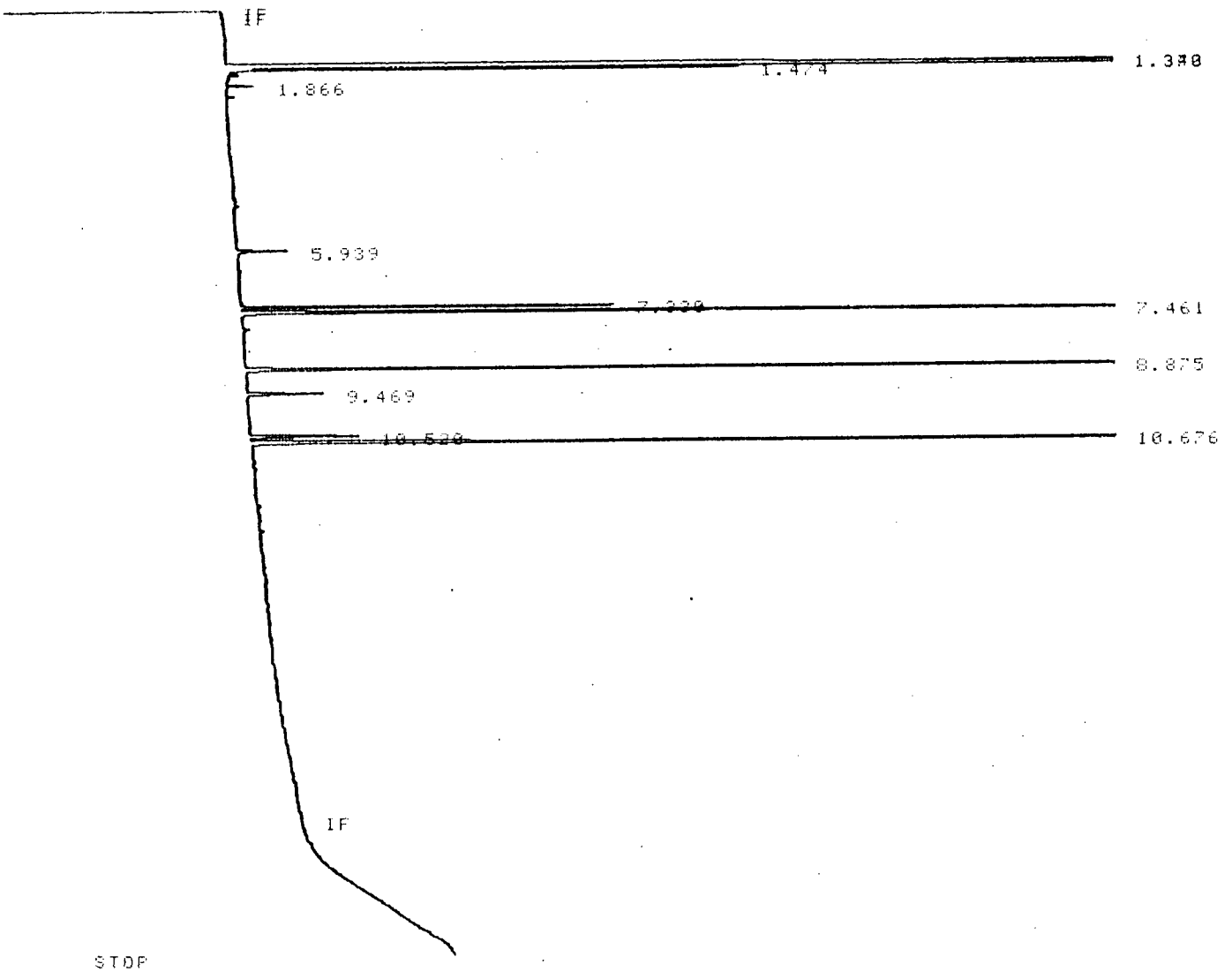


STOP

RUN # 24 NOV 27, 1996 16:08:17

START-No plot

END OF SIGNAL

==========

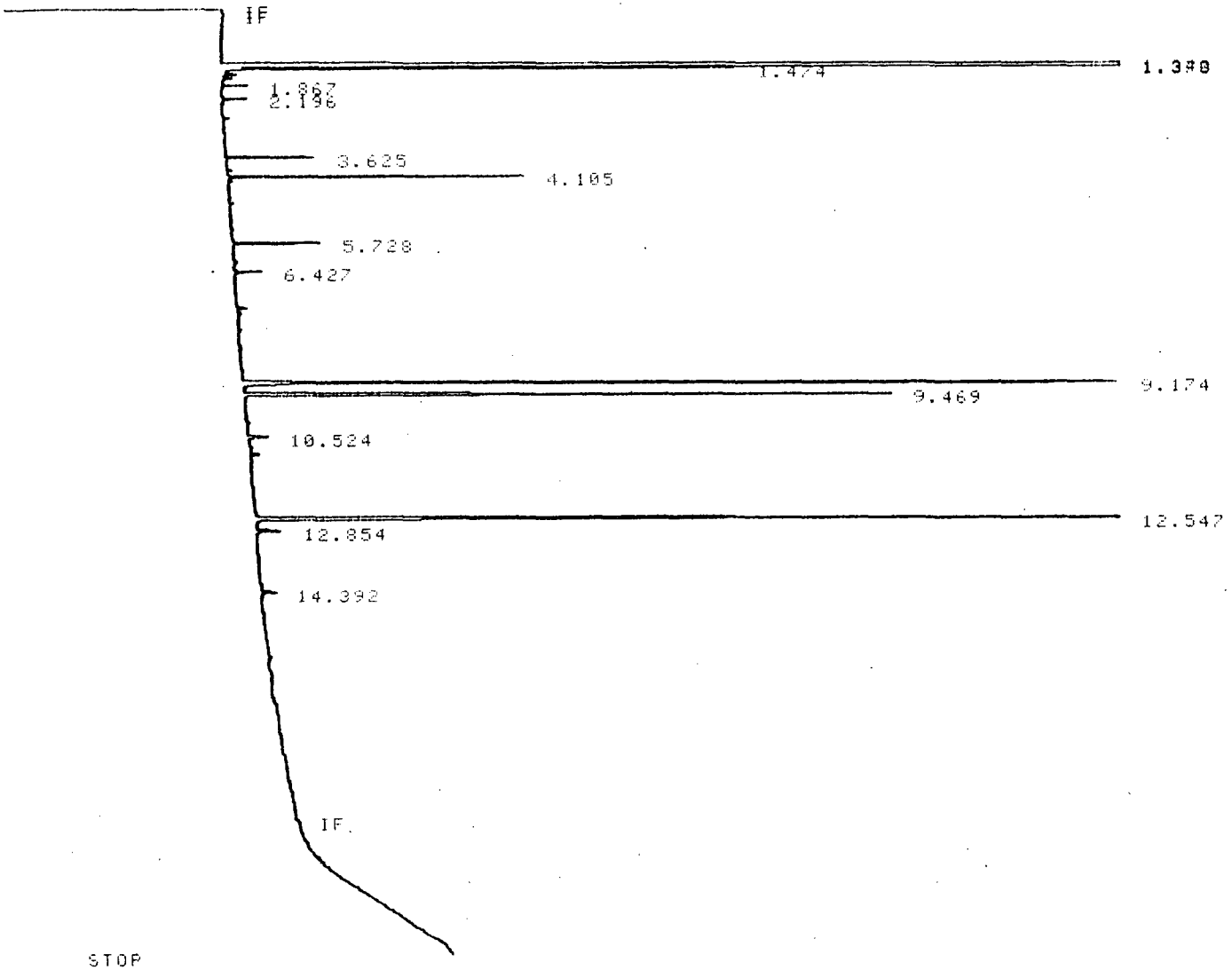
BOTTLE: 21 ID#: 20WED 27-NOV-96 02:41:00

FILE DATA:F96B26557

4402-6 RMT

RUN # 23 NOV 27, 1996 15:38:02

START



STOP

RUN # 23 NOV 27, 1996 15:38:02

START-No plot

END OF SIGNAL

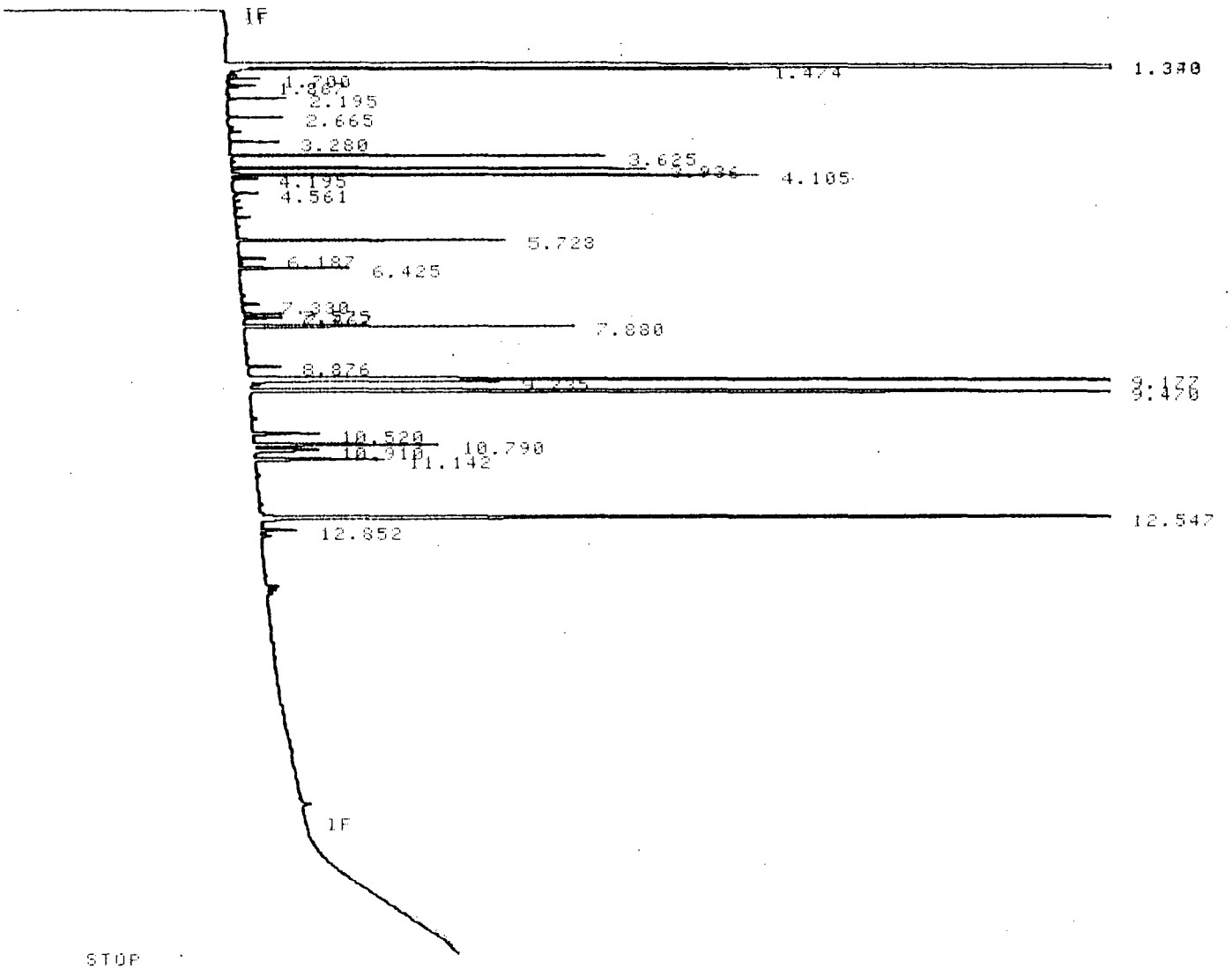
BOTTLE: 27 ID#: 26WED 27-NOV-96 06:13:29

FILE DATA:F96B26557

4402-8 RMT

RUN # 30 NOV 27, 1996 19:10:28

START



STOP

RUN # 30 NOV 27, 1996 19:10:28

START-No Plot

END OF SIGNAL

.#

==========

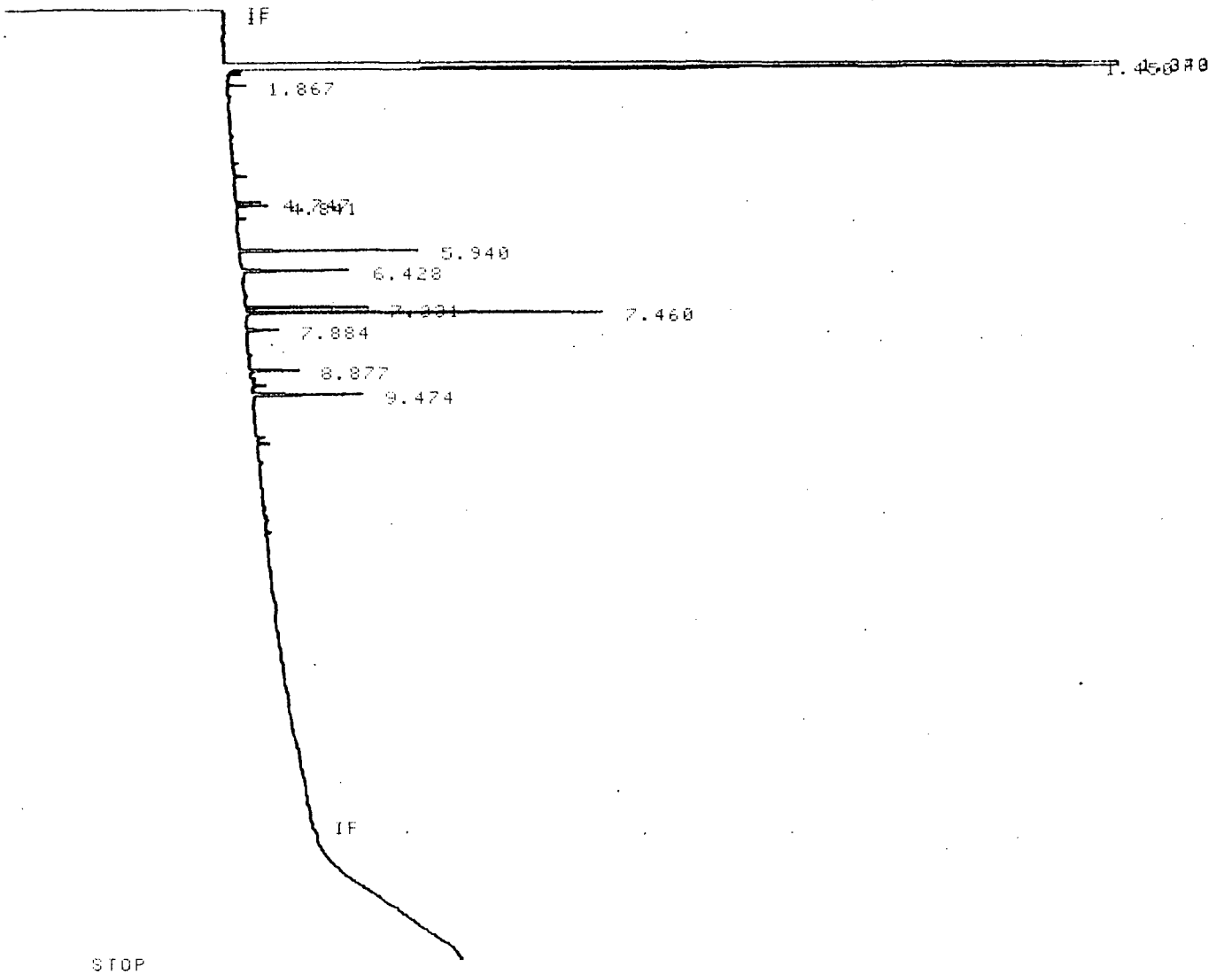
BOTTLE: 29 ID#: 28WED 27-NOV-96 07:19:11

FILE DATA:F96826557

4402-10 RMT

RUN # 32 NOV 27, 1996 20:16:08

START



STOP

RUN # 32 NOV 27, 1996 20:16:08

START-No plot

END OF SIGNAL

#

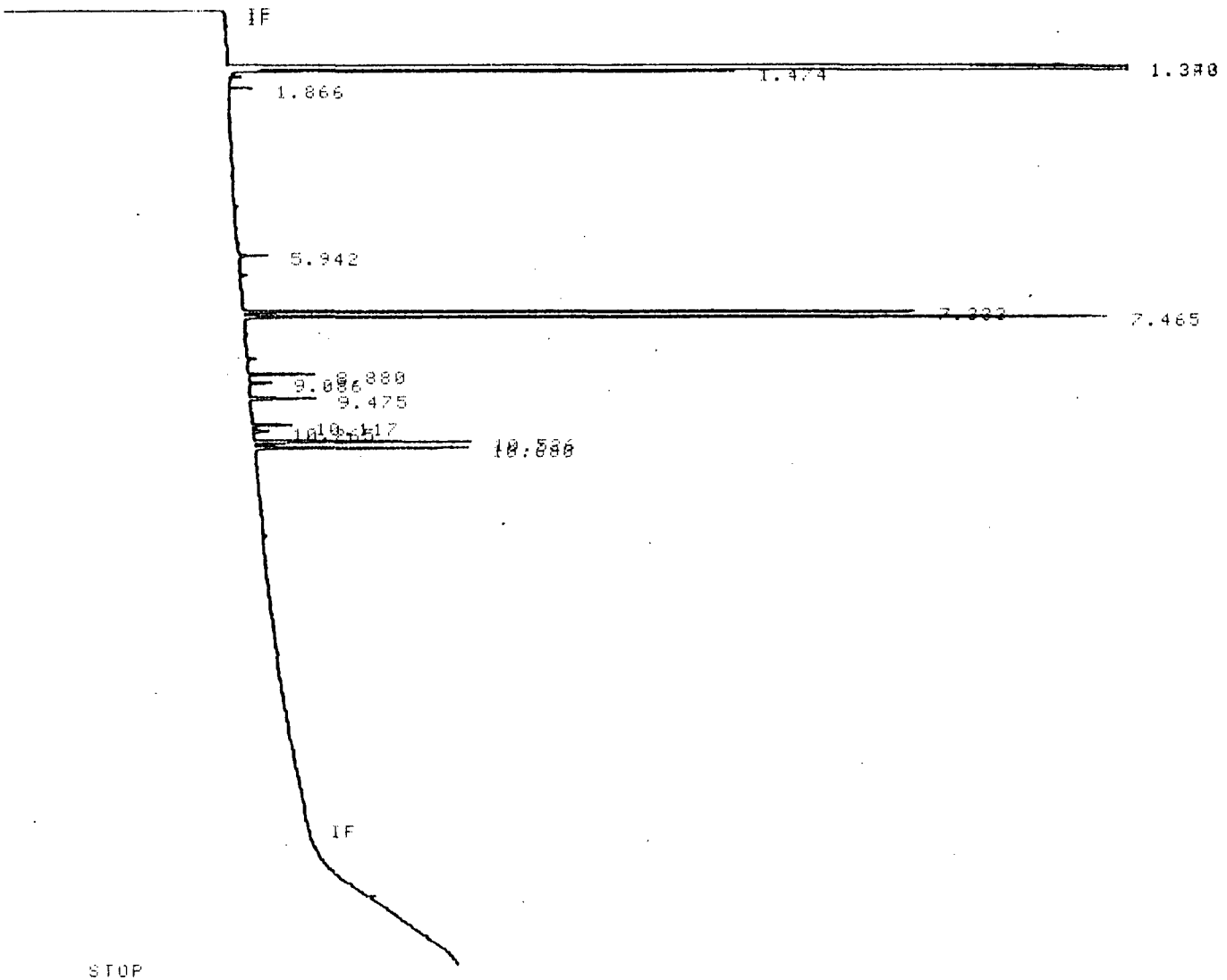
==========

BOTTLE: 30 ID#: 29WED 27-NOV-96 07:49:07

FILE DATA:F96B26557

4402-11 RMT

RUN # 33 NOV 27, 1996 20:46:21
START



STOP

RUN # 33 NOV 27, 1996 20:46:21
START-No plot
END OF SIGNAL

==========

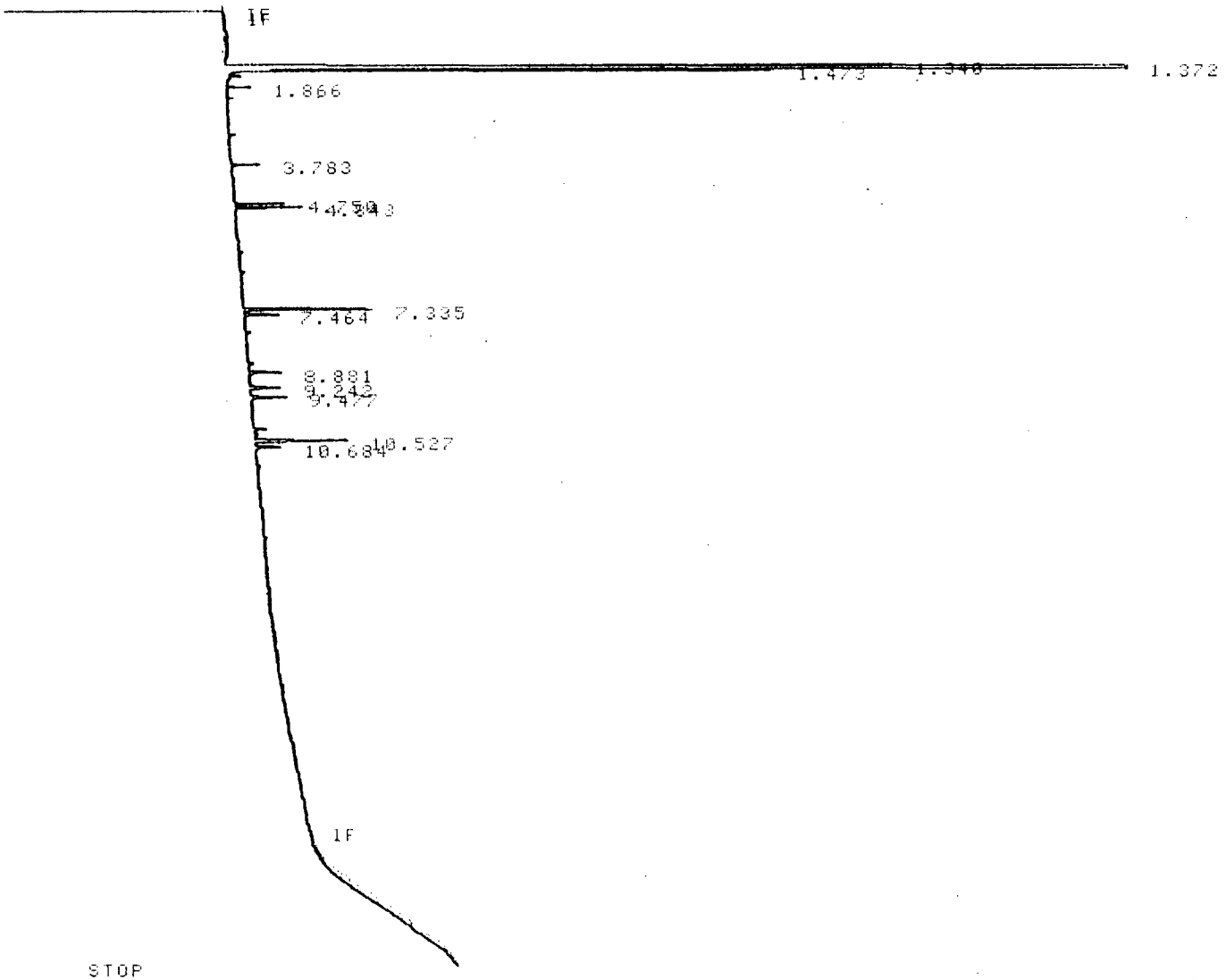
BOTTLE: 32 ID#: 31WED 27-NOV-96 08:19:32

FILE DATA:F96B26557

4402-13 RMT

RUN # 34 NOV 27, 1996 21:16:34

START



STOP

RUN # 34 NOV 27, 1996 21:16:34

START-No plot

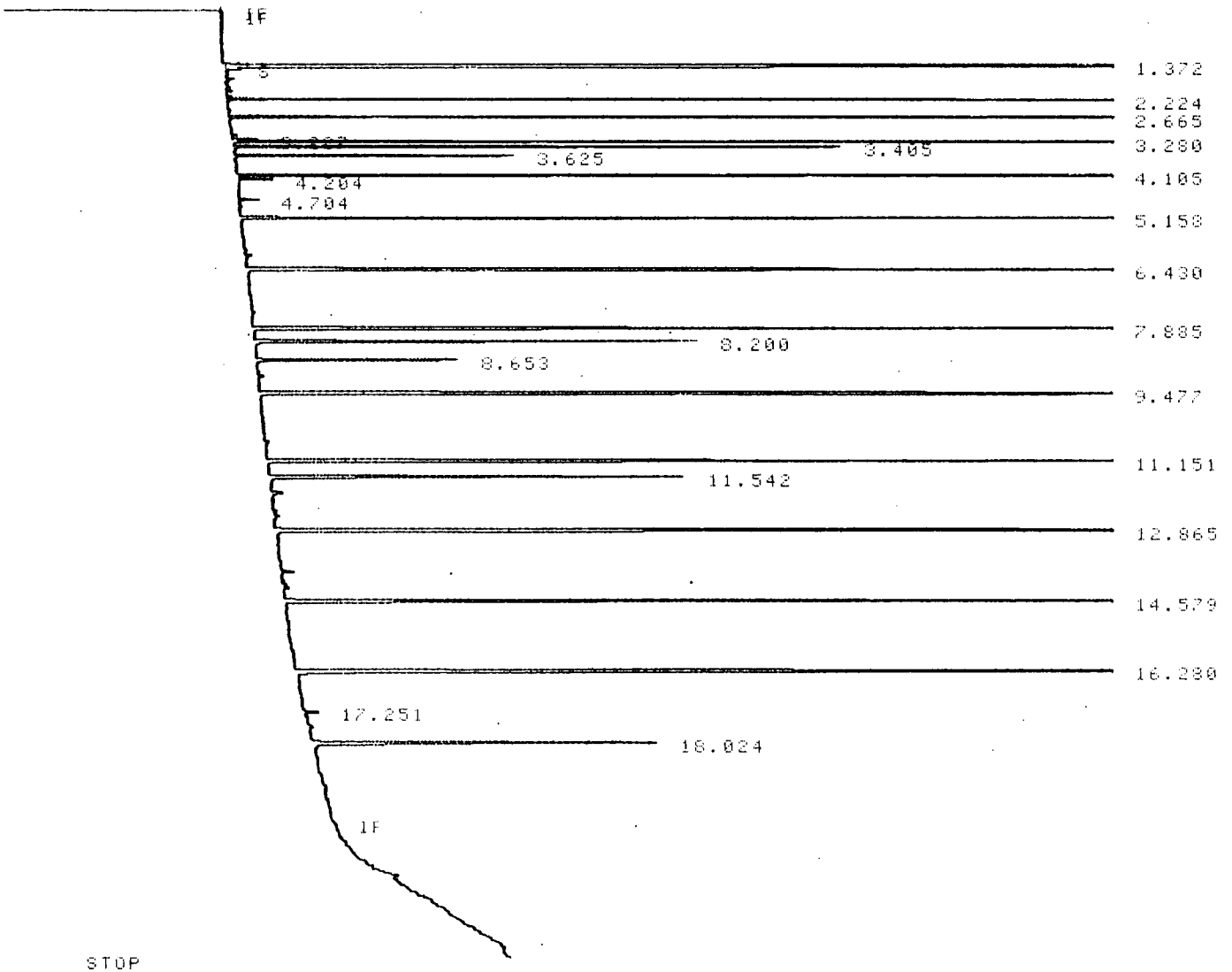
END OF SIGNAL

BOTTLE: 1 ID#: 1WED 27-NOV-96 09:11:58

FILE DATA:F96B27331

CALIBRATION STANDARD

RUN # 35 NOV 27, 1996 22:09:02
START



STOP

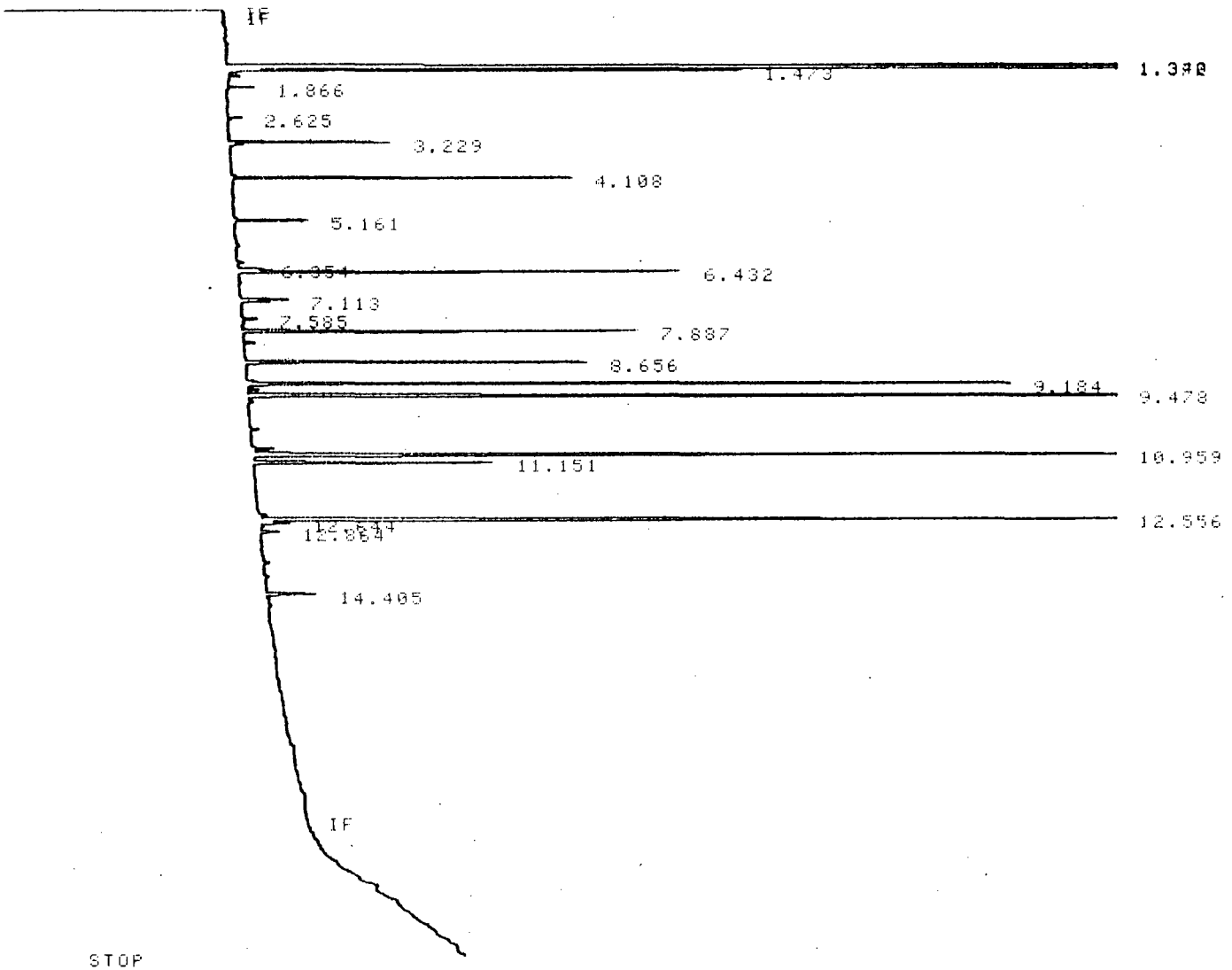
RUN # 35 NOV 27, 1996 22:09:02
START-No plot

BOTTLE: 33 ID#: 32WED 27-NOV-96 09:41:41

FILE DATA:F96B27331

4402-14 RMT

RUN # 36 NOV 27, 1996 22:39:14
START



STOP

RUN # 36 NOV 27, 1996 22:39:14
START-No plot
END OF SIGNAL

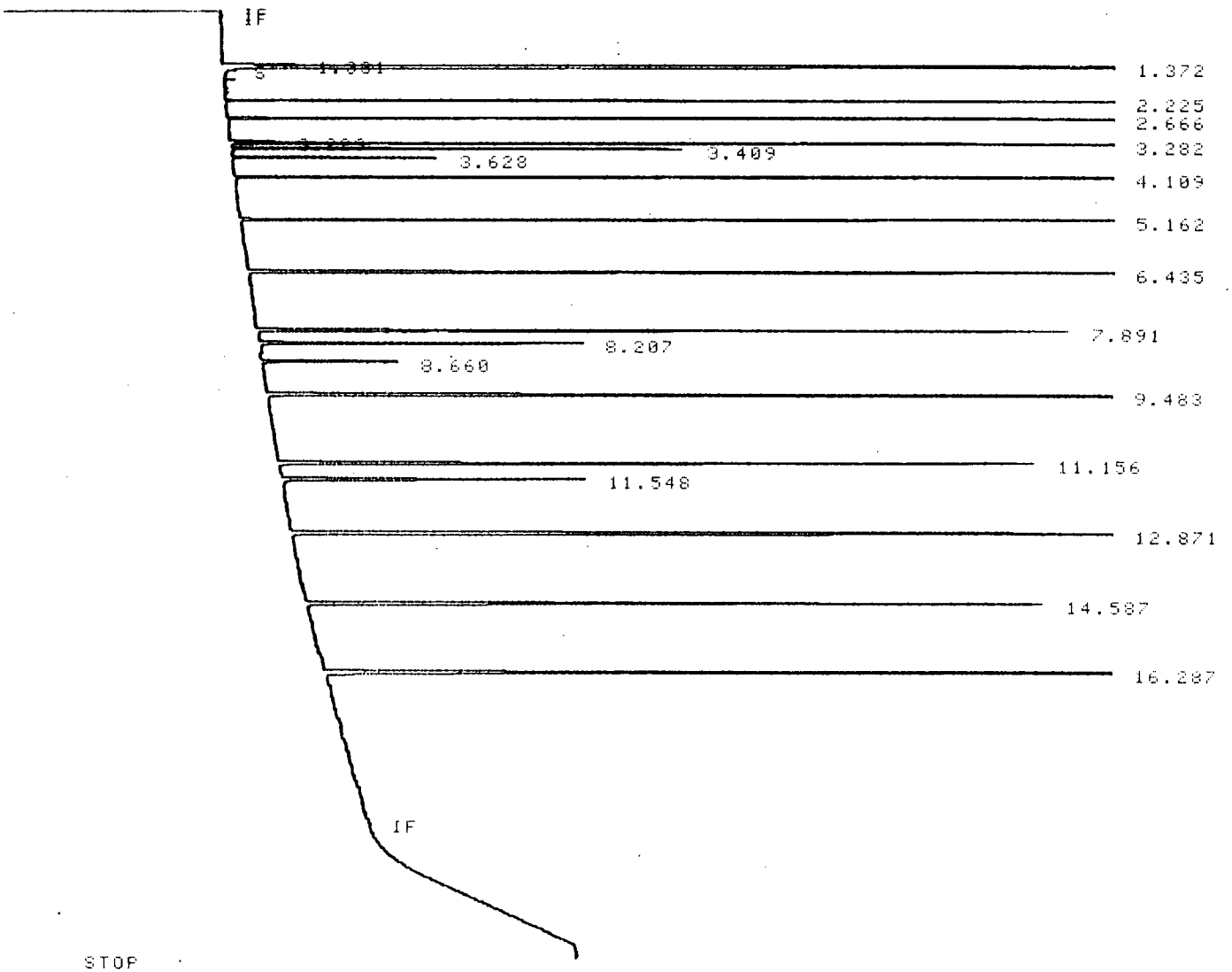
BOTTLE: 53 ID#: 1THU 28-NOV-96 19:05:16

FILE DATA:F96B28687

CALIBRATION STANDARD

RUN # 59 NOV 28, 1996 08:02:17

START



STOP

RUN # 59 NOV 28, 1996 08:02:17

START-No plot

END OF SIGNAL

==========

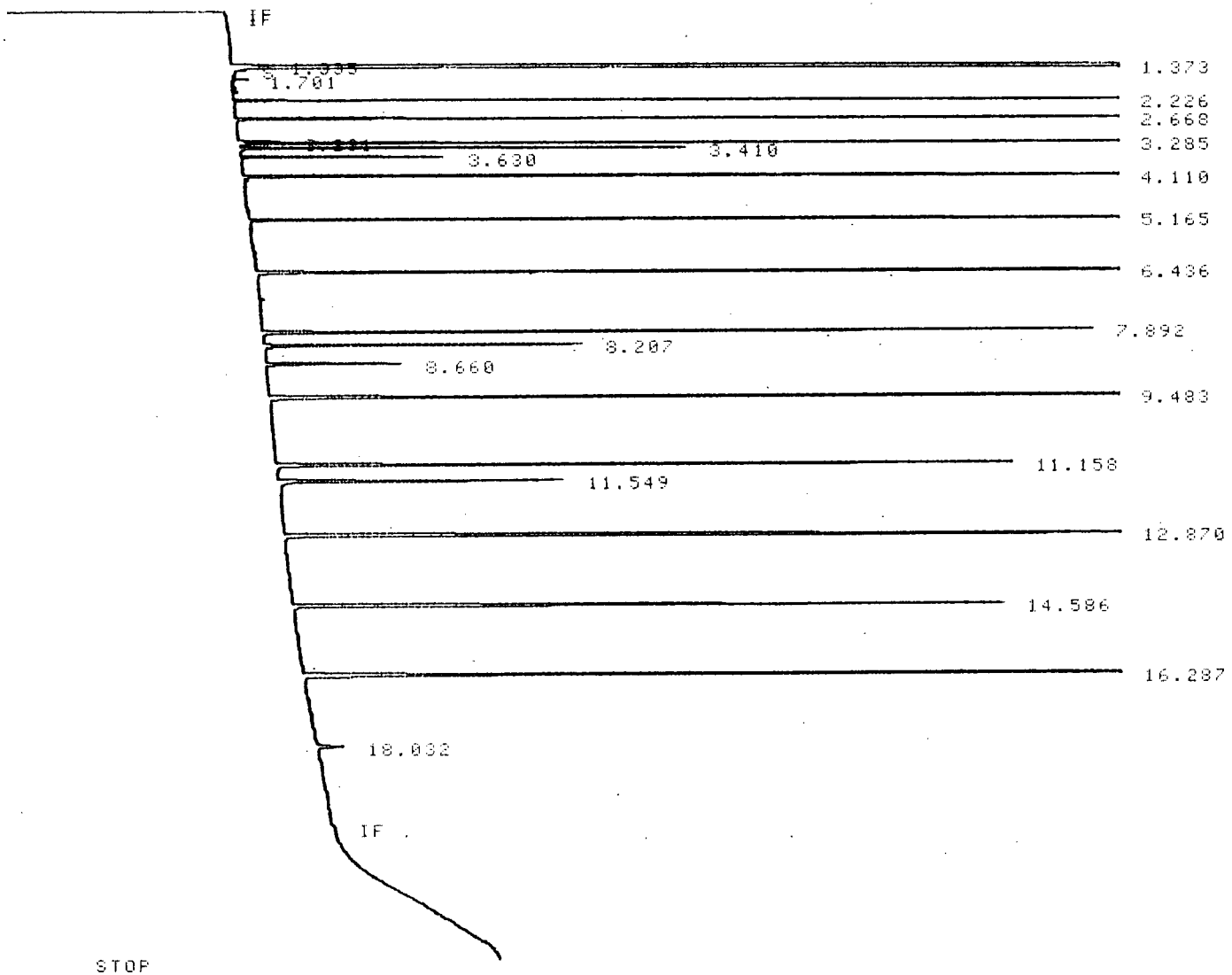
BOTTLE: 53 ID#: 1THU 28-NOV-96 19:34:43

FILE DATA:F96B28687

CALIBRATION STANDARD

RUN # 60 NOV 28, 1996 08:32:33

START



STOP

RUN # 60 NOV 28, 1996 08:32:33

START-No plot

END OF SIGNAL

==========

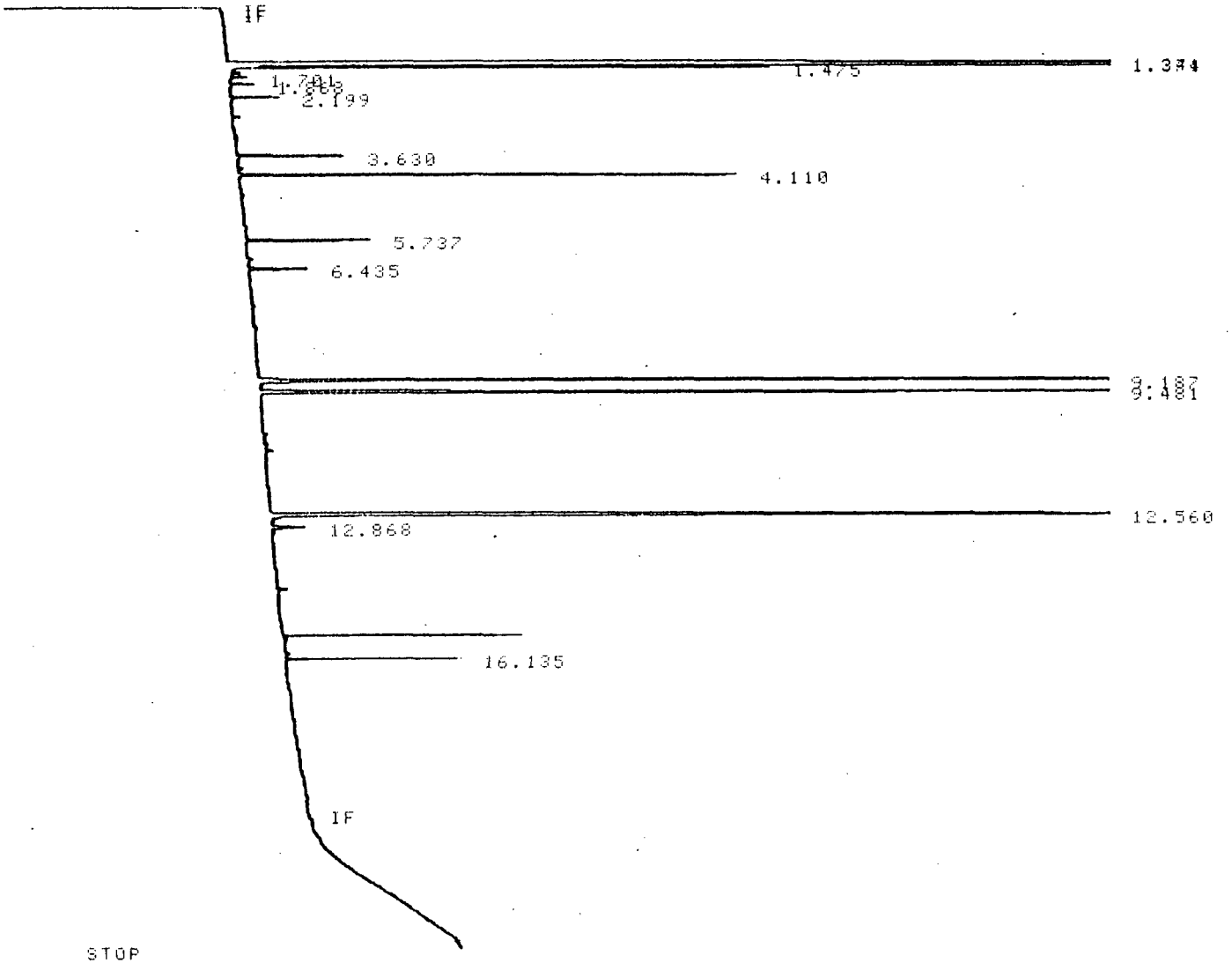
BOTTLE: 54 ID#: 52THU 28-NOV-96 20:05:06

FILE DATA:F96B28687

4402-1AN RMT

RUN # 61 NOV 28, 1996 09:02:50

START



STOP

RUN # 61 NOV 28, 1996 09:02:50

START-No plot

END OF SIGNAL

==========

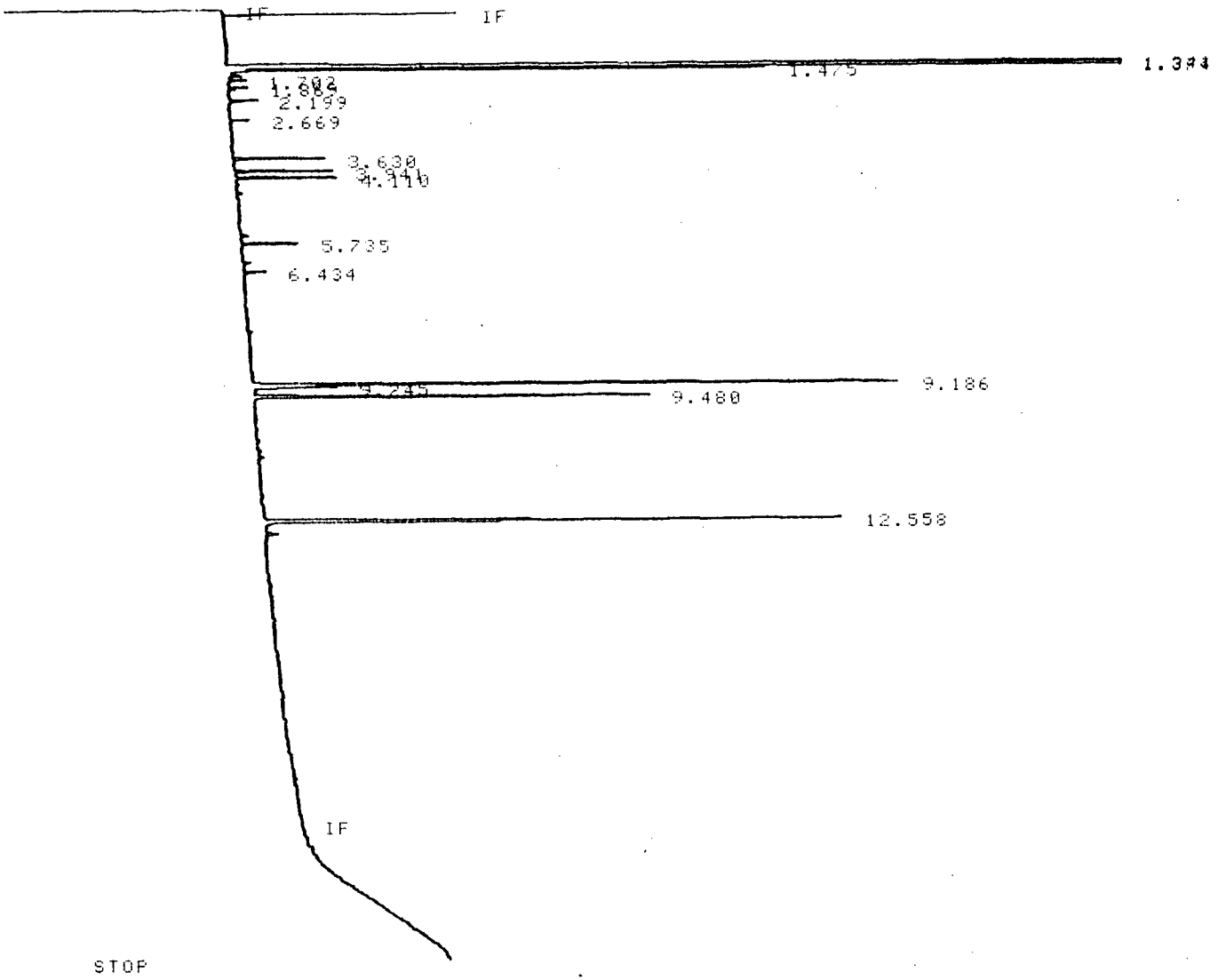
BOTTLE: 55 ID#: 53THU 28-NOV-96 20:35:20

FILE DATA:F96B28687

4402-3AN RMT

RUN # 62 NOV 28, 1996 09:33:08

START



STOP

RUN # 62 NOV 28, 1996 09:33:08

START-No plot

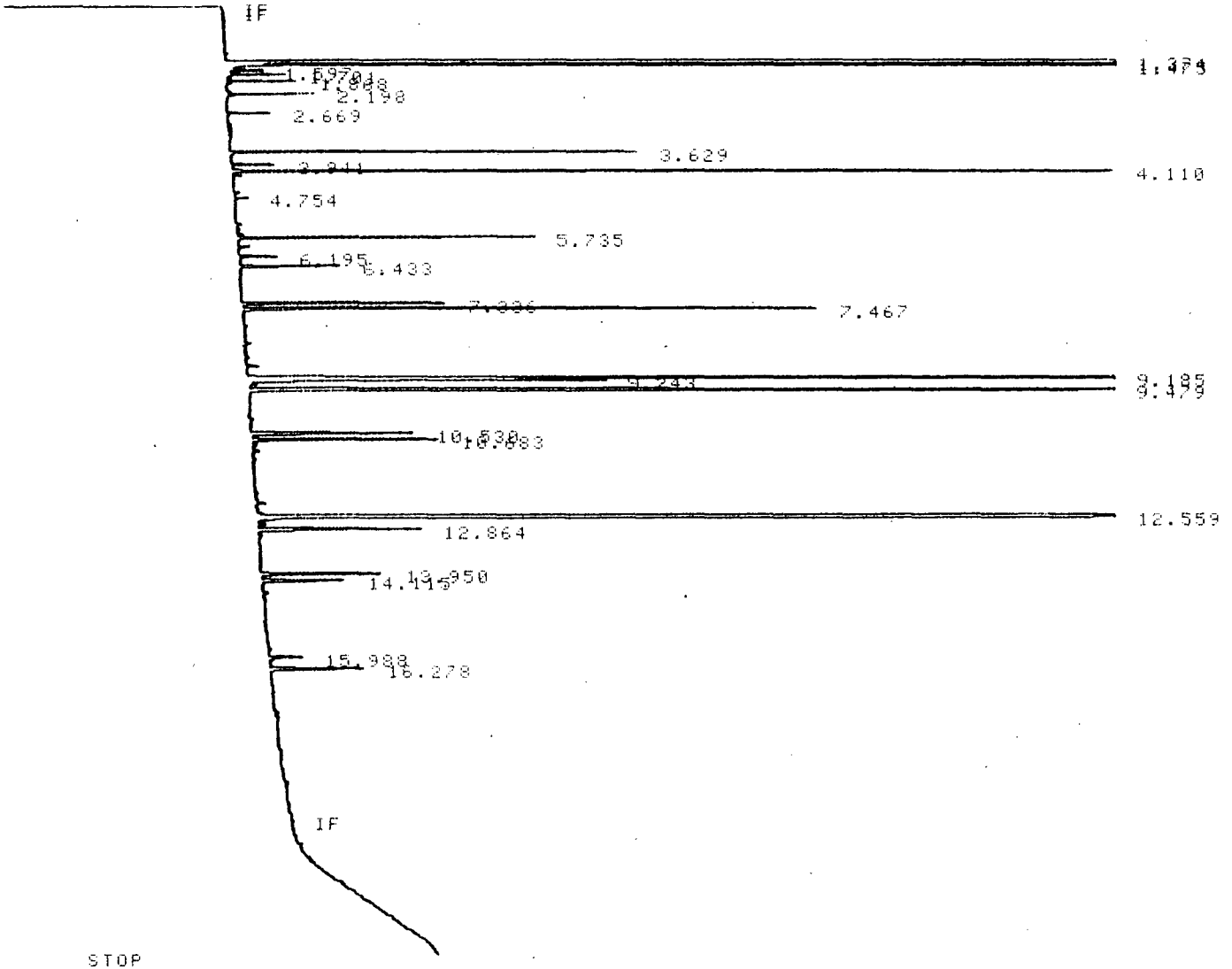
END OF SIGNAL

BOTTLE: 56 ID#: 54THU 28-NOV-96 21:05:35

FILE DATA:F96B28687

4402-4AN RMT

RUN # 63 NOV 28, 1996 10:03:31
START



STOP

RUN # 63 NOV 28, 1996 10:03:31
START-No plot
END OF SIGNAL

==========

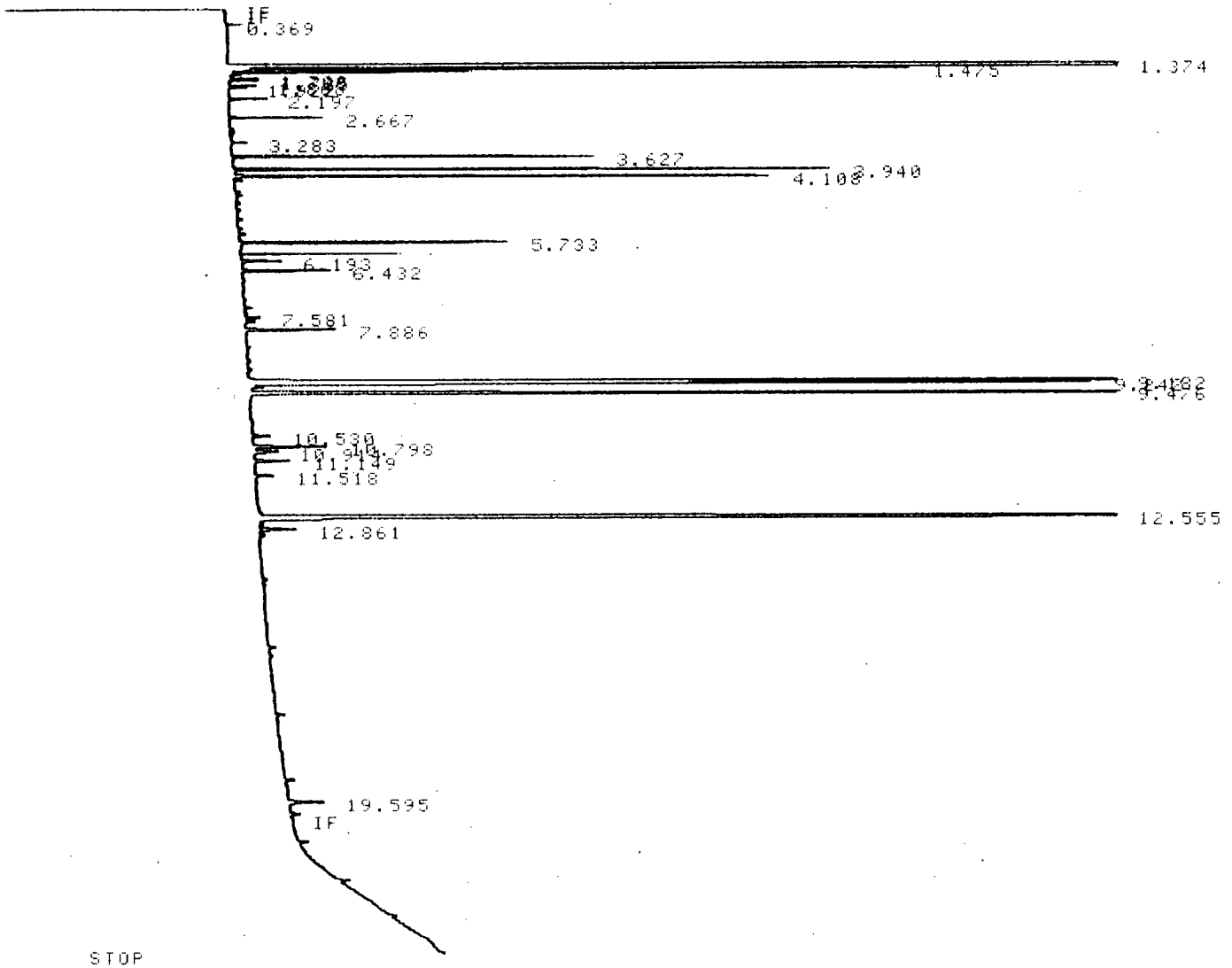
BOTTLE: 57 ID#: 55THU 28-NOV-96 21:37:02

FILE DATA:F96B28687

4402-5AN RMT

RUN # 64 NOV 28, 1996 10:34:03

START



STOP

RUN # 64 NOV 28, 1996 10:34:03

START-No plot

END OF SIGNAL

ID: 25 4402-i RMI Date of run: 27-NOV-96 10:59:51
Bottle: 26 SAMPLE [AEROBE]

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.385	156941824	0.024	. . .	7.067	SOLVENT PEAK	< min ri		
1.485	6384	0.020	. . .	7.295	. . . . .	< min ri		
1.877	376	0.020	. . .	8.186	. . . . .	< min ri		
4.758	5480	0.031	1.055	12.612	13:0 ISO	7.06	ECL deviates 0.000	Reference -0.000
4.851	808	0.031	1.051	12.701	13:0 ANTEISO	1.05	ECL deviates -0.000	Reference -0.001
5.950	3210	0.035	1.016	13.617	14:0 ISO	4.09	ECL deviates -0.001	Reference -0.001
6.437	2512	0.037	1.003	14.001	14:0	3.12	ECL deviates 0.001	Reference 0.001
7.340	26992	0.038	0.983	14.621	15:0 ISO	32.90	ECL deviates 0.000	Reference 0.000
7.470	4824	0.038	0.981	14.711	15:0 ANTEISO	5.86	ECL deviates -0.000	Reference -0.000
8.501	920	0.040	0.962	15.384	16:1 w7c alcohol . .	1.10	ECL deviates -0.002	
8.652	1992	0.040	0.960	15.479	Sum In Feature 3 . .	2.37	ECL deviates -0.003	16:1 ISO I/14:0 3OH
8.885	5936	0.045	0.956	15.626	16:0 ISO	7.04	ECL deviates -0.000	Reference -0.000
9.250	7224	0.043	0.951	15.856	Sum In Feature 4 . .	8.52	ECL deviates 0.009	15:0 ISO 2OH/16:1w7c
9.490	5008	0.042	0.947	16.001	16:0	5.88	ECL deviates 0.001	Reference 0.000
10.123	2736	0.043	0.938	16.385	ISO 17:1 w10c . . .	3.18	ECL deviates -0.002	
10.247	3072	0.047	0.937	16.459	ISO 17:1 w6c	3.57	ECL deviates -0.002	
10.391	808	0.044	0.935	16.539	17:1 ANTEISO A . . .	0.94	ECL deviates -0.002	
10.532	9728	0.042	0.933	16.630	17:0 ISO	11.26	ECL deviates 0.001	Reference -0.00:
10.685	1784	0.044	0.931	16.721	17:0 ANTEISO	2.06	ECL deviates -0.001	Reference -0.00[illegible]
*******	1992	. . .	. . .	. . .	SUMMED FEATURE 3 . .	2.32	12:0 ALDE ?	unknown 10.928
*******	. . .	. . .	. . .	. . .	. . . . .	. . .	16:1 ISO I/14:0 3OH	14:0 3OH/16:1 ISO I
*******	7224	. . .	. . .	. . .	SUMMED FEATURE 4 . .	8.52	16:1 w7c/15 iso 2OH	15:0 ISO 2OH/16:1w7c

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
156941824	82992	82992	100.00	80652	10	0.003	0.001

TSBA (Rev 3.90) Bacillus 0.702
B. cereus 0.702
B. thuringiensis . . . . . 0.541 (Bacillus cereus group)
CLIN (Rev 3.90) Bacillus 0.342
B. cereus 0.342
B. mycoides 0.278

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MIDI DOS SYSTEM                                                                              2?-NOV-96 15:28:57
Continue: 25        4402-1 RMI                       [AEROBE]   2?-NOV-96 18:39:5?
------------------------------------------------------------------------------------------------------------
Comparison with TSBA [Rev 3.90]: Bacillus-cereus                                          Distance:  2.989

                        0   5  10  15  20  25  30  35  40  45  50  55  60  65  70  75  80  85  90  95  100
                        .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
13:0 ISO. . . . . . .   .   . x--+--.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
13:0 ANTEISO. . . .   -*-   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
14:0 ISO. . . . . . . . -+x-.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
14:0. . . . . . . . . . -*-.    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
15:0 ISO. . . . . . .   .   .   .   .   .   .  ---x-+-------.   .   .   .   .   .   .   .   .   .   .   .
15:0 ANTEISO. . . . . --+-x .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
16:1 w7c alcohol. .   -*-   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
16:0 ISO. . . . . . . . ---+-x  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
16:0. . . . . . . . . . ---+x--.    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
15:0 2OH. . . . . .   x+-   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
ISO 17:1 w10c . . . . . x-+-.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
ISO 17:1 w5c. . . . . --x+--.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
17:1 ANTEISO A. . .   +x-   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
17:0 ISO. . . . . . .   .   .---+-x-.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
17:0 ANTEISO. . . .   -+x   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
SUMMED FEATURE 3. . . -*-   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
SUMMED FEATURE 4. . .   .   . -++- .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
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Comparison with CLIN [Rev 3.90]: Bacillus-cereus                                          Distance:  5.520

                        0   5  10  15  20  25  30  35  40  45  50  55  60  65  70  75  80  85  90  95  100
                        .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
13:0 ISO. . . . . . .   .   .-+--.  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
13:0 ANTEISO. . . .   +x-   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
14:0 ISO. . . . . . . . +-x.    .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
14:0. . . . . . . . . . -*  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
15:0 ISO. . . . . .   .   .   .   .   .   .   .   . x .   ---------+---  .   .   .   .   .   .   .   .   .
15:0 ANTEISO. . . . . --+-x .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
16:1 w7c alcohol. .   +x-   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
16:0 ISO. . . . . . . . -+--x   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
16:0. . . . . . . . . . --+-x-  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
ISO 17:1 w10c . . . . -+x   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
ISO 17:1 w5c. . . .   ----x+------  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
17:1 ANTEISO A. . .   +x-   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
17:0 ISO. . . . . . .   .   . --+-x-.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
17:0 ANTEISO. . . .   -+x-  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
18:1 w9c. . . . . .   x --+---  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
18:0. . . . . . . . . x-+-  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
SUMMED FEATURE 3. .   -+x-  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
SUMMED FEATURE 4. . . . ------+-x--- .  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
SUMMED FEATURE 6. .   x-+-  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
------------------------------------------------------------------------------------------------------------
```

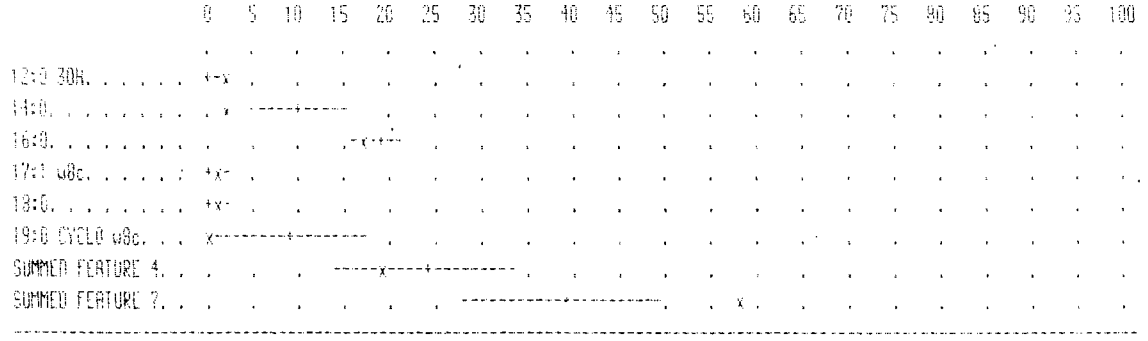
ID: 24 4402-2 RMT Date of run: 27-NOV-96 10:09:34
Bottle: 25 SAMPLE (AEROBE)

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.385	156828928	0.024	. . .	7.068	SOLVENT PEAK		< min rt	
1.485	7432	0.020	. . .	7.296	. . . . .		< min rt	
1.878	456	0.022	. . .	8.189	. . . . .		< min rt	
5.740	1286	0.036	1.021	13.452	12:0 3OH	1.96	ECL deviates -0.005	
6.436	1072	0.037	1.003	14.000	14:0	1.60	ECL deviates -0.000	Reference 0.000
9.185	13560	0.042	0.951	15.815	Sum In Feature 4 . .	19.25	ECL deviates -0.002	16:1 w7c/15 iso 2OH
9.480	11704	0.041	0.947	16.000	16:0	16.54	ECL deviates 0.000	Reference 0.000
10.000	696	0.044	0.930	16.789	17:1 w8c	0.97	ECL deviates -0.003	
12.558	43080	0.046	0.910	17.821	Sum In Feature 7 . .	58.50	ECL deviates -0.001	18:1 w7c/w9t/w12t
12.864	872	0.044	0.907	18.000	18:0	1.18	ECL deviates -0.000	Reference -0.001
*******	13560	. . . . .		. . .	SUMMED FEATURE 4 . .	19.25	16:1 w7c/15 iso 2OH	15:0 ISO 2OH/16:1w7c
*******	43080	. . . . .		. . .	SUMMED FEATURE 7 . .	58.50	18:1 w7c/w9t/w12t	18:1 w9c/w12t/w7c
*******	. . . . .			. . .	. . . . .		18:1 w12t/w9t/w7c	

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
156828928	72272	72272	100.00	67622	3	0.002	0.000

1589 (Rev 3.90) Enterococcus . . . . . 0.308 (Streptococcus faecium)
E. faecium . . . . . 0.308 (Streptococcus faecium)
E. f. GC subgroup A . . . . . 0.308 (Streptococcus faecium)
E. mundtii 0.171
CLIN (Rev 3.90) = NO MATCH =

Comparison with 1588 (Rev 3.90): Enterococcus-faecium-GC subgroup A(Streptococcus faecium) Distance: 5.452



Comparison with CLIN (Rev 3.90): Sphingomonas-paucimobilis/Pseudomonas paucimobilis Distance: 0.815

	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
12:0 3OH	+-x
14:0	-+x
15:0	*--
14:0 2OH	x-------+------
16:1 w5c	x+-
16:0	-------+------x
17:1 w8c	+x-
17:1 w6c	x--+---
18:1 w5c	x-+---
18:0	-*-
SUMMED FEATURE 4	---+--- x
SUMMED FEATURE 7	x -----+------

ID: 23 1402-3 AMI Date of run: 27-NOV-96 17:59:08
Bottle: 24 SAMPLE [AEROBE]

Rf	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.384	158519424	0.024	. . .	7.064	SOLVENT PEAK		< min rt	
1.484	7392	0.020	. . .	7.292	. . . . .		< min rt	
1.577	400	0.020	. . .	8.187	. . . . .		< min rt	
2.205	648	0.024	. . .	8.953	. . . . .		< min rt	
2.675	432	0.025	1.194	10.000	10:0	0.23	ECL deviates 0.000	Reference 0.000
3.635	4064	0.028	1.111	11.418	10:0 3OH	2.02	ECL deviates -0.005	
4.115	17064	0.029	1.082	12.000	12:0	8.63	ECL deviates 0.000	Reference 0.000
4.757	568	0.032	1.055	12.611	13:0 ISO	0.27	ECL deviates -0.001	Reference -0.001
5.739	7256	0.034	1.021	13.451	12:0 3OH	3.31	ECL deviates -0.004	
6.436	1720	0.036	1.003	14.000	14:0	0.77	ECL deviates 0.000	Reference 0.000
9.186	59896	0.041	0.951	15.816	Sum In Feature 4 . .	25.46	ECL deviates -0.001	16:1 w7c/15 iso 2OH
9.480	50040	0.041	0.947	16.001	16:0	21.17	ECL deviates 0.001	Reference 0.000
10.521	2920	0.043	0.933	16.629	17:0 ISO	1.22	ECL deviates 0.000	Reference -0.001
10.960	5480	0.045	0.928	16.886	17:0 CYCLO	2.27	ECL deviates -0.002	Reference -0.004
12.558	75936	0.045	0.910	17.823	Sum In Feature 7 . .	30.87	ECL deviates 0.001	18:1 w7c/w9t/w12t
12.864	1592	0.045	0.907	18.002	18:0	0.65	ECL deviates 0.002	Reference -0.001
14.402	7648	0.047	0.891	19.899	19:0 CYCLO w8c . . .	3.13	ECL deviates -0.001	Reference -0.004
15.596	800	0.056	. . .	21.360	. . . . .		> max rt	
*******	59896	. . . . .	. . .		SUMMED FEATURE 4 . .	25.46	16:1 w7c/15 iso 2OH	15:0 ISO 3OH/16:1w7c
*******	75936	. . . . .	. . .		SUMMED FEATURE 7 . .	30.87	18:1 w7c/w9t/w12t	18:1 w9c/w11t w12
*******	. . . . .	. . . . .	. . .		. . . . .		18:1 w12t/w9t/w7c	

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
158519424	235632	235632	100.00	223849	9	0.002	0.002

TSBA [Rev 3.90] Pseudomonas . . . . . 0.456 (includes P. perfectomarina)
P. stutzeri . . . . . 0.456 (includes P. perfectomarina
CLIN [Rev 3.90] Pseudomonas 0.867
P. stutzeri 0.867

Comparison with TSBA [Rev 3.90]: Pseudomonas-stutzeri (includes P. perfectomarina) Distance: 4.449

```
                 0   5  10  15  20  25  30  35  40  45  50  55  60  65  70  75  80  85  90  95 100
                 .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
10:0. . . . . *--  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
10:0 3OH. . . . .x*-.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
12:0. . . . . .  .-*x.  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
13:0 ISO. . . . *--  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
12:0 3OH. . . . .-*-.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
14:0. . . . . -*  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
16:0. . . . . .   .   .   .---+-y--  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
17:0 ISO. . . . +x  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
17:0 CYCLO. . . +-x .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
18:0. . . . . +x  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
19:0 CYCLO w8c. . -+-x  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
SUMMED FEATURE 4. . .   .   .   .  -----y-+------  .   .   .   .   .   .   .   .   .   .   .   .   .   .
SUMMED FEATURE 7. . .   .   .   .   .   .x----------  .   .   .   .   .   .   .   .   .   .   .   .   .
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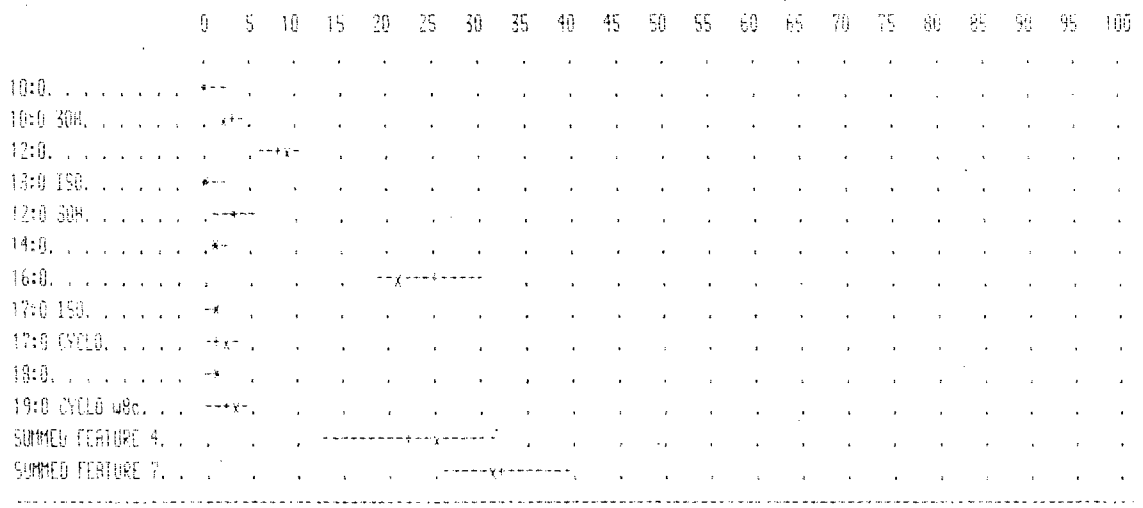
Comparison with CLIN [Rev 3.90]: Pseudomonas-stutzeri Distance: 2.018



ID: 1 CALIBRATION STANDARD Date of run: 27-NOV-96 17:08:53
Bottle: 1 CALIBRATION [AEROBIC]

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.385	173512448	0.021	. . .	7.068	SOLVENT PEAK		< min rt	
2.235	27392	0.022	1.266	9.000	9:0	5.09		
2.675	57984	0.023	1.194	10.000	10:0	10.17	Peak match 0.0000	
3.237	568	0.025	. . .	10.914	. . . . .	. . .		
3.290	30424	0.026	1.134	11.000	11:0	5.06	Peak match -0.0051	
3.415	12656	0.026	1.125	11.152	10:0 2OH	2.09	Peak match 0.0088	
3.635	6128	0.027	1.111	11.418	10:0 3OH	1.00	Peak match 0.0013	
4.115	64112	0.028	1.082	12.000	12:0	10.19	Peak match -0.0010	
5.166	33544	0.032	1.039	13.000	13:0	5.12	Peak match 0.0000	
6.436	68864	0.035	1.003	14.000	14:0	10.14	Peak match 0.0002	
7.891	35632	0.039	0.972	15.000	15:0	5.09	Peak match -0.0056	
8.205	15168	0.040	0.967	15.198	14:0 2OH	2.15	Peak match 0.0095	
8.659	7200	0.042	0.959	15.483	Sum In Feature 3 . .	1.01	Peak match 0.0024	14:0 3OH/16:1 I50 I
9.480	73372	0.041	0.947	16.000	16:0	10.20	Peak match -0.0025	
11.151	37136	0.043	0.926	17.000	17:0	5.06	Peak match -0.0047	
11.545	16008	0.045	0.921	17.229	16:0 2OH	2.17	Peak match 0.0065	
12.865	76816	0.046	0.909	18.000	18:0	10.23	Peak match -0.0015	
14.581	38304	0.045	0.890	19.000	19:0	5.08	Peak match -0.0006	
16.278	79320	0.047	0.573	20.000	20:0	10.17		
18.025	6416	0.054	. . .	21.029	. . . . .	. . .		
*******	7200	. . . . .	. . .	. . .	SUMMED FEATURE 3 . .	1.01	12:0 ALDE ?	unknown 10.328
*******	. . . . .	. . . . .	. . .	. . .	. . . . .	. . .	16:1 I50 I/14:0 3OH	14:0 3OH/16:1 I50 I

Solvent Ar	Total Area	Named Area	% Named	Total Hmnt	Mbr Ret	ECL Deviation	Ref ECL Shift
173512448	681168	680680	99.92	681014	0	. . . . .	. . . . .

0000 PEAK MATCHING: PEAK POSITION MATCHING ERROR (RMS) IS 0.0045.

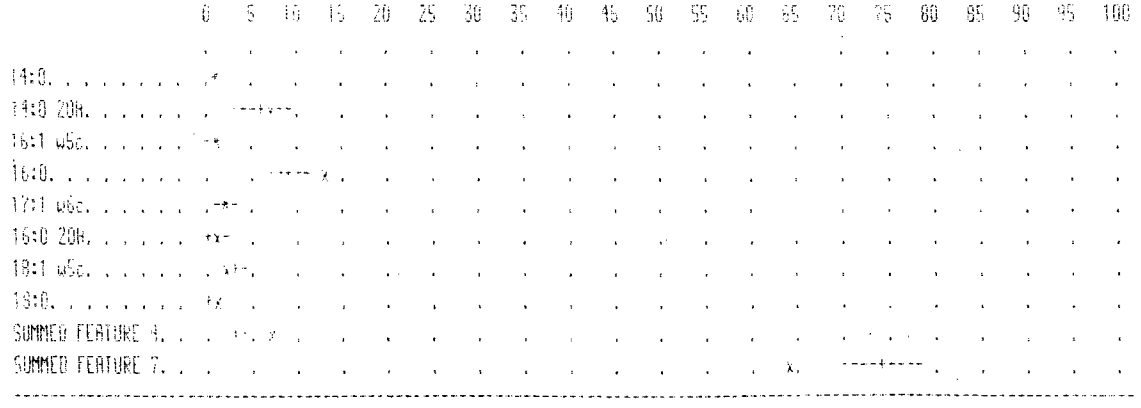
ID: 22 1102-4 KMI Date of run: 27-NOV-96 16:38:33
Bottle: 23 SAMPLE (AEROBIC)

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.384	157546624	0.024	. . .	7.067	SOLVENT PEAK		< min rt	
1.484	7176	0.020	. . .	7.244	. . . . .		< min rt	
1.877	448	0.022	. . .	8.187	. . . . .		< min rt	
6.435	800	0.035	1.005	14.000	14:0	0.57	ECL deviates -0.000	Reference -0.001
8.206	10880	0.041	0.967	15.200	14:0 2OH	7.50	ECL deviates -0.005	
9.185	10304	0.042	0.951	15.815	Sum In Feature 4 . .	6.98	ECL deviates -0.002	16:1 w7c/15 iso 2OH
9.330	1920	0.040	0.948	15.907	16:1 w5c	1.30	ECL deviates -0.001	
9.479	19360	0.041	0.946	16.000	16:0	13.06	ECL deviates 0.000	Reference -0.001
10.917	3584	0.080	0.927	16.660	17:1 w6c	2.37	ECL deviates -0.002	
11.538	1160	0.065	0.919	17.226	16:0 2OH	0.76	ECL deviates -0.009	
12.556	99440	0.045	0.906	17.821	Sum In Feature 7 . .	64.37	ECL deviates -0.001	19:1 w7c/w9t/w12t
12.721	3568	0.064	0.904	17.917	18:1 w5c	2.31	ECL deviates -0.002	
12.863	1232	0.055	0.902	18.000	18:0	0.79	ECL deviates -0.000	Reference -0.001
13.003	3072	0.045	. . .	18.082	. . . . .	. . .		
16.070	768	0.052	. . .	19.678	. . . . .	. . .		
19.594	1952	0.070	. . .	21.953	. . . . .	. . .	> max rt	
*******	10304	. . . . .	. . .		SUMMED FEATURE 4 . .	6.98	16:1 w7c/15 iso 2OH	15:0 ISO 2OH/16:1w7c
*******	99440	. . . . .	. . .		SUMMED FEATURE 7 . .	64.37	18:1 w7c/w9t/w12t	18:1 w6c/w12t/w9c
*******	. . . . .	. . .	. . .	. . . . .	. . . . .	. . .	19:1 w12t/w9t/w7c	

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
157546624	156888	152248	97.04	140291	5	0.003	0.001

ISBR (Rev 3.90)	Sphingomonas	0.385	(Pseudomonas paucimobilis)
	S. paucimobilis	0.385	(Pseudomonas paucimobilis)
	S. capsulata	0.290	(Flavobacterium capsulatum)
	Flavobacterium	0.226	(questionably in this genus)
	F. resinovorum	0.226	(questionably in this genus)
CLIN (Rev 3.90)	Sphingomonas	0.786	(Pseudomonas paucimobilis)
	S. paucimobilis	0.786	(Pseudomonas paucimobilis)

Comparison with ISBR (Rev 3.90): Sphingomonas-paucimobilis(Pseudomonas paucimobilis) Distance: 4.909



Comparison with CLIN [Rev 3.90]: Sphingomonas-paucimobilis(Pseudomonas paucimobilis) Distance: 2.614

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                  0   5   10  15  20  25  30  35  40  45  50  55  60  65  70  75  80  85  90  95  100
                  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
14:0. . . . . .  -+-  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
15:0. . . . . .  *--  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
14:0 2OH. . . .  -------*------  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
16:1 w5c. . . .  .*-  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
16:0. . . . . .  .   ------+-x---  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
17:1 w8c. . . .  --x---  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
16:0 2OH. . . .  +x-  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
18:1 w5c. . . .  --*--.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
18:0. . . . . .  -*-  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
SUMMED FEATURE 4. .  ---+---x  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
SUMMED FEATURE 7. .  .   .   .   .   .   .   .   .   .   .   .   .   x------+------  .   .   .   .
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ID: 21 4402-5 AMI Date of run: 27-NOV-96 16:08:17
Bottle: 22 SAMPLE [AEROBIC]

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.384	157886080	0.029	. . .	7.064	SOLVENT PEAK		< min rt	
1.484	7120	0.020	. . .	7.292	. . . . .		< min rt	
1.876	488	0.022	. . .	8.183	. . . . .		< min rt	
5.958	1872	0.040	1.017	13.618	14:0 ISO	0.75	ECL deviates -0.000	Reference -0.001
7.340	12760	0.037	0.983	14.621	15:0 ISO	4.94	ECL deviates 0.000	Reference 0.001
7.471	129400	0.037	0.981	14.711	15:0 ANTEISO	49.95	ECL deviates 0.000	Reference 0.001
8.885	46688	0.040	0.955	15.626	16:0 ISO	17.56	ECL deviates -0.000	Reference -0.000
9.479	3032	0.042	0.946	15.999	16:0	1.13	ECL deviates -0.001	Reference -0.001
10.561	4320	0.043	0.932	16.629	17:0 ISO	1.58	ECL deviates 0.000	Reference -0.000
10.686	65800	0.043	0.930	16.722	17:0 ANTEISO	24.09	ECL deviates 0.000	Reference -0.001

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
157886080	263880	263880	100.00	254035	7	0.000	0.001

TSBA [Rev 3.90] Aureobacterium . . . . . 0.840 (Corynebacterium barkeri)
A. barkeri . . . . . 0.840 (Corynebacterium barkeri)
Micrococcus 0.629
M. kristinae 0.629
M. roseus* 0.577
M. varians* 0.000
CLIN [Rev 3.90] Legionella 0.561
L. jordanis 0.561

Comparison with TSBA [Rev 3.90]: Aureobacterium barkeri (Corynebacterium barkeri) Distance: 2.041

	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
14:0 ISO.	-*-	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15:1 ANTEISO A. . .	*-	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15:0 ISO.	-+x	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15:0 ANTEISO. . . .	.	.	.	.	.	.	.	.	----------+----y--												
16:0 ISO.	.	.	.	.--*--	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
16:0.	.x-	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
17:0 ISO.	.-*-	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
17:0 ANTEISO. . . .	.	.	.	.	.----------			.	.	.	.	.	.	.	.	.	.	.	.	.	.

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MIDI 805 SYSTEM                                                                          26-NOV-96 15:28:57
Continue: 21        4402-C BMF                        [AEROBE]  27-NOV-96 16:08:17
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Comparison with CLIN [Rev 3.90]: Legionella-jordanis                                     Distance: 4.053

                          0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75   80   85   90   95  100
                          .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
14:0 ISO. . . . . . .    .x+   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
15:0 ISO. . . . . . .    .-+- x     .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
15:0 ANTEISO. . . . .    .    .    .    .    .    .    .    .    . ----+---x-  .    .    .    .    .    .    .    .    .    .
15:1 w6c. . . . . . .    x+   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
16:1 ISO H. . . . . .    x+   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
16:0 ISO. . . . . . .    .    .    .   ----+-----   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
16:0. . . . . . . . .    -+--  .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
ANTEISO 17:1 w9c. . .    x+-  .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
17:0 ISO. . . . . . .    .-+- .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
17:0 ANTEISO. . . . .    .    .    .  ------+-----x-  .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
17:0 CYCLO. . . . . .    x-+- .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
18:0. . . . . . . . .    x+   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
SUMMED FEATURE 4. . .    x -----   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
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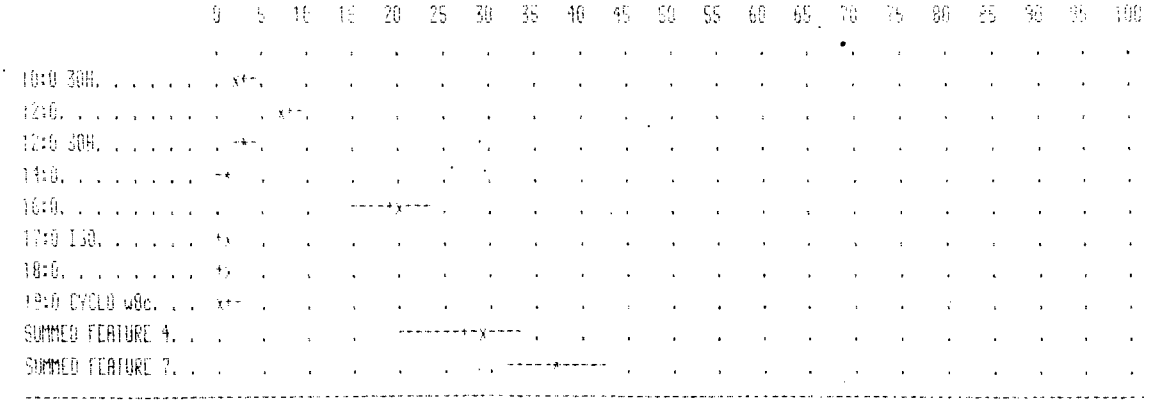
ID: 20 4402-6 RMI Date of run: 27-NOV-96 15:38:02
Bottle: 21 SAMPLE [AEROBE]

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.384	158705152	0.024	. . .	7.066	SOLVENT PEAK		< min rt	
1.484	7240	0.020	. . .	7.293	. . . . .		< min rt	
1.877	416	0.021	. . .	8.186	. . . . .		< min rt	
2.206	528	0.026	. . .	8.954	. . . . .		< min rt	
3.635	2160	0.028	1.113	11.418	10:0 3OH	2.15	ECL deviates -0.005	
4.115	7392	0.029	1.084	12.000	12:0	7.17	ECL deviates 0.000	Reference 0.000
5.738	2624	0.035	1.023	13.451	12:0 3OH	2.58	ECL deviates -0.004	
6.435	976	0.038	1.004	14.000	14:0	0.86	ECL deviates -0.000	Reference -0.001
9.185	33712	0.041	0.951	15.815	Sum In Feature 4 . .	28.67	ECL deviates -0.002	16:1 w7c/15 iso 2OH
9.429	23944	0.041	0.946	16.000	16:0	20.27	ECL deviates 0.000	Reference -0.001
10.530	880	0.044	0.832	16.629	17:0 ISO	0.73	ECL deviates -0.000	Reference -0.001
12.557	45144	0.045	0.908	17.821	Sum In Feature 7 . .	36.66	ECL deviates -0.001	18:1 w7c/w9t/w12t
12.864	1080	0.047	0.905	18.000	18:0	0.87	ECL deviates 0.000	Reference -0.001
*******	33712	. . . . .	. . .		SUMMED FEATURE 4 . .	28.67	16:1 w7c/15 iso 2OH	15:0 ISO 2OH/16:1w7c
*******	45144	. . . . .	. . .		SUMMED FEATURE 7 . .	36.66	18:1 w7c/w9t/w12t	18:1 w9c/w12t/w9c
*******	. . . . .	. . . . .	. . .		. . . . .		18:1 w12t/w9t/w9c	

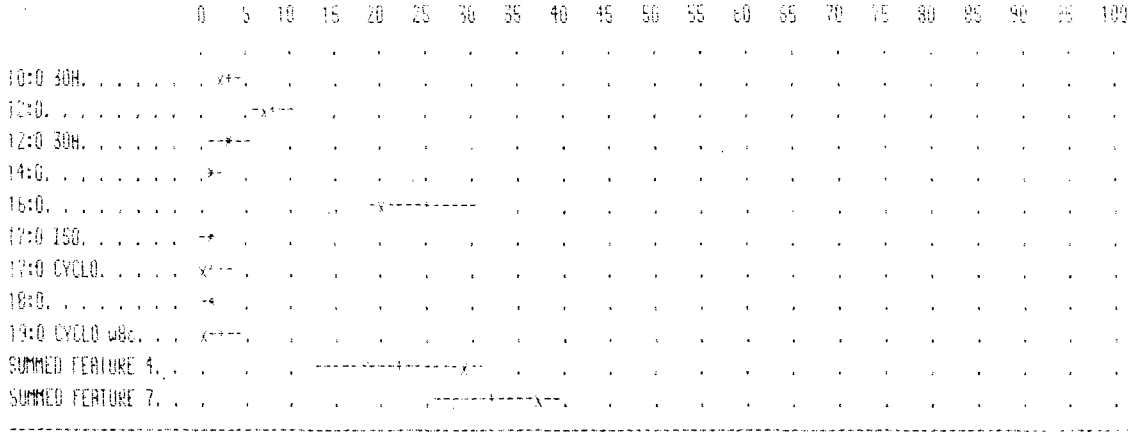
Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
158705152	118114	118112	100.00	111779	5	0.002	0.001

[SBA (Rev 3.90)]	Pseudomonas	0.87% (includes P. perfectomarina)
	P. stutzeri	0.87% (includes P. perfectomarina)
	P. mendocina	0.586
	P. pseudoalcaligenes	0.455
CLIN (Rev 3.90)	Pseudomonas	0.783
	P. stutzeri	0.783
	Neisseria	0.484
	N. meningitidis	0.484
	N. m. GC subgroup A	0.484

Comparison with [SBA (Rev 3.90)]: Pseudomonas-stutzeri(includes P. perfectomarina) Distance: 1.868



Comparison with CLIN (Rev 3.90): Pseudomonas-stutzeri Distance: 2.638



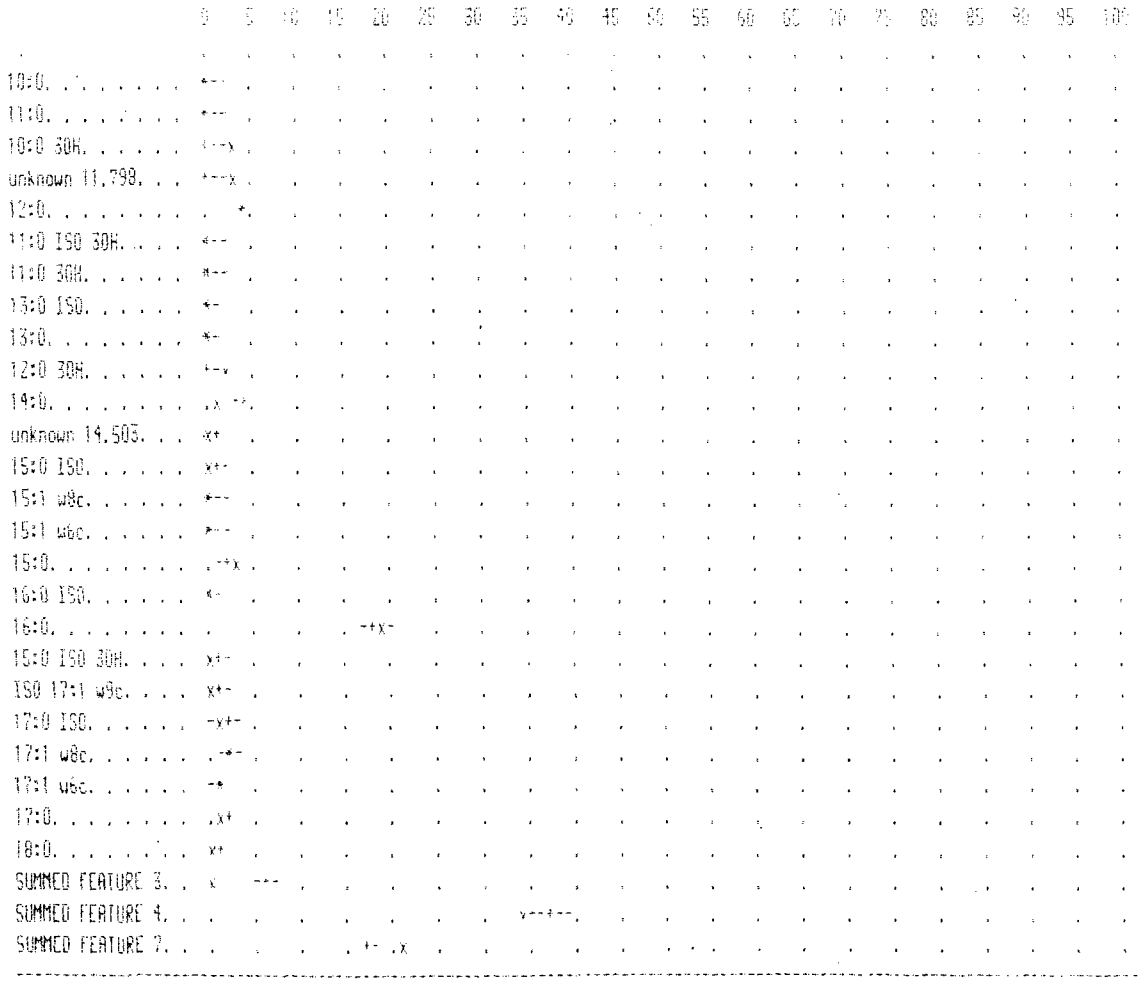
ID: 26 4402-8 RMT Date of run: 27-NOV-96 10:10:28
Bottle: 27 SAMPLE [AEROBE]

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.384	156126496	0.024	. . .	7.065	SOLVENT PEAK		< min rt	
1.484	7488	0.020	. . .	7.293	. . . . .		< min rt	
1.710	672	0.025	. . .	7.806	. . . . .		< min rt	
1.827	496	0.022	. . .	8.186	. . . . .		< min rt	
2.206	1168	0.025	. . .	8.934	. . . . .		< min rt	
2.675	1192	0.026	1.194	10.000	10:0	0.41	ECL deviates -0.000	Reference 0.000
3.290	1184	0.027	1.134	11.000	11:0	0.39	ECL deviates 0.000	Reference 0.000
3.635	8252	0.027	1.111	11.416	10:0 3OH	2.82	ECL deviates -0.005	
3.946	10056	0.028	1.052	11.795	unknown 11.798 . . .	3.18	ECL deviates -0.003	
4.115	13400	0.030	1.082	12.000	12:0	4.29	ECL deviates 0.000	Reference 0.000
4.205	728	0.031	1.078	12.086	11:0 ISO 3OH	0.23	ECL deviates -0.004	
4.571	744	0.032	1.062	12.434	11:0 3OH	0.23	ECL deviates -0.007	
5.730	8272	0.034	1.021	13.451	12:0 3OH	2.45	ECL deviates -0.004	
6.197	992	0.038	. . .	13.812	. . . . .			
6.425	3568	0.036	1.003	14.000	14:0	1.04	ECL deviates -0.000	Reference -0.001
7.359	652	0.039	0.983	14.621	15:0 ISO	0.18	ECL deviates 0.000	Reference -0.000
7.585	1448	0.040	0.978	14.790	15:1 w8c	0.41	ECL deviates -0.002	
7.677	1496	0.039	0.972	14.854	15:1 w6c	0.42	ECL deviates -0.002	
7.890	11720	0.039	0.972	15.000	15:0	3.30	ECL deviates -0.000	Reference -0.001
8.085	1392	0.042	0.956	15.626	16:0 ISO	0.37	ECL deviates 0.000	Reference -0.000
9.187	124672	0.042	0.951	16.816	Sum In Feature 4 . .	34.37	ECL deviates -0.001	16:1 w7c/15 iso 2OH
9.480	70576	0.042	0.947	16.001	16:0	19.31	ECL deviates 0.001	Reference 0.000
10.530	2744	0.044	0.933	16.628	17:0 ISO	0.74	ECL deviates -0.001	Reference -0.002
10.800	7520	0.044	0.930	16.789	17:1 w8c	2.03	ECL deviates -0.003	
10.920	4176	0.067	0.928	16.861	17:1 w6c	1.12	ECL deviates -0.001	
11.152	5304	0.044	0.926	17.000	17:0	1.42	ECL deviates -0.000	Reference -0.001
12.357	79576	0.046	0.910	17.821	Sum In Feature 7 . .	20.98	ECL deviates -0.001	18:1 w7c/w9t/w12t
12.864	1496	0.045	0.907	18.000	18:0	0.39	ECL deviates 0.000	Reference -0.001
*******	124672	. . .	. . .	. . .	SUMMED FEATURE 4 . .	34.37	16:1 w7c/15 iso 2OH	15:0 ISO 2OH/16:1w7c
*******	79520	. . .	. . .	. . .	SUMMED FEATURE 7 . .	20.98	18:1 w7c/w9t/w12t	18:1 w9c/w12t/w7c
*******	. . . . .	. . .	. . .	. . .	. . . . .	. . .	18:1 w12t/w9t/w7c	

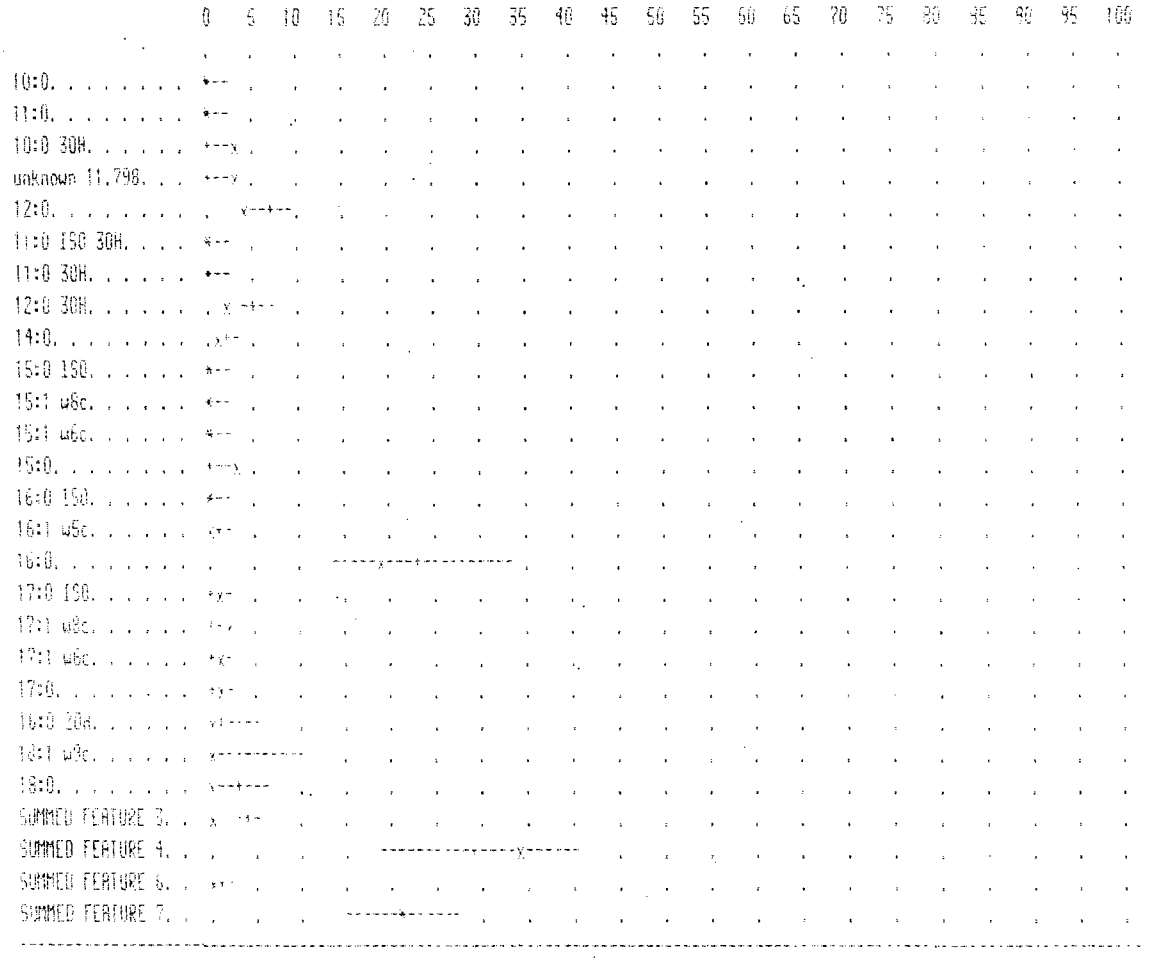
Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
156126496	361400	360408	99.73	345141	11	0.002	0.001

	ISBR (Rev 3.90)	Aeromonas 0.162
		A. veronii 0.162
		Vibrio 0.142
		V. proteolyticus 0.142
		V. furnissii 0.116
		V. fluvialis 0.090
		Pseudomonas 0.112
		P. syringae 0.112
		P. s. pisi 0.112
		P. s. tagetes 0.077
		P. s. syringae 0.073
		P. rubrisubalbicans 0.098
		P. viridiflava 0.095
	CLIN (Rev 3.90)	Neisseria 0.138
		N. mucosa* 0.139
		N. meningitidis 0.131
		N. m. GC subgroup A* 0.131
		Pseudomonas 0.129
		P. stutzeri 0.129
		Vibrio 0.107
		V. alginolyticus 0.107

Comparison with ISBR (Rev 3.90): Aeromonas-veronii Distance: 6.777



Comparison with CLIN [Rev 3.90]: Neisseria-mucosa* Distance: 7.498



ID: 20 1402-10 RMI Date of run: 27-NOV-96 20:16:08
Bottle: 29 SAMPLE [AEROBE]

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.384	157378816	0.024	. . .	7.070	SOLVENT PEAK	* min rt		
1.460	3672	0.016	. . .	7.242	. . . . .	* min rt		
4.759	776	0.033	1.055	12.612	13:0 ISO	2.39	ECL deviates 0.000	Reference -0.000
4.851	968	0.032	1.051	12.701	13:0 ANTEISO	2.97	ECL deviates -0.000	Reference -0.001
5.950	5496	0.034	1.016	13.617	14:0 ISO	16.30	ECL deviates -0.001	Reference -0.001
6.438	3536	0.036	1.003	14.001	14:0	10.35	ECL deviates 0.001	Reference 0.001
7.341	4216	0.037	0.983	14.621	15:0 ISO	12.10	ECL deviates 0.000	Reference 0.001
7.471	12360	0.038	0.981	14.711	15:0 ANTEISO	35.38	ECL deviates -0.000	Reference 0.000
7.893	1249	0.039	0.972	15.000	15:0	3.54	ECL deviates 0.000	Reference 0.001
8.867	1888	0.041	0.956	15.625	16:0 ISO	5.27	ECL deviates -0.001	Reference 0.001
9.483	4232	0.042	0.947	16.000	16:0	11.70	ECL deviates 0.000	Reference 0.002

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
157378816	34720	34720	100.00	34253	9	0.001	0.001

TOTAL AREA LESS THAN 50000.

ISSR [Rev 3.90] Bacillus 0.8e*
B. circulans* 0.6e*
CLIN [Rev 3.90] * NO MATCH *

Comparison with ISSR [Rev 3.90]: Bacillus-circulans* Distance: 8.400

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                  0   5  10  15  20  25  30  35  40  45  50  55  60  65  70  75  80  85  90  95  100
                  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
13:0 ISO. . . . . --x . . . . . .
13:0 ANTEISO. . . +---x . . . . . .
14:0 ISO. . . . . ----------+----x--------. . . . . .
14:0. . . . . .  ------x-+-------. . . . . .
15:0 ISO. . . . . .  . . x . ------+-------  . . . . . .
15:0 ANTEISO. . . .  . . ----------------------x--------  . . . . . .
15:0. . . . . +-- x. . . . . .
16:1 w7c alcohol. . x+- . . . . . .
16:0 ISO. . . . . -----x----+-------------  . . . . . .
16:1 w7c . . . . . x-+---  . . . . . .
16:0. . . . . ---------+--x------ . . . . . .
17:0 ISO. . . . . x-+ . . . . . .
17:0 ANTEISO. . . x------  . . . . . .
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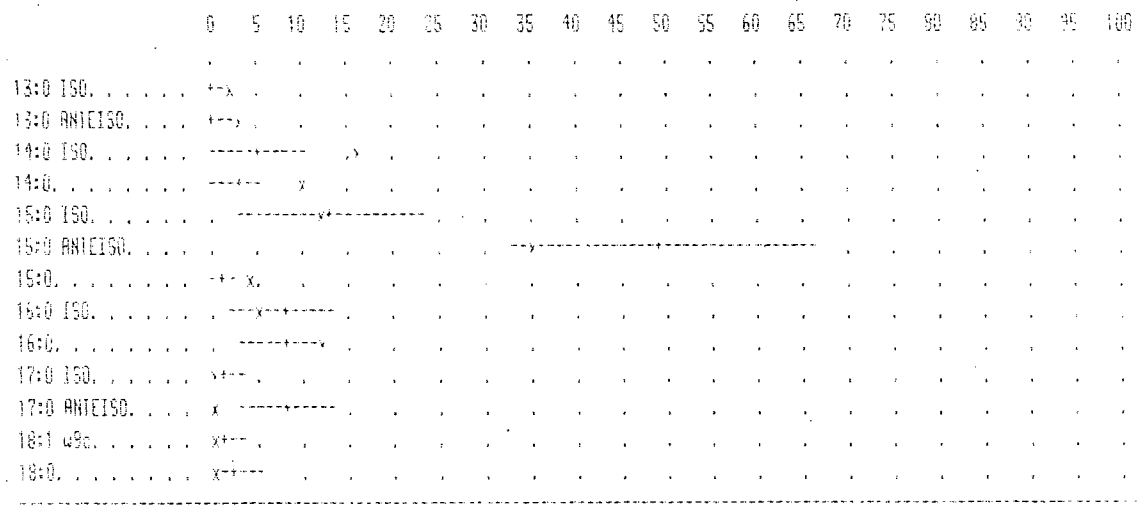
Comparison with CLIN (Rev 3.90): Bacillus-circulans Distance: 8.30



ID: 29 4402-11 RMI Date of run: 27-NOV-96 20:46:21
Bottle: 30 SAMPLE [AEROBE]

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.384	156561152	0.024	. . .	7.060	SOLVENT PEAK		< min rt	
1.465	7416	0.022	. . .	7.285	. . . . .		< min rt	
1.877	408	0.022	. . .	8.101	. . . . .		< min rt	
5.954	929	0.035	1.016	13.616	14:0 ISO	1.23	ECL deviates 0.000	Reference 0.002
7.344	22512	0.037	0.983	14.621	15:0 ISO	29.18	ECL deviates -0.000	Reference 0.003
7.475	29496	0.039	0.981	14.711	15:0 ANTEISO	38.13	ECL deviates -0.000	Reference 0.005
8.890	2584	0.041	0.956	15.636	16:0 ISO	3.26	ECL deviates -0.000	Reference 0.005
9.095	1048	0.046	0.953	15.755	16:1 w11c	1.32	ECL deviates -0.002	
9.485	2616	0.043	0.947	16.000	16:0	3.27	ECL deviates 0.000	Reference 0.005
10.127	1624	0.044	0.958	16.385	ISO 17:1 w10c . . .	2.01	ECL deviates -0.002	
10.276	696	0.044	0.937	16.474	Sum In Feature 5 . .	0.86	ECL deviates -0.002	17:1 ISO I/ANTEI B
10.536	8280	0.042	0.936	16.629	17:0 ISO	10.19	ECL deviates 0.000	Reference 0.002
10.690	8592	0.044	0.937	16.722	17:0 ANTEISO	10.55	ECL deviates -0.000	Reference 0.001
*******	696	. . . . .		. . .	SUMMED FEATURE 5 . .	0.86	17:1 ISO I/ANTEI B	17:1 ANTEISO B/I 1

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
156561152	78569	78569	100.00	75940	2	0.001	0.003

TSBA [Rev 3.90] Bacillus 0.865
B. subtilis* 0.665
B. amyloliquefaciens . . . . . 0.795 (Bacillus subtilis group)
B. licheniformis . . . . . 0.593 (Bacillus subtilis group)
Paenibacillus . . . . . 0.437 (Bacillus)
P. macerans . . . . . 0.437 (Bacillus)
P. m. GC subgroup A . . . . . 0.437 (Bacillus)
CLIN [Rev 3.90] Bacillus 0.706
B. subtilis 0.706
Staphylococcus 0.382
S. lentus* 0.382
S. hyicus 0.247
S. h. GC subgroup A* 0.247

Comparison with TSBA [Rev 3.90]: Bacillus-subtilis* Distance: 1.916

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

14:0 ISO. . . . . *
15:0 ISO. x
15:0 ANTEISO. x
16:0 ISO. . . . . *
16:1 w11c . . . . . x*
16:0. . . . . x*
ISO 17:1 w10c . . . . *
17:0 ISO. x
17:0 ANTEISO. x
SUMMED FEATURE 5. . *

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MIDI DOS SYSTEM                                                                                       26-NOV-96 15:28:57
Continue: 29        4402-11 RM1                       [AEROBE]   27-NOV-96 20:46:21
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Comparison with CLIN [Rev 3.90]: Bacillus-subtilis                                               Distance:  3.148

                      0    5    10   15   20   25   30   35   40   45   50   55   60   65   70   75   80   85   90   95   100
                      .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
14:0 ISO. . . . . . . ,*   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
15:0 ISO. . . . . . . .    .    .    ---------+----y---  .    .    .    .    .    .    .    .    .    .    .    .    .    .
15:0 ANTEISO. . . . . .    .    .    .    .    .    ------+-x----  .    .    .    .    .    .    .    .    .    .    .    .
16:0 ISO. . . . . . . . -* .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
16:1 w11c . . . . . . -*   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
16:0. . . . . . . . . .--x+--   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
ISO 17:1 w10c . . .   --*- .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
17:0 ISO. . . . . . . .    .  --x---+-------   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
17:0 ANTEISO. . . . . .    ,-----*-----   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
18:1 w9c. . . . . . . x+----.   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
18:0. . . . . . . . . x+-- .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
SUMMED FEATURE 5. .   +x   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
SUMMED FEATURE 6. .   x-+------ .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
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Escape code : 3394

MIDI DUS SYSTEM 27-NOV-96 09:11:57

ID: 1 CALIBRATION STANDARD Date of run: 27-NOV-96 22:09:01

Bottle: 1 CALIBRATION (HEROBE)

Rt	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.384	172313600	0.021	. . .	7.073	SOLVENT PEAK		? min rt	
2.234	29096	0.022	1.266	9.000	9:0	5.09		
2.675	61392	0.023	1.197	10.000	10:0	10.16	Peak match	0.0013
3.236	536	0.024	. . .	10.912	. . . . .	. . .		
3.290	32128	0.026	1.137	11.000	11:0	5.05	Peak match	-0.0025
3.416	13360	0.026	1.128	11.153	10:0 2OH	2.00	Peak match	0.0059
3.635	6472	0.028	1.114	11.418	10:0 3OH	1.00	Peak match	0.0022
4.115	67792	0.028	1.085	12.000	12:0	10.18	Peak match	0.0007
4.213	1040	0.031	. . .	12.093	. . . . .	. . .		
4.713	712	0.034	. . .	12.568	. . . . .	. . .		
5.168	35608	0.032	1.041	13.000	13:0	5.13	Peak match	0.0031
6.440	72992	0.035	1.004	14.000	14:0	10.13	Peak match	0.0019
7.895	37832	0.039	0.972	15.000	15:0	5.09	Peak match	-0.0036
8.210	16176	0.040	0.966	15.198	14:0 2OH	2.16	Peak match	0.0082
8.663	7736	0.041	0.959	15.482	Sum In Feature 3 . .	1.03	Peak match	0.0033 14:0 3OH/16:1 ISO I
9.967	77960	0.041	0.946	16.000	16:0	10.20	Peak match	-0.0020
11.161	33472	0.043	0.933	17.000	17:0	5.04	Peak match	-0.0049
11.551	17104	0.045	0.919	17.228	16:0 2OH	2.17	Peak match	0.0075
12.975	81768	0.045	0.904	18.000	18:0	10.23	Peak match	-0.0021
14.590	41288	0.045	0.888	19.000	19:0	5.07	Peak match	0.0013
16.290	84256	0.047	0.873	20.000	20:0	10.19		
19.034	16096	0.050	. . .	21.026	. . . . .	. . .		
*******	7736	. . . . .		. . .	SUMMED FEATURE 3 . .	1.03	12:0 ALDE ?	unknown 10.928
*******	. . . . .			. . .	. . . . .	. . .	16:1 ISO I/14:0 3OH	14:0 3OH/16:1 ISO I

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
172313600	724720	722432	99.68	722895	0	. . . . .	. . . . .

GOOD PEAK MATCHING: PEAK POSITION MATCHING ERROR (RMS) IS 0.0040.

ID: 31 9402-13 RMI Date of run: 27-NOV-96 21:16:31
Bottle: 32 SAMPLE (AEROBIC)

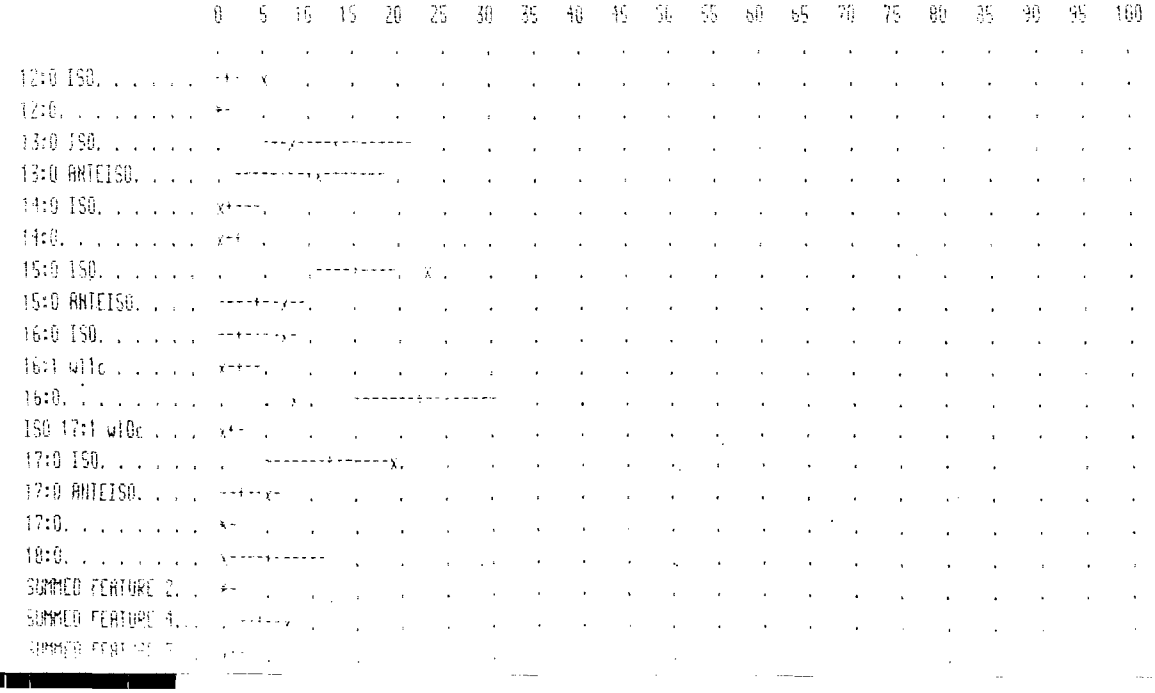
PT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.383	158733696	0.024	. . .	7.064	SOLVENT PEAK		< min rt	
1.483	7160	0.020	. . .	7.291	. . . . .		< min rt	
1.676	392	0.021	. . .	8.184	. . . . .		< min rt	
3.792	760	0.029	1.101	11.600	12:0 ISO	4.52	ECL deviates 0.000	Reference 0.000
4.760	1472	0.033	1.055	12.612	13:0 ISO	8.38	ECL deviates 0.000	Reference 0.002
4.853	1960	0.032	1.051	12.700	13:0 ANTEISO	11.17	ECL deviates -0.001	Reference 0.001
7.345	4424	0.038	0.983	14.622	15:0 ISO	23.48	ECL deviates 0.001	Reference 0.004
7.471	1296	0.040	0.981	14.710	15:0 ANTEISO	6.86	ECL deviates -0.001	Reference 0.002
8.890	1376	0.044	0.956	15.626	16:0 ISO	7.10	ECL deviates 0.000	Reference 0.003
9.254	1344	0.047	0.951	15.855	Sum In Feature 4 . .	6.90	ECL deviates 0.008	15:0 ISO 20H/16:1w7c
9.485	1480	0.043	0.947	16.000	16:0	7.57	ECL deviates 0.000	Reference 0.003
10.537	3704	0.043	0.933	16.629	17:0 ISO	18.67	ECL deviates 0.000	Reference 0.002
10.692	1064	0.044	0.931	16.722	17:0 ANTEISO	5.35	ECL deviates -0.000	Reference 0.000
*******	1344	. . . . .		. . .	SUMMED FEATURE 4 . .	6.90	16:1 w7c/15 iso 20H	15:0 ISO 20H/16:1w7c

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
158733696	19898	19866	100.00	19520	9	0.005	0.002

TOTAL AREA LESS THAN 50000.

ISBA (Rev 3.90)	Brevibacterium	0.286 (not the type strain)
	B. acetylicum	0.286 (not the type strain)
	B. a. GC subgroup B	0.286 (not the type strain)
	Bacillus	0.231 (Bacillus cereus group)
	B. mycoides	0.231 (Bacillus cereus group)
	B. m. GC subgroup M	0.231 (Bacillus cereus group)
CLIN (Rev 3.90)	* NO MATCH *	

Comparison with ISBA (Rev 3.90): Brevibacterium-acetylicum-GC subgroup A(not the type strain) Distance: 5.602



ID: 32 4402-14 RMI Date of run: 27-NOV-96 22:39:14
Bottle: 33 SAMPLE (AEROBE)

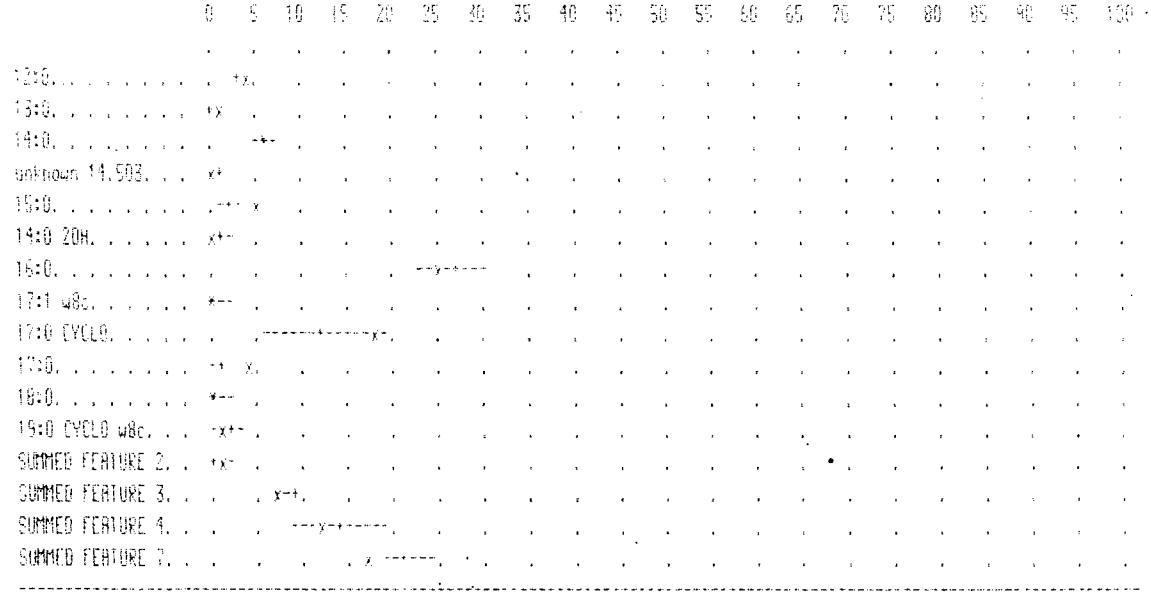
Rf	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.383	154899840	0.024	. . .	7.063	SOLVENT PEAK		< min rt	
1.483	6624	0.020	. . .	7.290	. . . . .		< min rt	
1.877	424	0.021	. . .	8.184	. . . . .		< min rt	
3.239	3712	0.027	1.142	10.914	Sum In Feature 3 . .	1.73	ECL deviates -0.000	12:0 ALDE ?
4.118	8440	0.029	1.085	12.000	12:0	3.74	ECL deviates 0.000	Reference 0.003
5.171	2304	0.034	1.041	13.000	13:0	0.98	ECL deviates 0.000	Reference 0.002
6.442	15456	0.039	1.004	14.000	14:0	6.33	ECL deviates -0.000	Reference 0.001
7.122	1832	0.040	0.988	14.467	Sum In Feature 2 . .	0.74	ECL deviates -0.003	13:0 3OH/15:1 i I/H
7.897	13672	0.038	0.972	15.000	15:0	5.42	ECL deviates 0.000	Reference 0.001
8.666	12760	0.041	0.959	15.464	Sum In Feature 3 . .	4.99	ECL deviates 0.002	16:1 ISO I/14:0 3OH
9.193	29776	0.042	0.950	15.815	Sum In Feature 4 . .	11.54	ECL deviates -0.002	16:1 w7c/15 iso 2OH
9.489	64112	0.041	0.946	16.001	16:0	24.73	ECL deviates 0.001	Reference 0.001
10.810	1040	0.048	0.926	16.791	17:1 w8c	0.39	ECL deviates -0.001	
10.904	46080	0.045	0.926	16.886	17:0 CYCLO	17.60	ECL deviates -0.002	Reference -0.003
11.161	9520	0.048	0.923	17.001	17:0	3.59	ECL deviates 0.001	Reference 0.000
12.567	46184	0.045	0.908	17.822	Sum In Feature 7 . .	17.10	ECL deviates -0.000	16:1 w7c/w9t/w12t
12.654	1392	0.046	. . .	17.875	. . . . .			
12.874	848	0.044	0.904	18.001	18:0	0.31	ECL deviates 0.001	Reference -0.001
14.413	2224	0.047	0.890	18.900	19:0 CYCLO w8c . . .	0.81	ECL deviates -0.000	Reference -0.005
*******	1932	. . . . .		. . .	SUMMED FEATURE 2 . .	0.74	15:1 ISO H/13:0 3OH	13:0 3OH/15:1 i I/H
*******	. . . . .			. . .	. . . . .		15:1 ISO I/13:0 3OH	
*******	16472	. . . . .		. . .	SUMMED FEATURE 3 . .	6.72	12:0 ALDE ?	unknown 10.928
*******	. . . . .			. . .	. . . . .		16:1 ISO I/14:0 3OH	14:0 3OH/16:1 ISO I
*******	29776	. . . . .		. . .	SUMMED FEATURE 4 . .	11.54	16:1 w7c/15 iso 2OH	15:0 ISO 2OH/16:1w7c
*******	45184	. . . . .		. . .	SUMMED FEATURE 7 . .	17.10	18:1 w7c/w9t/w12t	18:1 w9c/w12t/w7c
*******	. . . . .			. . .	. . . . .		18:1 w12t/w9t/w7c	

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
154899840	259880	258488	99.46	245106	9	0.001	0.002

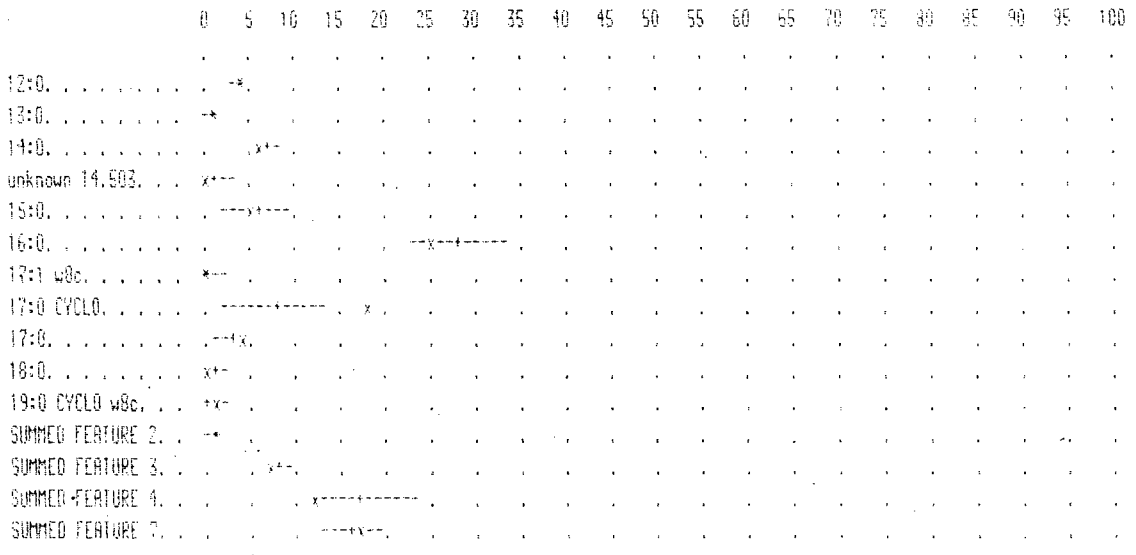
Continue: 32 4402-14 RM1 [AEROBIC] 27-NOV-96 22:39:14

[SBA [Rev 3.90] Salmonella	0.557	
S. choleraesuis	0.557	
S. c. choleraesuis	0.557	
S. c. arizonae	0.324	
S. c. diarizonae	0.309	
Enterobacter	0.508	
E. taylorae	0.508	
E. cloacae*	0.421	(excludes ATCC 35549 which is atypical)
E. asburiae*	0.263	
Kluyvera	0.430	
K. cryocrescens	0.430	
CLIN [Rev 3.90] Kluyvera	0.595	
K. cryocrescens	0.595	
K. ascorbata	0.420	
Escherichia	0.518	(high DNA homology with Shigella)
E. coli subgroup A	0.518	(high DNA homology with Shigella)
E. coli subgroup B	0.371	(high DNA homology with Shigella)
Enterobacter	0.451	
E. cloacae	0.451	
E. c. GC subgroup A*	0.451	
E. c. GC subgroup B**	0.381	
E. taylorae	0.325	
E. asburiae	0.271	

Comparison with [SBA [Rev 3.90]: Salmonella-choleraesuis-choleraesuis Distance: 3.245



Comparison with CLIN [Rev 3.90]: kluyvera-cryocrescens Distance: 3.040



ID: 1 CALIBRATION STANDARD Date of run: 28-NOV-96 08:02:17
Bottle: 53 CALIBRATION [ANAEK1]

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.385	173633792	0.022	. . .	7.073	SOLVENT PEAK		< min rt	
2.235	21728	0.022	1.270	9.000	9:0 FAME	5.10		
2.676	45800	0.023	1.201	10.000	10:0 FAME	10.17	Peak match 0.0017	
3.239	968	0.026	. . .	10.914	. . . . .	. . .	< min area	
3.292	24016	0.025	1.141	11.000	11:0 FAME	5.07	Peak match -0.0016	
3.419	10024	0.027	1.132	11.154	10:0 2OH FAME . . .	2.10	Peak match 0.0032	
3.638	4784	0.028	1.118	11.418	10:0 3OH FAME . . .	0.99	Peak match 0.0039	
4.119	50656	0.028	1.089	12.000	12:0 FAME	10.20	Peak match -0.0001	
5.172	26496	0.032	1.044	13.000	13:0 FAME	5.12	Peak match 0.0033	
6.445	54560	0.035	1.006	14.000	14:0 FAME	10.15	Peak match 0.0020	
7.902	28368	0.038	0.973	15.000	15:0 FAME	5.11	Peak match -0.0038	
8.217	12120	0.041	0.967	15.198	14:0 2OH FAME . . .	2.17	Peak match 0.0091	
8.670	5096	0.041	0.959	15.483	Sum In Feature 5 . .	0.90	Peak match 0.0022	14:0 3OH FAME
9.493	58302	0.041	0.946	16.000	16:0 FAME	10.21	Peak match -0.0015	
11.166	29616	0.043	0.922	17.000	17:0 FAME	5.05	Peak match -0.0028	
11.559	12728	0.045	0.917	17.229	16:0 2OH FAME . . .	2.16	Peak match 0.0056	
12.881	61280	0.044	0.902	18.000	18:0 FAME	10.22	Peak match -0.0016	
14.597	31104	0.046	0.884	19.000	19:0 FAME	5.08	Peak match 0.0012	
16.297	63520	0.048	0.868	20.000	20:0 FAME	10.19		
*******	5096	. . . . .	. . .		SUMMED FEATURE 5 . .	0.90	15:0 ANA	14:0 3OH FAME

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
173633792	541256	540288	99.82	540668	0	. . . . .	

GOOD PEAK MATCHING: PEAK POSITION MATCHING ERROR (RMS) IS 0.0036.

ID: 1 CALIBRATION STANDARD Date of run: 28-NOV-96 08:32:46
Bottle: 53 CALIBRATION [ANAEK1]

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.385	173949824	0.021	. . .	7.075	SOLVENT PEAK	. . .	< min rt	
2.236	21792	0.022	1.270	9.000	9:0 FAME	5.11		
2.678	46008	0.023	1.200	10.000	10:0 FAME	10.19	Peak match -0.0002	
3.240	912	0.025	. . .	10.911	. . . . .	. . .	< min area	
3.295	24128	0.026	1.140	11.000	11:0 FAME	5.07	Peak match -0.0056	
3.420	9968	0.027	1.131	11.151	10:0 2OH FAME . . .	2.08	Peak match 0.0080	
3.640	4736	0.027	1.117	11.418	10:0 3OH FAME . . .	0.98	Peak match 0.0029	
4.121	50928	0.029	1.088	12.000	12:0 FAME	10.22	Peak match -0.0019	
5.175	26672	0.032	1.043	13.000	13:0 FAME	5.13	Peak match -0.0006	
6.446	54840	0.035	1.005	14.000	14:0 FAME	10.17	Peak match 0.0002	
7.902	28416	0.038	0.973	15.000	15:0 FAME	5.10	Peak match -0.0046	
8.218	12000	0.041	0.967	15.199	14:0 2OH FAME . . .	2.14	Peak match 0.0078	
8.570	5112	0.041	0.959	15.483	Sum In Feature 5 . .	0.90	Peak match 0.0027	14:0 3OH FAME
9.493	58584	0.041	0.946	16.000	16:0 FAME	10.22	Peak match -0.0024	
11.168	29776	0.044	0.922	17.000	17:0 FAME	5.07	Peak match -0.0045	
11.560	12352	0.047	0.917	17.229	16:0 2OH FAME . . .	2.09	Peak match 0.0060	
12.880	61456	0.045	0.902	18.000	18:0 FAME	10.23	Peak match -0.0015	
14.596	31272	0.047	0.885	19.000	19:0 FAME	5.10	Peak match -0.0000	
16.296	63624	0.046	0.866	20.000	20:0 FAME	10.19		
18.045	1368	0.052	. . .	21.028	. . . . .	. . .		
*******	5112	. . .	. . .	. . .	SUMMED FEATURE 5 . .	0.90	15:0 ANTE	14:0 3OH FAME

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
173949824	542584	541672	99.83	541997	0	. . . . .	. . . . .

6000 PEAK MATCHING: PEAK POSITION MATCHING ERROR (RMS) IS 0.0042.

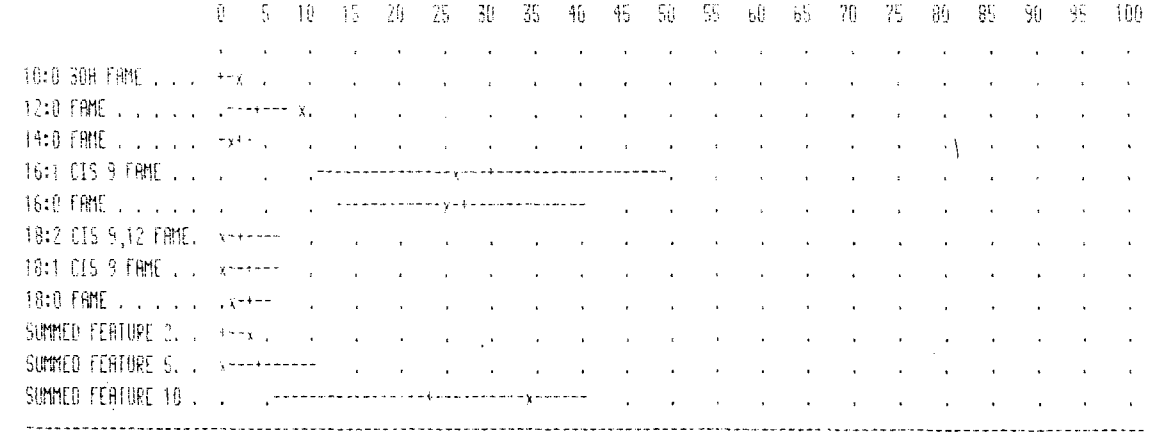
ID: 52 4402-1AN RMT Date of run: 28-NOV-96 09:02:50
Bottle: 54 SAMPLE [ANAER:1]

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.385	157459072	0.024	. . .	7.076	SOLVENT PEAK	.	< min rt	
1.465	7368	0.020	. . .	7.302	. . . . .	.	< min rt	
1.879	400	0.021	. . .	8.193	. . . . .	.	< min rt	
2.209	952	0.024	. . .	8.940	. . . . .	.	< min rt	
3.640	2584	0.028	1.117	11.419	10:0 3OH FAME . . .	1.08	ECL deviates -0.005	
4.120	12808	0.030	1.088	12.000	12:0 FAME	9.08	ECL deviates -0.000	Reference -0.001
5.747	3936	0.035	1.025	13.451	Sum In Feature 2 . .	2.63	ECL deviates -0.005	12:0 3OH FAME
6.445	2072	0.037	1.005	14.000	14:0 FAME	1.36	ECL deviates 0.000	Reference -0.001
9.197	41504	0.040	0.950	15.815	16:1 CIS 9 FAME . .	25.71	ECL deviates -0.003	
9.491	39840	0.041	0.946	16.000	16:0 FAME	24.56	ECL deviates -0.000	Reference -0.001
12.520	57504	0.045	0.906	17.820	Sum In Feature 10 .	33.95	ECL deviates -0.004	18:1cl1/t9/t6 FAME
12.878	1416	0.044	0.902	18.000	18:0 FAME	0.83	ECL deviates -0.000	Reference -0.001
15.565	1048	0.015	. . .	19.571	. . . . .	.	< min ar/ht	
16.145	696	0.015	. . .	19.912	. . . . .	.	< min ar/ht	
*******	3936	. . . . .		. . .	SUMMED FEATURE 2 . .	2.63	12:0 3OH FAME	13:0 DMA
*******	57504	. . . . .		. . .	SUMMED FEATURE 10 ..	33.95	18:1cl1/t9/t6 FAME	UN 17.834

Solvent Ar	Total Area	Named Area	% Named	Total Anmt	Nbr Ref	ECL Deviation	Ref ECL Shift
157459072	166408	161664	98.96	163392	4	0.003	0.001

MOORE [Rev 3.90] ARCOBACTER CRYAEROPHILUS 0.258
EIKENELLA CORRODENS 0.241
NEISSERIA FLAVESCENS 0.229

Comparison with MOORE [Rev 3.90]: ARCOBACTER CRYAEROPHILUS Distance: 6.265



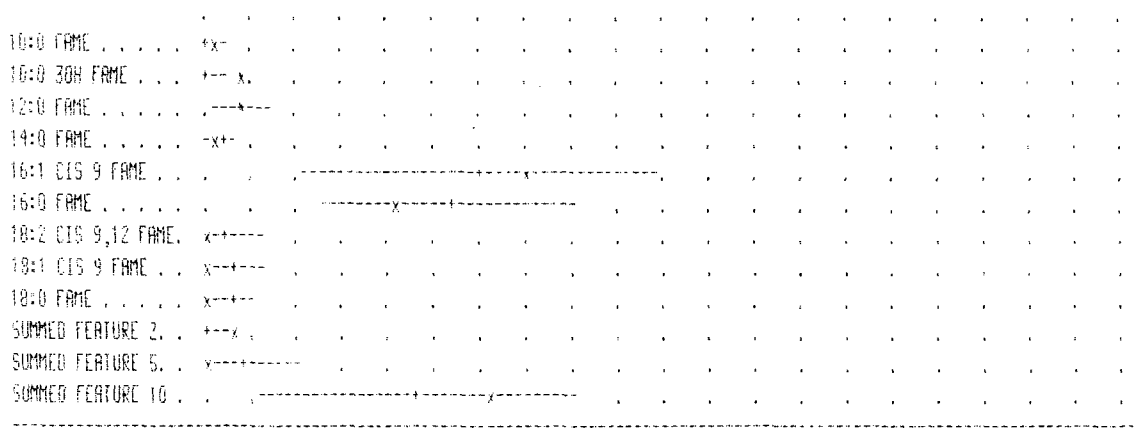
ID: 53 9402-3AN RMI Date of run: 28-NOV-96 09:33:08
Bottle: 55 SAMPLE [ANAERI]

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.385	158065024	0.024	. . .	7.075	SOLVENT PEAK		< min rt	
1.485	7520	0.020	. . .	7.301	. . . . .		< min rt	
2.209	640	0.028	. . .	8.937	. . . . .		< min rt	
2.679	488	0.028	1.200	10.001	10:0 FAME	0.65	ECL deviates 0.001	Reference 0.000
3.640	2288	0.028	1.117	11.417	10:0 3OH FAME . . .	3.72	ECL deviates -0.007	
3.951	2456	0.029	. . .	11.794	. . . . .			
4.120	2824	0.031	1.088	11.999	12:0 FAME	4.48	ECL deviates -0.001	Reference -0.001
5.745	1840	0.035	1.025	13.449	Sum In Feature 2 . .	2.75	ECL deviates -0.007	12:0 3OH FAME
6.445	776	0.037	1.005	14.000	14:0 FAME	1.14	ECL deviates 0.000	Reference -0.001
9.195	25312	0.043	0.950	15.815	16:1 CIS 9 FAME . .	35.04	ECL deviates -0.003	
9.490	15000	0.041	0.946	16.000	16:0 FAME	20.67	ECL deviates 0.000	Reference -0.002
12.568	23760	0.045	0.906	17.818	Sum In Feature 10 .	31.36	ECL deviates -0.006	18:1cl1/t9/t6 FAME
*******	1840	. . .	. . .	. . .	SUMMED FEATURE 2 . .	2.75	12:0 3OH FAME	13:0 OHA
*******	23760	. . .	. . .	. . .	SUMMED FEATURE 10 .	31.36	18:1cl1/t9/t6 FAME	UN 17.834

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
158065024	74744	72288	96.71	68629	4	0.004	0.001

MOORE [Rev 3.90] ARCOBACTER CRYAEROPHILUS 0.296
NEISSERIA SUBFLAVA 0.167
NEISSERIA FLAVESCENS 0.139

Comparison with MOORE [Rev 3.90]: ARCOBACTER CRYAEROPHILUS Distance: 5.888



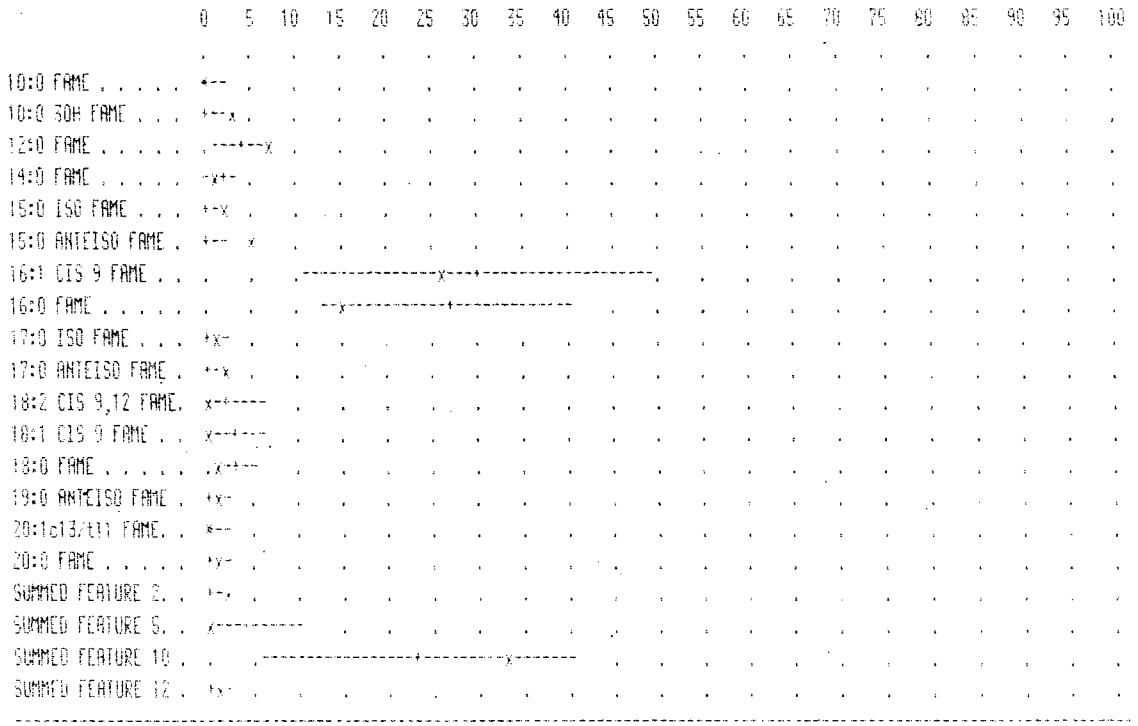
ID: 54 4402-9AN RMI Date of run: 28-NOV-96 10:03:51
Bottle: 56 SAMPLE LANAER13

RT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.385	165313792	0.023	. . .	7.074	SOLVENT PEAK	< min rt		
1.485	19032	0.021	. . .	7.301	. . . . .	< min rt		
1.607	680	0.026	. . .	7.574	. . . . .	< min rt		
1.711	1056	0.029	. . .	7.809	. . . . .	< min rt		
1.878	1056	0.021	. . .	8.188	. . . . .	< min rt		
2.208	1680	0.024	. . .	8.935	. . . . .	< min rt		
2.678	920	0.026	1.200	10.000	10:0 FAME	0.27	ECL deviates -0.000	Reference 0.000
3.639	9416	0.027	1.117	11.418	10:0 3OH FAME . . .	2.55	ECL deviates -0.006	
3.951	1200	0.029	. . .	11.796	. . . . .			
4.120	24816	0.029	1.088	12.001	12:0 FAME	6.54	ECL deviates 0.001	Reference -0.001
5.745	9112	0.034	1.025	13.451	Sum In Feature 2 . .	2.26	ECL deviates -0.005	12:0 3OH FAME
6.204	1280	0.036	. . .	13.813	. . . . .			
6.443	3312	0.036	1.005	14.001	14:0 FAME	0.81	ECL deviates 0.001	Reference -0.002
7.347	6816	0.037	0.984	14.622	15:0 ISO FAME . . .	1.63	ECL deviates -0.001	Reference -0.004
7.478	19480	0.038	0.981	14.712	15:0 ANTEISO FAME .	4.62	ECL deviates -0.002	Reference -0.005
9.195	112080	0.042	0.959	15.817	16:1 CIS 9 FAME . .	25.81	ECL deviates -0.001	
9.253	11600	0.035	. . .	15.853	. . . . .			
9.489	66128	0.041	0.946	16.002	16:0 FAME	15.15	ECL deviates 0.002	Reference -0.003
10.546	6408	0.043	0.930	16.629	17:0 ISO FAME . . .	1.44	ECL deviates -0.001	Reference -0.005
10.594	7392	0.043	0.926	16.721	17:0 ANTEISO FAME .	1.66	ECL deviates -0.002	
12.569	148656	0.045	0.906	17.823	Sum In feature 10 .	32.63	ECL deviates -0.001	18:1cis1/t9/t6 FAME
12.874	6840	0.045	0.902	18.001	18:0 FAME	1.50	ECL deviates 0.001	Reference -0.004
13.360	5112	0.046	0.891	18.634	Sum In Feature 12 .	1.10	ECL deviates -0.000	19:0 ISO FAME
14.124	3680	0.048	0.889	18.729	19:0 ANTEISO FAME .	0.79	ECL deviates -0.001	
15.998	1672	0.052	0.871	19.029	20:1cis13/t11 FAME . .	0.35	ECL deviates -0.004	
16.288	4096	0.047	0.868	20.000	20:0 FAME	0.66	ECL deviates -0.000	Reference -0.005
*******	9112	. . . . .	. . .		SUMMED FEATURE 2 . .	2.26	12:0 3OH FAME	13:0 DMA
*******	148656	. . . . .	. . .		SUMMED FEATURE 10 .	32.63	18:1cis1/t9/t6 FAME	UN 17.834
*******	5112	. . . . .	. . .		SUMMED FEATURE 12 .	1.10	UN 18.622	19:0 ISO FAME

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Nbr Ref	ECL Deviation	Ref ECL Shift
165313792	450008	435928	96.87	412580	10	0.002	0.004

MOORE (Rev 3.90) ARCOBACTER CRYAEROPHILUS 0.145
DICHELOBACTER NODOSUS 0.063
EIKENELLA CORRODENS 0.049

Comparison with MOORE [Rev 3.90]: ARCOBACTER CRYAEROPHILUS Distance: 2.405



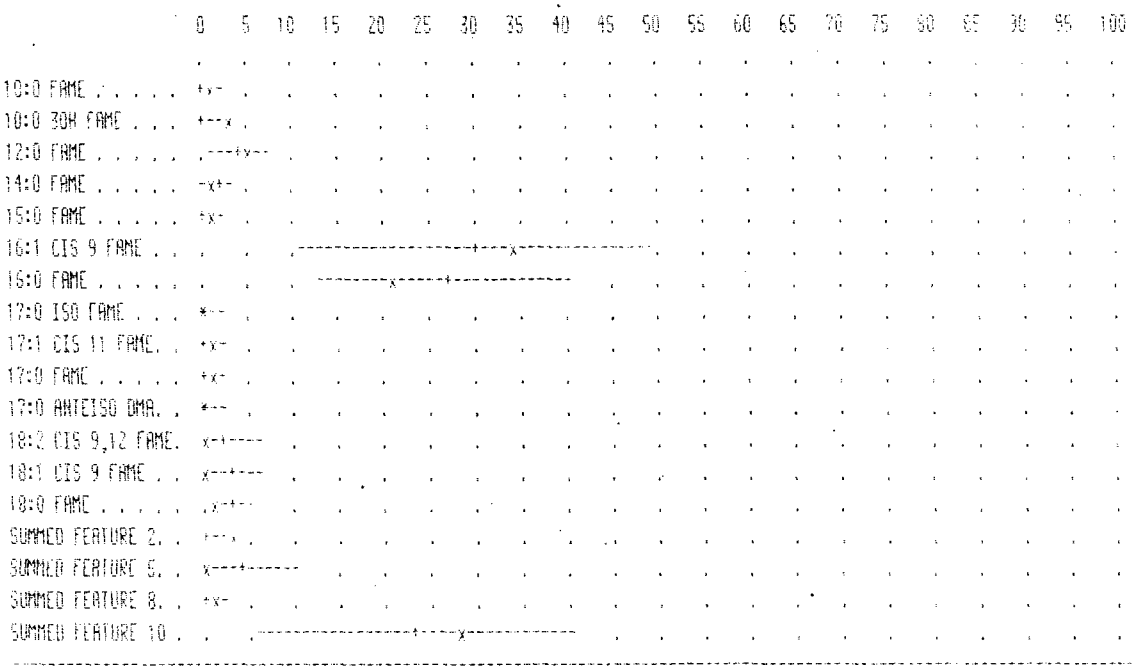
ID: 55 4402-SAN RMI Date of run: 28-NOV-96 10:34:03
Bottle: 57 SAMPLE [ANAERO1]

PT	Area	Ar/Ht	Respon	ECL	Name	%	Comment 1	Comment 2
1.385	159989888	0.024	. . .	7.078	SOLVENT PEAK		< min rt	
1.485	9808	0.021	. . .	7.304	. . . . .		< min rt	
1.555	928	0.014	. . .	7.462	. . . . .		< min rt	
1.710	472	0.022	. . .	7.813	. . . . .		< min rt	
1.878	432	0.021	. . .	8.196	. . . . .		< min rt	
2.207	816	0.026	. . .	8.932	. . . . .		< min rt	
2.678	1904	0.025	1.200	10.000	10:0 FAME	0.79	ECL deviates 0.000	Reference 0.000
3.638	8424	0.027	1.117	11.418	10:0 3OH FAME . . .	3.26	ECL deviates -0.006	
3.950	14328	0.028	. . .	11.796	. . . . .			
4.118	14136	0.031	1.089	12.000	12:0 FAME	5.32	ECL deviates -0.000	Reference -0.004
5.743	8808	0.037	1.025	13.451	Sum In Feature 2 . .	3.13	ECL deviates -0.005	12:0 3OH FAME
6.039	640	0.014	. . .	13.684	. . . . .		< min ar/ht	
6.202	1440	0.038	. . .	13.812	. . . . .			
6.441	3040	0.037	1.005	14.000	14:0 FAME	1.06	ECL deviates 0.000	Reference -0.004
7.896	3360	0.039	0.973	15.000	15:0 FAME	1.17	ECL deviates -0.000	Reference -0.004
9.192	101808	0.042	0.950	15.814	16:1 CIS 9 FAME . .	33.51	ECL deviates -0.004	
9.252	30552	0.039	. . .	15.852	. . . . .			
9.466	63576	0.041	0.946	15.999	16:0 FAME	20.82	ECL deviates -0.001	Reference -0.004
10.539	792	0.046	0.930	16.627	17:0 ISO FAME . . .	0.26	ECL deviates -0.003	Reference -0.006
10.808	3184	0.045	0.927	16.787	Sum In Feature 8 . .	1.02	ECL deviates -0.007	17:1 CIS 9 FAME
10.925	1560	0.064	0.925	16.857	17:1 CIS 11 FAME . .	0.50	ECL deviates -0.007	
11.159	1600	0.046	0.922	16.996	17:0 FAME	0.51	ECL deviates -0.004	Reference -0.005
11.526	960	0.053	0.918	17.210	17:0 ANTEISO OHA . .	0.31	ECL deviates 0.014	Reference 0.013
12.565	88848	0.045	0.906	17.816	Sum In Feature 10 .	27.88	ECL deviates -0.008	18:1cl1/t9/t6 FAME
12.872	1616	0.045	0.902	17.995	18:0 FAME	0.51	ECL deviates -0.005	Reference -0.005
19.605	2256	0.064	. . .	21.948	. . . . .		> max rt	
*******	8808	. . . . .	. . .		SUMMED FEATURE 2 . .	3.13	12:0 3OH FAME	13:0 OHA
*******	3184	. . . . .	. . .		SUMMED FEATURE 8 . .	1.02	17:1 CIS 9 FAME	17:2 FAME @ 16.801
*******	88848	. . . . .	. . .		SUMMED FEATURE 10 .	27.88	18:1cl1/t9/t6 FAME	UN 17.834

Solvent Ar	Total Area	Named Area	% Named	Total Amnt	Mbr Ref	ECL Deviation	Ref ECL Shift
159989888	350576	303616	86.60	280673	9	0.006	0.006

MOORE (Rev 3.90) ARCOBACTER CRYAEROPHILUS 0.303
NEISSERIA SUBFLAVA 0.209
NEISSERIA FLAVESCENS 0.208

Comparison with MOORE [Rev 3.90]: ARCOBACTER CRYAEROPHILUS Distance: 5.82



Endpoint Assay Data

MOLECULAR DEVICES CORP.
Template Display

DATA FILE: 4402 RMT plt 1
DESCRIPTION: 4402 RMT strains 1-7 w/ Hydrocarbon Mix
PROTOCOL:
DESCRIPTION:

PAGE: 1

PRINTED: 11/27/96

	1	2	3	4	5	6	7	8	9	10	11	12
A	BL	BL	BL	BL	CNT08	CNT08	CNT08	CNT08	CNT09	CNT09	CNT09	CNT09
B	CNT01	CNT01	CNT01	CNT01	UNK01	UNK01	UNK01	UNK01	CNT10	CNT10	CNT10	CNT10
C	CNT02	CNT02	CNT02	CNT02	UNK02	UNK02	UNK02	UNK02	CNT11	CNT11	CNT11	CNT11
D	CNT03	CNT03	CNT03	CNT03	UNK03	UNK03	UNK03	UNK03	CNT12	CNT12	CNT12	CNT12
E	CNT04	CNT04	CNT04	CNT04	UNK04	UNK04	UNK04	UNK04	CNT13	CNT13	CNT13	CNT13
F	CNT05	CNT05	CNT05	CNT05	UNK05	UNK05	UNK05	UNK05	CNT14	CNT14	CNT14	CNT14
G	CNT06	CNT06	CNT06	CNT06	UNK06	UNK06	UNK06	UNK06	CNT15	CNT15	CNT15	CNT15
H	CNT07	CNT07	CNT07	CNT07	UNK07	UNK07	UNK07	UNK07	CNT16	CNT16	CNT16	CNT16

Group Type	Name	Std. Value/Dil. Factor	Wells
Blank	BL		A1,A2,A3,A4
Control	CNT01	1.000	B1,B2,B3,B4
	CNT02	1.000	C1,C2,C3,C4
	CNT03	1.000	D1,D2,D3,D4
	CNT04	1.000	E1,E2,E3,E4
	CNT05	1.000	F1,F2,F3,F4
	CNT06	1.000	G1,G2,G3,G4
	CNT07	1.000	H1,H2,H3,H4
	CNT08	1.000	A5,A6,A7,A8
	CNT09	1.000	A9,A10,A11,A12
	CNT10	1.000	B9,B10,B11,B12
	CNT11	1.000	C9,C10,C11,C12
	CNT12	1.000	D9,D10,D11,D12
	CNT13	1.000	E9,E10,E11,E12
	CNT14	1.000	F9,F10,F11,F12
	CNT15	1.000	G9,G10,G11,G12
	CNT16	1.000	H9,H10,H11,H12
Unknown	UNK01	1.000	B5,B6,B7,B8
	UNK02	1.000	C5,C6,C7,C8
	UNK03	1.000	D5,D6,D7,D8
	UNK04	1.000	E5,E6,E7,E8

MOLECULAR DEVICES CORP.
Raw Data (Plate)

DATA FILE: 4402 RMT plt 1
DESCRIPTION: 4402 RMT strains 1-7 w/ Hydrocarbon Mix
PROTOCOL: PRINTED: 11/27/96
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590 CALIBRATION: ON

Optical Density

	1	2	3	4	5	6	7	8	9	10	11	12
A	0.087	0.077	0.081	0.098	0.189	0.363	0.125	0.156	0.105	0.087	0.094	0.095
B	0.364	0.349	0.361	0.368	0.246	0.238	0.221	0.234	0.706	0.617	0.630	0.666
C	0.146	0.158	0.148	0.128	0.235	0.138	0.148	0.151	0.152	0.175	0.179	0.190
D	0.192	0.197	0.211	0.208	0.264	0.187	0.201	0.209	1.762	1.763	1.638	1.614
E	0.197	0.166	0.166	0.158	0.197	0.165	0.168	0.168	0.864	1.068	1.154	0.846
F	0.224	0.218	0.206	0.189	0.259	0.302	0.218	0.240	0.335	0.349	0.382	0.300
G	0.229	0.217	0.210	0.212	0.180	0.158	0.132	0.194	0.872	1.449	1.925	1.875
H	0.155	0.155	0.134	0.093	0.132	0.146	0.129	0.172	0.579	0.789	0.865	0.847

MOLECULAR DEVICES CORP.
Raw Data (Plate)

DATA FILE: 4402 RMT plt 1
DESCRIPTION: 4402 RMT strains 1-7 w/ Hydrocarbon Mix
PROTOCOL: PRINTED: 11/27/96
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590 CALIBRATION: ON

OD with Plate Blank Subtracted

	1	2	3	4	5	6	7	8	9	10	11	12
A	0#001	-0#009	-0#005	0#012	0.103	0.277	0.039	0.070	0.019	0.001	0.008	0.009
B	0.278	0.263	0.275	0.282	0.160	0.152	0.135	0.148	0.620	0.531	0.544	0.580
C	0.060	0.072	0.062	0.042	0.149	0.052	0.062	0.065	0.066	0.089	0.093	0.104
D	0.106	0.111	0.125	0.122	0.178	0.101	0.115	0.123	1.676	1.677	1.552	1.528
E	0.111	0.080	0.080	0.072	0.111	0.079	0.082	0.082	0.778	0.982	1.068	0.760
F	0.138	0.132	0.120	0.103	0.173	0.216	0.132	0.154	0.249	0.263	0.296	0.214
G	0.143	0.131	0.124	0.126	0.094	0.072	0.046	0.108	0.786	1.363	1.839	1.789
H	0.069	0.069	0.048	0.007	0.046	0.060	0.043	0.086	0.493	0.703	0.779	0.761

MOLECULAR DEVICES CORP.
Raw Data (Report)
(Plate Blank Subtracted)

DATA FILE: 4402 RMT plt 1
DESCRIPTION: 4402 RMT strains 1-7 w/ Hydrocarbon Mix
PROTOCOL:
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590

PRINTED: 11/27/96

CALIBRATION: ON

PLATE BLANK	Mean OD	Std Dev	CV	Well	OD
BL	0.086	0.009	10.66	A1	0.087
				A2	0.077
				A3	0.081
				A4	0.098

CONTROLS	Mean OD	Std Dev	CV	Well	OD
CNT01	0.275	0.008	2.979	B1	0.278
				B2	0.263
				B3	0.275
				B4	0.282
CNT02	0.059	0.012	21.08	C1	0.060
				C2	0.072
				C3	0.062
				C4	0.042
CNT03	0.116	0.009	7.726	D1	0.106
				D2	0.111
				D3	0.125
				D4	0.122
CNT04	0.086	0.017	20.06	E1	0.111
				E2	0.080
				E3	0.080
				E4	0.072
CNT05	0.124	0.015	12.50	F1	0.138
				F2	0.132
				F3	0.120
				F4	0.103
CNT06	0.131	0.009	6.495	G1	0.143
				G2	0.131
				G3	0.124
				G4	0.126
CNT07	0.048	0.029	60.26	H1	0.069
				H2	0.069
				H3	0.048
				H4	0.007
CNT08	0.123	0.106	86.88	A5	0.103
				A6	0.277
				A7	0.039
				A8	0.070
CNT09	0.009	0.007	78.01	A9	0.019
				A10	0.001
				A11	0.008
				A12	0.009

MOLECULAR DEVICES CORP.
Raw Data (Report)
(Plate Blank Subtracted)

DATA FILE: 4402 RMT plt 1 PAGE: 2
DESCRIPTION: 4402 RMT strains 1-7 w/ Hydrocarbon Mix
PROTOCOL: PRINTED: 11/27/96
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590 CALIBRATION: ON

CONTROLS	Mean OD	Std Dev	CV	Well	OD
CNT10	0.569	0.040	7.023	B9	0.620
				B10	0.531
				B11	0.544
				B12	0.580
CNT11	0.088	0.016	18.11	C9	0.066
				C10	0.089
				C11	0.093
				C12	0.104
CNT12	1.608	0.079	4.937	D9	1.676
				D10	1.677
				D11	1.552
				D12	1.528
CNT13	0.897	0.152	16.95	E9	0.778
				E10	0.982
				E11	1.068
				E12	0.760
CNT14	0.256	0.034	13.28	F9	0.249
				F10	0.263
				F11	0.296
				F12	0.214
CNT15	1.444	0.488	33.79	G9	0.786
				G10	1.363
				G11	1.839
				G12	1.789
CNT16	0.684	0.131	19.20	H9	0.493
				H10	0.703
				H11	0.779
				H12	0.761

UNKNOWNS	Mean OD	Std Dev	CV	Well	OD
UNK01	0.149	0.010	7.004	B5	0.160
				B6	0.152
				B7	0.135
				B8	0.148
UNK02	0.082	0.045	54.72	C5	0.149
				C6	0.052
				C7	0.062
				C8	0.065
UNK03	0.129	0.034	26.06	D5	0.178
				D6	0.101
				D7	0.115
				D8	0.123

MOLECULAR DEVICES CORP.
Raw Data (Report)
(Plate Blank Subtracted)

DATA FILE: 4402 RMT plt 1
DESCRIPTION: 4402 RMT strains 1-7 w/ Hydrocarbon Mix
PROTOCOL:
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590

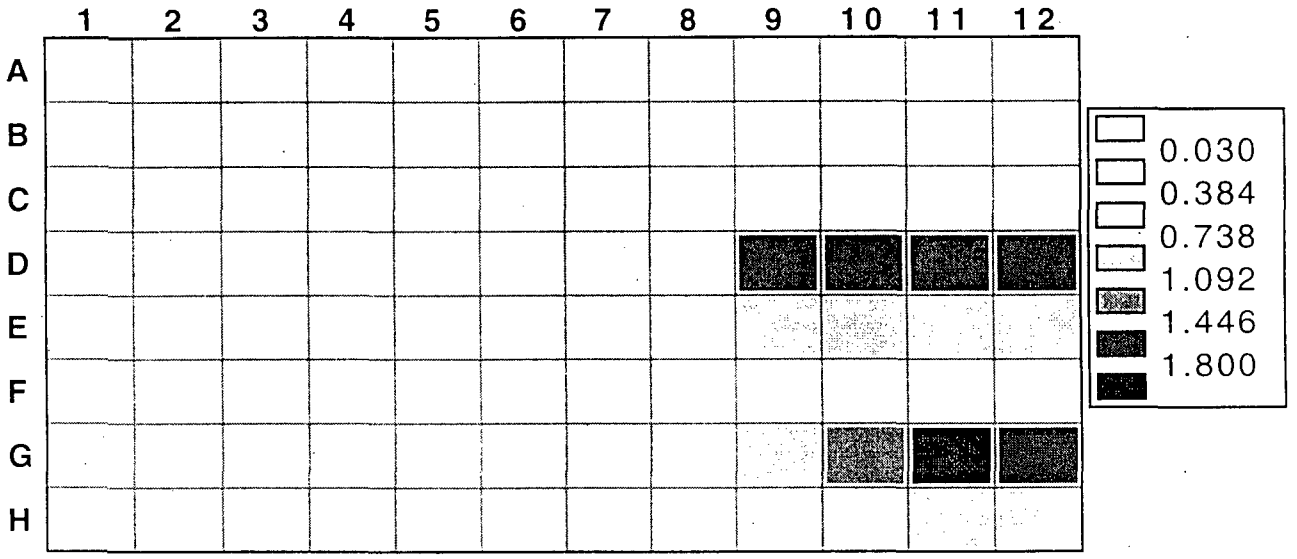
PRINTED: 11/27/96

CALIBRATION: ON

UNKNOWNS	Mean OD	Std Dev	CV	Well	OD
UNK04	0.089	0.015	16.98	E5	0.111
				E6	0.079
				E7	0.082
				E8	0.082
UNK05	0.169	0.036	21.11	F5	0.173
				F6	0.216
				F7	0.132
				F8	0.154
UNK06.	0.080	0.027	33.74	G5	0.094
				G6	0.072
				G7	0.046
				G8	0.108
UNK07	0.059	0.020	33.25	H5	0.046
				H6	0.060
				H7	0.043
				H8	0.086

MOLECULAR DEVICES CORP.
Gray Scale (Plate)

DATA FILE: 4402 RMT plt 1
DESCRIPTION: 4402 RMT strains 1-7 w/ Hydrocarbon Mix
PROTOCOL:
DESCRIPTION:
PRINTED: 11/27/96
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590
CALIBRATION: ON



High Limit = 1.800

Low Limit = 0.030

MOLECULAR DEVICES CORP.
Template Display

DATA FILE: 4402 RMT plt 2
DESCRIPTION: 4402 RMT strains w/ Hydrocarbon Mix
PROTOCOL:
DESCRIPTION:

PAGE: 1

PRINTED: 11/27/96

	1	2	3	4	5	6	7	8	9	10	11	12
A	BL	BL	BL	BL	CNT08	CNT08	CNT08	CNT08	CNT09	CNT09	CNT09	CNT09
B	CNT01	CNT01	CNT01	CNT01	UNK01	UNK01	UNK01	UNK01	CNT10	CNT10	CNT10	CNT10
C	CNT02	CNT02	CNT02	CNT02	UNK02	UNK02	UNK02	UNK02	CNT11	CNT11	CNT11	CNT11
D	CNT03	CNT03	CNT03	CNT03	UNK03	UNK03	UNK03	UNK03	CNT12	CNT12	CNT12	CNT12
E	CNT04	CNT04	CNT04	CNT04	UNK04	UNK04	UNK04	UNK04	CNT13	CNT13	CNT13	CNT13
F	CNT05	CNT05	CNT05	CNT05	UNK05	UNK05	UNK05	UNK05	CNT14	CNT14	CNT14	CNT14
G	CNT06	CNT06	CNT06	CNT06	UNK06	UNK06	UNK06	UNK06	CNT15	CNT15	CNT15	CNT15
H	CNT07	CNT07	CNT07	CNT07	UNK07	UNK07	UNK07	UNK07	CNT16	CNT16	CNT16	CNT16

Group Type	Name	Std. Value/Dil. Factor	Wells
Blank	BL		A1,A2,A3,A4
Control	CNT01	1.000	B1,B2,B3,B4
	CNT02	1.000	C1,C2,C3,C4
	CNT03	1.000	D1,D2,D3,D4
	CNT04	1.000	E1,E2,E3,E4
	CNT05	1.000	F1,F2,F3,F4
	CNT06	1.000	G1,G2,G3,G4
	CNT07	1.000	H1,H2,H3,H4
	CNT08	1.000	A5,A6,A7,A8
	CNT09	1.000	A9,A10,A11,A12
	CNT10	1.000	B9,B10,B11,B12
	CNT11	1.000	C9,C10,C11,C12
	CNT12	1.000	D9,D10,D11,D12
	CNT13	1.000	E9,E10,E11,E12
	CNT14	1.000	F9,F10,F11,F12
	CNT15	1.000	G9,G10,G11,G12
	CNT16	1.000	H9,H10,H11,H12
Unknown	UNK01	1.000	B5,B6,B7,B8
	UNK02	1.000	C5,C6,C7,C8
	UNK03	1.000	D5,D6,D7,D8
	UNK04	1.000	E5,E6,E7,E8

MOLECULAR DEVICES CORP.
Raw Data (Plate)

DATA FILE: 4402 RMT plt 2
DESCRIPTION: 4402 RMT strains w/ Hydrocarbon Mix
PROTOCOL: PRINTED: 11/27/96
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590 CALIBRATION: ON

Optical Density

	1	2	3	4	5	6	7	8	9	10	11	12
A	0.083	0.075	0.068	0.087	0.124	0.305	0.135	0.137	0.094	0.071	0.077	0.084
B	0.165	0.148	0.152	0.151	0.388	0.190	0.251	0.448	0.446	0.513	1.573	0.778
C	0.153	0.159	0.142	0.124	0.348	0.448	0.206	0.195	0.197	0.165	0.194	0.192
D	0.245	0.247	0.250	0.242	0.320	1.045	0.609	0.446	0.374	0.401	0.377	0.369
E	0.443	0.420	0.443	0.420	0.208	0.192	0.207	0.235	0.455	0.465	0.456	0.510
F	0.101	0.116	0.114	0.111	0.131	0.110	0.141	0.148	0.119	0.113	0.114	0.120
G	0.261	0.249	0.244	0.257	0.288	0.278	0.339	0.263	0.368	0.359	0.367	0.387
H	0.234	0.231	0.225	0.226	0.240	0.272	0.201	0.246	2.734	2.663	2.672	2.740

MOLECULAR DEVICES CORP.
Raw Data (Plate)

DATA FILE: 4402 RMT plt 2
DESCRIPTION: 4402 RMT strains w/ Hydrocarbon Mix
PROTOCOL: PRINTED: 11/27/96
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590 CALIBRATION: ON

OD with Plate Blank Subtracted

	1	2	3	4	5	6	7	8	9	10	11	12
A	0#005	-0#003	-0#010	0#009	0.046	0.227	0.057	0.059	0.016	-0.007	-0.001	0.006
B	0.087	0.070	0.074	0.073	0.310	0.112	0.173	0.370	0.368	0.435	1.495	0.700
C	0.075	0.081	0.064	0.046	0.270	0.370	0.128	0.117	0.119	0.087	0.116	0.114
D	0.167	0.169	0.172	0.164	0.242	0.967	0.531	0.368	0.296	0.323	0.299	0.291
E	0.365	0.342	0.365	0.342	0.130	0.114	0.129	0.157	0.377	0.387	0.378	0.432
F	0.023	0.038	0.036	0.033	0.053	0.032	0.063	0.070	0.041	0.035	0.036	0.042
G	0.183	0.171	0.166	0.179	0.210	0.200	0.261	0.185	0.290	0.281	0.289	0.309
H	0.156	0.153	0.147	0.148	0.162	0.194	0.123	0.168	2.656	2.585	2.594	2.662

MOLECULAR DEVICES CORP.
Raw Data (Report)
(Plate Blank Subtracted)

DATA FILE: 4402 RMT plt 2 — PAGE: 1
DESCRIPTION: 4402 RMT strains - w/ Hydrocarbon Mix
PROTOCOL: — PRINTED: 11/27/96
DESCRIPTION:
MODE: Endpoint — AUTOMIX: OFF
WAVELENGTH: 590 — CALIBRATION: ON

PLATE BLANK	Mean OD	Std Dev	CV	Well	OD
BL	0.078	0.008	10.81	A1	0.083
				A2	0.075
				A3	0.068
				A4	0.087

CONTROLS	Mean OD	Std Dev	CV	Well	OD
CNT01	0.076	0.008	9.938	B1	0.087
				B2	0.070
				B3	0.074
				B4	0.073
CNT02	0.066	0.015	23.20	C1	0.075
				C2	0.081
				C3	0.064
				C4	0.046
CNT03	0.168	0.003	2.007	D1	0.167
				D2	0.169
				D3	0.172
				D4	0.164
CNT04	0.353	0.013	3.759	E1	0.365
				E2	0.342
				E3	0.365
				E4	0.342
CNT05	0.032	0.007	20.65	F1	0.023
				F2	0.038
				F3	0.036
				F4	0.033
CNT06	0.174	0.008	4.399	G1	0.183
				G2	0.171
				G3	0.166
				G4	0.179
CNT07	0.151	0.004	2.814	H1	0.156
				H2	0.153
				H3	0.147
				H4	0.148
CNT08	0.097	0.087	89.37	A5	0.046
				A6	0.227
				A7	0.057
				A8	0.059
CNT09	0.003	0.010	304.1	A9	0.016
				A10	-0.007
				A11	-0.001
				A12	0.006

MOLECULAR DEVICES CORP.
Raw Data (Report)
(Plate Blank Subtracted)

DATA FILE: 4402 RMT plt 2 PAGE: 2
DESCRIPTION: 4402 RMT strains w/ Hydrocarbon Mix
PROTOCOL: PRINTED: 11/27/96
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590 CALIBRATION: ON

CONTROLS	Mean OD	Std Dev	CV	Well	OD
CNT10	0.749	0.517	69.04	B9	0.368
				B10	0.435
				B11	1.495
				B12	0.700
CNT11	0.109	0.015	13.62	C9	0.119
				C10	0.087
				C11	0.116
				C12	0.114
CNT12.	0.302	0.014	4.709	D9	0.296
				D10	0.323
				D11	0.299
				D12	0.291
CNT13	0.393	0.026	6.626	E9	0.377
				E10	0.387
				E11	0.378
				E12	0.432
CNT14	0.038	0.004	9.181	F9	0.041
				F10	0.035
				F11	0.036
				F12	0.042
CNT15	0.292	0.012	4.065	G9	0.290
				G10	0.281
				G11	0.289
				G12	0.309
CNT16	2.624	0.040	1.538	H9	2.656
				H10	2.585
				H11	2.594
				H12	2.662

UNKNOWNS	Mean OD	Std Dev	CV	Well	OD
UNK01	0.241	0.119	49.48	B5	0.310
				B6	0.112
				B7	0.173
				B8	0.370
UNK02	0.221	0.121	54.84	C5	0.270
				C6	0.370
				C7	0.128
				C8	0.117
UNK03	0.527	0.316	60.05	D5	0.242
				D6	0.967
				D7	0.531
				D8	0.368

MOLECULAR DEVICES CORP.
Raw Data (Report)
(Plate Blank Subtracted)

DATA FILE: 4402 RMT plt 2
DESCRIPTION: 4402 RMT strains w/ Hydrocarbon Mix
PROTOCOL:
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590

PRINTED: 11/27/96

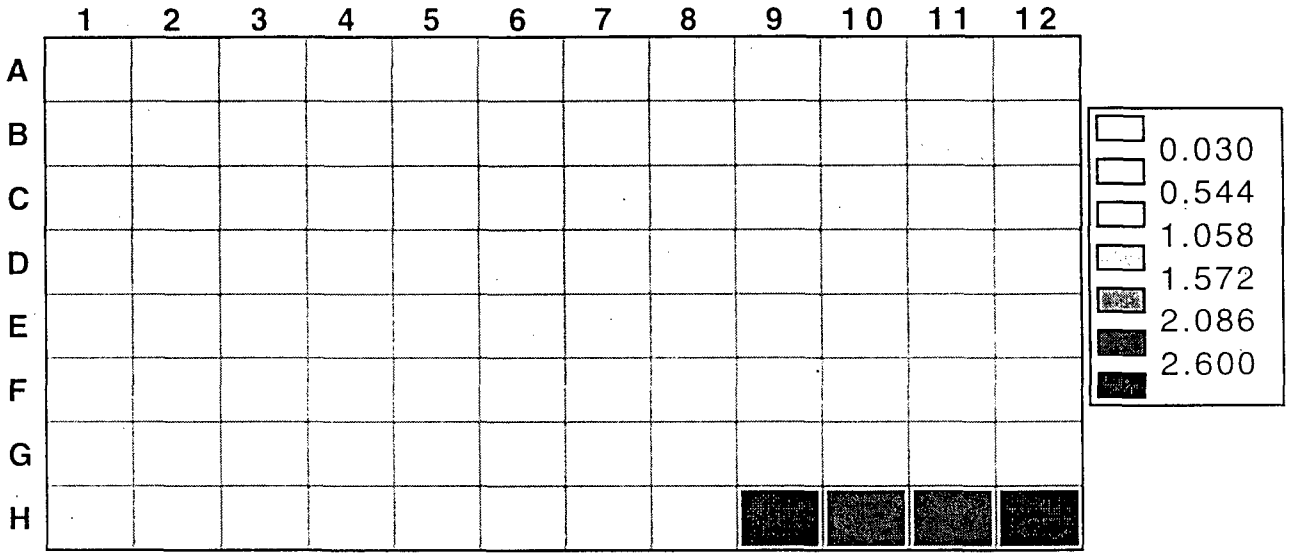
CALIBRATION: ON

UNKNOWNS	Mean OD	Std Dev	CV	Well	OD
UNK04	0.132	0.018	13.53	E5	0.130
				E6	0.114
				E7	0.129
				E8	0.157
UNK05	0.054	0.017	30.49	F5	0.053
				F6	0.032
				F7	0.063
				F8	0.070
UNK06	0.214	0.033	15.43	G5	0.210
				G6	0.200
				G7	0.261
				G8	0.185
UNK07	0.162	0.029	18.16	H5	0.162
				H6	0.194
				H7	0.123
				H8	0.168

MOLECULAR DEVICES CORP.
Gray Scale (Plate)

DATA FILE: 4402 RMT plt 2
DESCRIPTION: 4402 RMT strains w/ Hydrocarbon Mix
PROTOCOL:
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590

PRINTED: 11/27/96
CALIBRATION: ON



High Limit = 2.600

Low Limit = 0.030

MOLECULAR DEVICES CORP.
Template Display

DATA FILE: 4402 RMT anaerobic plt
DESCRIPTION: 4402 RMT -7 anaerobic strains w/Hydrocarbon Mix
PROTOCOL:
DESCRIPTION:

PAGE: 1

PRINTED: 12/9/96

	1	2	3	4	5	6	7	8	9	10	11	12
A	BL	BL	BL	BL	CNT08	CNT08	CNT08	CNT08	CNT09	CNT09	CNT09	CNT09
B	CNT01	CNT01	CNT01	CNT01	UNK01	UNK01	UNK01	UNK01	CNT10	CNT10	CNT10	CNT10
C	CNT02	CNT02	CNT02	CNT02	UNK02	UNK02	UNK02	UNK02	CNT11	CNT11	CNT11	CNT11
D	CNT03	CNT03	CNT03	CNT03	UNK03	UNK03	UNK03	UNK03	CNT12	CNT12	CNT12	CNT12
E	CNT04	CNT04	CNT04	CNT04	UNK04	UNK04	UNK04	UNK04	CNT13	CNT13	CNT13	CNT13
F	CNT05	CNT05	CNT05	CNT05	UNK05	UNK05	UNK05	UNK05	CNT14	CNT14	CNT14	CNT14
G	CNT06	CNT06	CNT06	CNT06	UNK06	UNK06	UNK06	UNK06	CNT15	CNT15	CNT15	CNT15
H	CNT07	CNT07	CNT07	CNT07	UNK07	UNK07	UNK07	UNK07	CNT16	CNT16	CNT16	CNT16

Group Type	Name	Std. Value/Dil. Factor	Wells
Blank	BL		A1,A2,A3,A4
Control	CNT01	1.000	B1,B2,B3,B4
	CNT02	1.000	C1,C2,C3,C4
	CNT03	1.000	D1,D2,D3,D4
	CNT04	1.000	E1,E2,E3,E4
	CNT05	1.000	F1,F2,F3,F4
	CNT06	1.000	G1,G2,G3,G4
	CNT07	1.000	H1,H2,H3,H4
	CNT08	1.000	A5,A6,A7,A8
	CNT09	1.000	A9,A10,A11,A12
	CNT10	1.000	B9,B10,B11,B12
	CNT11	1.000	C9,C10,C11,C12
	CNT12	1.000	D9,D10,D11,D12
	CNT13	1.000	E9,E10,E11,E12
	CNT14	1.000	F9,F10,F11,F12
	CNT15	1.000	G9,G10,G11,G12
	CNT16	1.000	H9,H10,H11,H12
Unknown	UNK01	1.000	B5,B6,B7,B8
	UNK02	1.000	C5,C6,C7,C8
	UNK03	1.000	D5,D6,D7,D8
	UNK04	1.000	E5,E6,E7,E8

MOLECULAR DEVICES CORP.
Raw Data (Plate)

DATA FILE: 4402 RMT anaerobic plt
DESCRIPTION: 4402 RMT -7 anaerobic strains w/Hydrocarbon Mix
PROTOCOL: PRINTED: 12/9/96
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590 CALIBRATION: ON

Optical Density

	1	2	3	4	5	6	7	8	9	10	11	12
A	0.103	0.083	0.075	0.070	0.176	0.127	0.100	0.198	0.084	0.071	0.072	0.089
B	0.149	0.143	0.145	0.095	0.252	0.220	0.240	0.253	0.183	0.251	0.327	0.360
C	0.688	0.522	0.347	0.190	0.237	0.268	0.239	0.253	0.699	1.283	1.461	1.513
D	0.103	0.112	0.105	0.108	0.179	0.184	0.175	0.186	0.147	0.267	0.327	0.375
E	0.218	0.129	0.117	0.119	0.204	0.220	0.294	0.161	0.187	0.380	0.464	0.597
F	0.119	0.116	0.109	0.094	0.168	0.148	0.171	0.208	0.138	0.188	0.218	0.292
G	0.107	0.100	0.089	0.090	0.199	0.116	0.165	0.170	0.117	0.163	0.215	0.267
H	0.123	0.102	0.077	0.069	0.101	0.427	0.114	0.128	0.119	0.235	0.288	0.296

MOLECULAR DEVICES CORP.
Raw Data (Plate)

DATA FILE: 4402 RMT anaerobic plt
DESCRIPTION: 4402 RMT -7 anaerobic strains w/Hydrocarbon Mix
PROTOCOL: PRINTED: 12/9/96
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590 CALIBRATION: ON

OD with Plate Blank Subtracted

	1	2	3	4	5	6	7	8	9	10	11	12
A	0#020	0#000	-0#008	-0#013	0.093	0.044	0.017	0.115	0.001	-0.012	-0.011	0.006
B	0.066	0.060	0.062	0.012	0.169	0.137	0.157	0.170	0.100	0.168	0.244	0.277
C	0.605	0.439	0.264	0.107	0.154	0.185	0.156	0.170	0.616	1.200	1.378	1.430
D	0.020	0.029	0.022	0.025	0.096	0.101	0.092	0.103	0.064	0.184	0.244	0.292
E	0.135	0.046	0.034	0.036	0.121	0.137	0.211	0.078	0.104	0.297	0.381	0.514
F	0.036	0.033	0.026	0.011	0.085	0.065	0.088	0.125	0.055	0.105	0.135	0.209
G	0.024	0.017	0.006	0.007	0.116	0.033	0.082	0.087	0.034	0.080	0.132	0.184
H	0.040	0.019	-0.006	-0.014	0.018	0.344	0.031	0.045	0.036	0.152	0.205	0.213

MOLECULAR DEVICES CORP.
Raw Data (Report)
(Plate Blank Subtracted)

DATA FILE: 4402 RMT anaerobic plt
DESCRIPTION: 4402 RMT -7 anaerobic strains w/Hydrocarbon Mix
PROTOCOL:
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590

PRINTED: 12/9/96

CALIBRATION: ON

PLATE BLANK	Mean OD	Std Dev	CV	Well	OD
BL	0.083	0.015	17.55	A1	0.103
				A2	0.083
				A3	0.075
				A4	0.070

CONTROLS	Mean OD	Std Dev	CV	Well	OD
CNT01	0.050	0.025	50.66	B1	0.066
				B2	0.060
				B3	0.062
				B4	0.012
CNT02	0.354	0.216	60.88	C1	0.605
				C2	0.439
				C3	0.264
				C4	0.107
CNT03	0.024	0.004	16.15	D1	0.020
				D2	0.029
				D3	0.022
				D4	0.025
CNT04	0.063	0.048	76.91	E1	0.135
				E2	0.046
				E3	0.034
				E4	0.036
CNT05	0.027	0.011	41.68	F1	0.036
				F2	0.033
				F3	0.026
				F4	0.011
CNT06	0.014	0.009	62.42	G1	0.024
				G2	0.017
				G3	0.006
				G4	0.007
CNT07	0.010	0.025	245.8	H1	0.040
				H2	0.019
				H3	-0.006
				H4	-0.014
CNT08	0.067	0.045	66.30	A5	0.093
				A6	0.044
				A7	0.017
				A8	0.115
CNT09	-0.004	0.009	237.5	A9	0.001
				A10	-0.012
				A11	-0.011
				A12	0.006

MOLECULAR DEVICES CORP.
Raw Data (Report)
(Plate Blank Subtracted)

DATA FILE: 4402 RMT anaerobic plt
DESCRIPTION: 4402 RMT -7 anaerobic strains w/Hydrocarbon Mix
PROTOCOL:
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590

PRINTED: 12/9/96

CALIBRATION: ON

CONTROLS	Mean OD	Std Dev	CV	Well	OD
CNT10	0.197	0.079	40.14	B9	0.100
				B10	0.168
				B11	0.244
				B12	0.277
CNT11	1.156	0.373	32.28	C9	0.616
				C10	1.200
				C11	1.378
				C12	1.430
CNT12	0.196	0.098	50.17	D9	0.064
				D10	0.184
				D11	0.244
				D12	0.292
CNT13	0.324	0.172	52.96	E9	0.104
				E10	0.297
				E11	0.381
				E12	0.514
CNT14	0.126	0.064	51.03	F9	0.055
				F10	0.105
				F11	0.135
				F12	0.209
CNT15	0.108	0.065	60.17	G9	0.034
				G10	0.080
				G11	0.132
				G12	0.184
CNT16	0.152	0.082	53.79	H9	0.036
				H10	0.152
				H11	0.205
				H12	0.213

UNKNOWNS	Mean OD	Std Dev	CV	Well	OD
UNK01	0.158	0.015	9.684	B5	0.169
				B6	0.137
				B7	0.157
				B8	0.170
UNK02	0.166	0.014	8.639	C5	0.154
				C6	0.185
				C7	0.156
				C8	0.170
UNK03	0.098	0.005	5.055	D5	0.096
				D6	0.101
				D7	0.092
				D8	0.103

MOLECULAR DEVICES CORP.
Raw Data (Report)
(Plate Blank Subtracted)

DATA FILE: 4402 RMT anaerobic plt
DESCRIPTION: 4402 RMT -7 anaerobic strains w/Hydrocarbon Mix
PROTOCOL:
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590

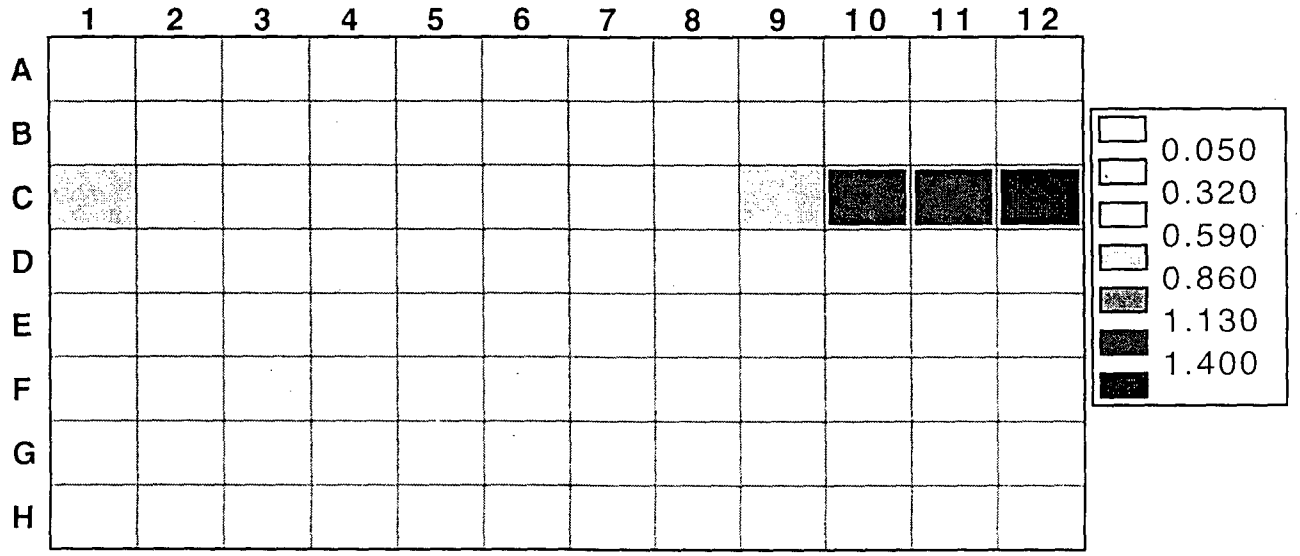
PRINTED: 12/9/96

CALIBRATION: ON

UNKNOWNS	Mean OD	Std Dev	CV	Well	OD
UNK04	0.137	0.055	40.45	E5	0.121
				E6	0.137
				E7	0.211
				E8	0.078
UNK05	0.091	0.025	27.49	F5	0.085
				F6	0.065
				F7	0.088
				F8	0.125
UNK06	0.080	0.034	43.18	G5	0.116
				G6	0.033
				G7	0.082
				G8	0.087
UNK07	0.110	0.157	142.8	H5	0.018
				H6	0.344
				H7	0.031
				H8	0.045

MOLECULAR DEVICES CORP.
Gray Scale (Plate)

DATA FILE: 4402 RMT anaerobic plt
DESCRIPTION: 4402 RMT -7 anaerobic strains w/Hydrocarbon Mix
PROTOCOL: PRINTED: 12/9/96
DESCRIPTION:
MODE: Endpoint AUTOMIX: OFF
WAVELENGTH: 590 CALIBRATION: ON



High Limit = 1.400

Low Limit = 0.050

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