SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

August 30, 1989

Science Applications International
4900 Hopyard Road, Suite 310
Pleasanton, CA 94566

Attention: Leslie Peters

Subject: Chromatograms

Dear Ms. Peters:

Enclosed are the Woodward Clyde chromatograms which you requested on August 21, 1989. There are three samples, one for TPH gas, one for TPH diesel, and one for TPH gas and 8240. We have provided the standard for all analyses except diesel. You should know that, although this sample quantitates as in the diesel range under the method, it does not resemble diesel and is somewhat lower boiling.

I hope this information is helpful to you.

Very truly yours,

SEQUOIA ANALYTICAL

Laura E. Saunders

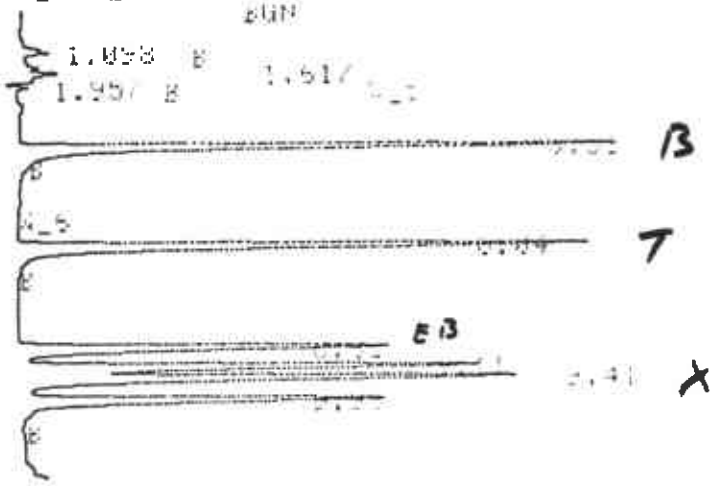
Laura E. Saunders
Project Manager

gn

3 PEAKS / AREA REJECT 24/548 TOTAL AREA

FILE /7 RUN 30 STARTED 12:00.7 89/06/06 CYNTHIA&MAILE'S
XS METHOD / BTEX ANALYSIS LAST EDITED 09:36.1 89/06/06
SMP AMT 10.0

.4 A_6 C_3 U_5



#1-BTEX #2

FILE /7 RUN 30 STARTED 12:00.7 89/06/06 CYNTHIA&MAILE'S
XS METHOD / BTEX ANALYSIS LAST EDITED 12:30.7 89/06/06
SMP AMT 10.0

RT	AREA	ID	XT/10	MF	UG/LITER	NAME
1.61	33959	U	0.16%	9.999999E-16	0.0000	Unknown
3.51	266617	B	0.35%	5.843703E-05	1.5600	BENZENE
5.04	26/28/	T	0.60%	5.430109E-05	1.5600	TOLUENE
5.62	1993/7	E	0.09%	5.195501/E-05	1.7400	ETHYL_BENZENE
5.11	229110		0.51%	5.743496E-05	1.5450	PARA XYLENE
9.41	258565	X	0.94%	5.569208E-05	1.4400	META XYLENE
9.98	198949		0.99%	8.067401E-05	1.6050	ORTHO XYLENE

6 MATCHED COMPOUNDS 97.58% OF TOTAL AREA
1 UNKNOWN PEAK / UNKNOWN 2% 2.32% OF TOTAL AREA
7 PEAKS / AREA REJECT 14540/3 TOTAL AREA

Exits Reports Menus Dir Del All Delete

FILE /8 RUN 31 STARTED 12:38.3 89/06/06 CYNTHIA&MAILE'S
XS METHOD / BTEX ANALYSIS LAST EDITED 12:30.7 89/06/06
SMP AMT 10.0

W_4 A_8 C_3 U_5

SGN

HEWLETT-PACKARD PART NUMBER 5181-1219 PRINT THIS SIDE

RUN # 001 JHR [redacted]001 21146154
START

FID gas std
0.977ppm Gas
Standard

2.703
3.085
3.540
4.375
4.910
5.215
5.584
6.193
7.045 Closing signal file MISIGNAL .DAT
7.970
8.425
8.955
9.463
10.020
10.647
10.903
11.205
11.635
12.110
12.307
12.545
13.073
13.440
13.800
14.210
14.540
14.082
15.723
16.051
16.470
16.931
17.150
17.426
18.269
18.648
18.945
19.225
19.455
20.060
20.505
20.952
21.863
23.123
26.041
STOP

Closing signal file MISIGNAL .DAT

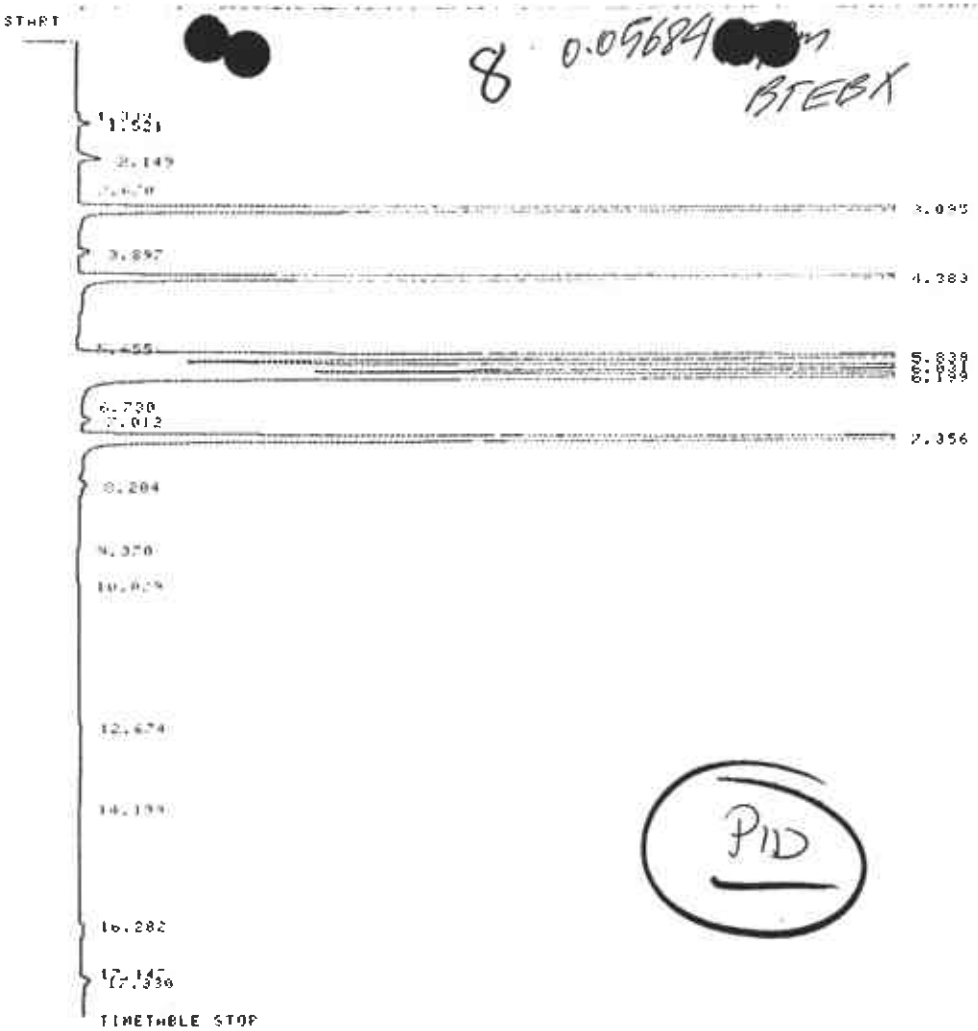
RUN 001 JHR [redacted]001 21146154

SIGNAL FILE: MISIGNAL.DAT
AREAS

RT	AREA	TYPE	WIDTH	AREA%
1.520	1417550	FV	.092	6.01602
1.626	2121765	VV	.148	9.00463
1.850	1266371	VV	.104	5.54670
2.032	200743	VV	.107	.07743
2.245	99669	VV	.082	.42299
2.311	116361	VV	.099	.49383
2.447	55069	VV	.063	.23371
3.004	1450440	VB	.071	6.10952
3.548	5844	BV	.079	.02480
3.679	9725	PP	.104	.04153
4.079	664	PP	.047	.00282
4.170	205	PP	.035	.00086
4.375	4273994	PB	.061	18.56294
4.910	4355	BP	.057	.01848
5.215	1497	PV	.075	.00635
5.584	1996	PP	.077	.00847
6.020	839454	PV	.090	3.56259
6.021	888166	VV	.090	3.76932
6.193	2121430	VB	.092	9.00246
6.841	1494	BV	.053	.00634
7.004	60056	VP	.104	.25487
7.045	1155742	PB	.093	4.90489
7.970	200143	PV	.093	.84939
8.218	2187	VV	.057	.00094
8.425	914296	VB	.124	3.88021
8.955	357359	BB	.103	1.51661
9.463	232755	BV	.098	.98780
10.020	1071570	PB	.094	4.54747
10.647	144461	BV	.141	.61308
10.903	34250	VP	.146	.14535
11.205	94207	PV	.100	.39981
11.635	244094	VB	.100	1.03931
12.110	56954	PV	.097	.24171
12.307	58004	VV	.101	.24990
12.545	52030	VV	.093	.22429
13.073	107163	VV	.107	.45479
13.073	10919	VV	.104	.04634
13.440	19426	VV	.104	.08244
13.800	27503	VP	.124	.11672
14.210	26362	PV	.114	.11269
14.540	99045	VV	.105	.42039
14.082	12015	VV	.164	.05211
15.723	26572	PV	.105	.11284
16.051	39510	VV	.132	.16771
16.470	46304	VV	.170	.20173
16.931	7062	VV	.141	.03003
17.150	3955	VV	.102	.01678
17.426	12460	VV	.225	.05272
18.269	2694	VV	.103	.01144
18.648	3320	VV	.172	.01413
18.945	2419	VV	.133	.01027
19.225	3614	VV	.165	.01534
19.455	9414	VV	.165	.04001
20.060	4065	VV	.171	.01900
20.505	7741	VV	.164	.03285
20.952	3010	VV	.153	.01277
21.863	4049	PV	.224	.01931
23.123	44899	BB	.190	.19051
[illegible]	3191	BV	.161	.01351

Methyl hydrate

QC-2



8 0.05684 [redacted] BTEBX

PID

Closing signal file M:SIGNAL .BHC

RUN# 317 JAN 22, 1991 20:49:54

SIGNAL FILE: M:SIGNAL.BHC
AREA

RT	AREA	TYPE	WIDTH	AREA%
1.339	1281	PV	.070	.01774
1.521	9019	VV	.074	.12489
2.149	22592	PB	.107	.31284
2.670	3788	PP	.160	.02861
3.095	1134251	PB	.071	15.77565
3.897	10229	PV	.086	.14164
4.383	1190101	PB	.062	16.53050
5.655	382	PV	.021	.00537
5.830	1079292	VV	.091	14.94676
6.031	1273387	VV	.091	17.63309
6.199	1346439	VB	.092	18.64550
6.730	1070	PV	.082	.01482
7.012	11598	VB	.132	.16060
7.356	1088816	PB	.094	15.07726
8.284	9121	BP	.135	.12630
9.370	1638	PV	.130	.02268
10.029	699	BV	.092	.00968
12.674	6521	PV	.213	.09030
14.199	1411	PP	.159	.01954
16.282	3445	VV	.250	.04770
17.145	422	PV	.070	.00584
17.336	11703	VV	.145	.16201

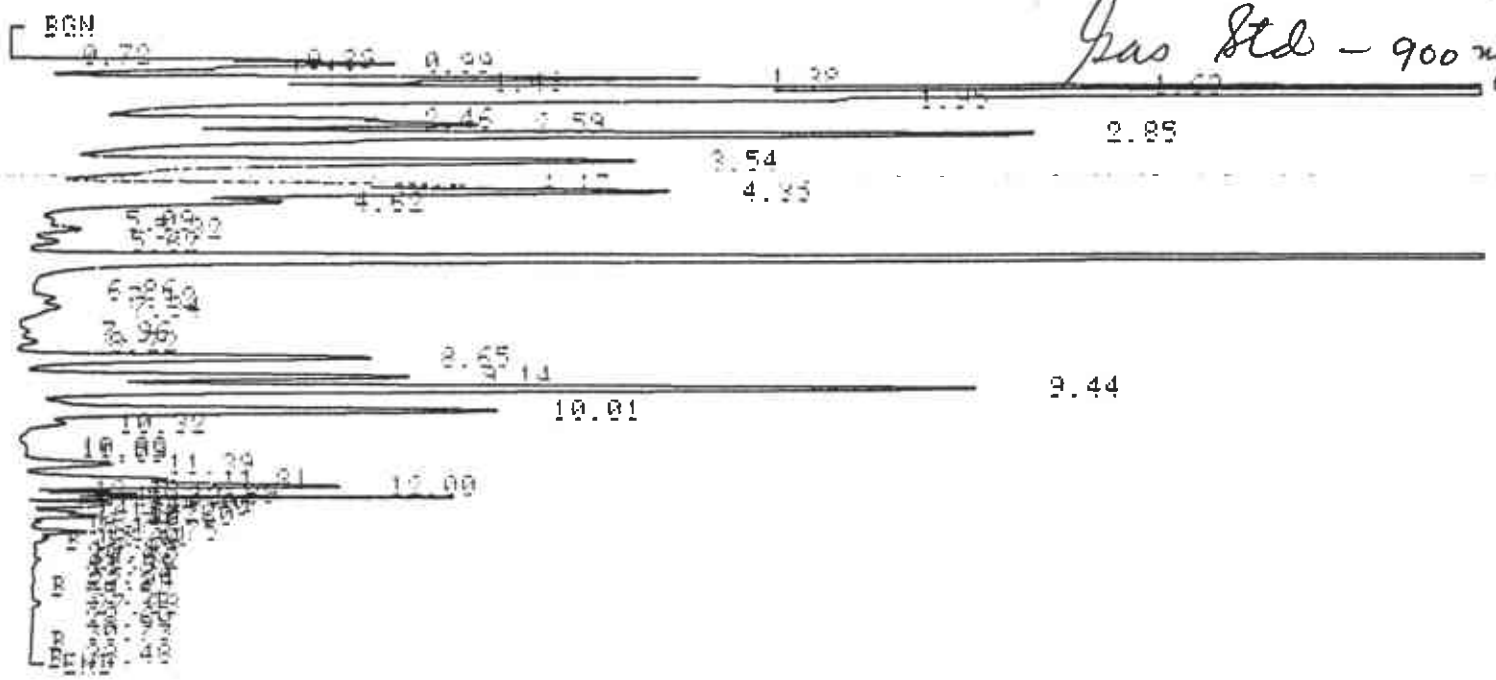
TOTAL AREA=7221570
MUL FACTOR=1.0000E+00

0.977 ppm Gas

RUN # 318 JAN 22, 1991 21:25:44
START

12:35 89/06/06

MODIFIED



Gas Std – 900 mg

#1

N 399 12:35 89/06/06

THOD 7 MODIFIED CALCULATION: %

T	AREA	BC	AREA %
0.99	5.6528	T	1.4695
1.38	8.9297	T	2.3198
1.48	4.6799	T	1.2157
1.63	18.1989	T	4.7279
1.82	89.6884	T	23.3000
1.95	16.8687	T	4.3823
2.46	5.3799	T	1.3976
2.59	9.2459	T	2.4019
2.85	29.6039	T	7.6907
3.54	19.1787	T	4.9824
4.17	7.7519	T	2.0139
4.35	15.6962	T	4.0776
4.62	7.0315	T	1.8267
5.07	39.3202	T	10.2149
8.65	7.8922	T	2.0502
9.14	8.0393	T	2.0886
9.44	20.0602	T	5.2114
10.01	11.3799	T	2.9563
12.00	7.9564	T	2.0410
12.89	4.2501	T	1.1041
13.33	11.7562	T	3.0541
14.06	4.0237	T	1.0452
15.80	4.0235	T	1.0452

T EB

X

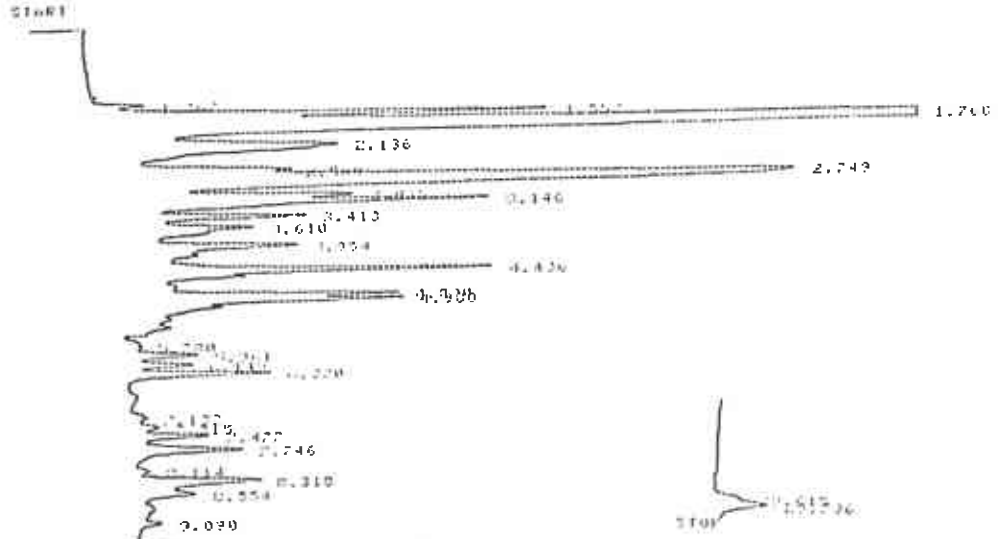
SC-4

37 PEAKS > AREA/HT REJECT

24.410	3016	VP	.110	.22428
29.593	14006	I PH	.109	1.04152

TOTAL AREA=1344767
AREA FACTOR=1.0000E+00

#3 9030799 1:1 500/1



RUN# 13 JAN 1, 1901 07:27:23

AREA%

PT	AREA	TYPE	WIDTH	AREA%
1.267	2139	VV	.072	.07182
1.552	23607	VV	.090	4.10355
1.700	161044	VV	.176	27.99388
2.136	32137	VV	.231	5.58456
2.366	12725	VV	.115	2.21106
2.713	82793	VV	.206	14.41952
3.035	14978	VV	.104	2.60359
3.146	25948	VV	.117	4.51047
3.413	10305	VV	.103	2.17371
3.610	9937	VV	.121	1.72732
3.954	16093	VV	.160	2.95385
4.436	25153	VV	.116	4.37228
4.830	15901	VV	.099	2.76403
5.920	13059	VV	.085	2.40751
6.090	1273	BV	.144	.22733
6.361	4459	VV	.108	.77510
6.149	3706	VV	.096	.64420
6.320	8140	VP	.099	1.41496
7.132	1262	PV	.127	.21937
7.315	1984	VV	.122	.34487
7.427	4687	VV	.104	.81473
7.746	9152	VV	.144	1.59087
8.114	1074	VV	.114	.18669
8.318	10444	VV	.142	1.81545
8.954	5273	VV	.150	.91654
9.090	1961	VP	.124	.34080
9.610	4241	PP	.200	.84150
10.155	3761	BV	.095	.65377
10.775	2030	VV	.151	.35285
11.415	2344	PV	.160	.40745
11.760	2899	VV	.140	.50393
12.245	1233	BV	.124	.21537
12.748	4993	VV	.160	.86792
13.438	3722	VV	.145	.64699
13.865	1526	VV	.133	.26526
14.345	3462	VV	.223	.60190
14.680	2464	VV	.164	.42831
16.415	11350	VV	.119	1.97423
16.913	3305	BP	.003	.57450
17.279	1442	VV	.092	.25066
17.540	4672	VP	.246	.81212
20.147	2492	BV	.136	.43318
20.317	5561	VV	.149	.96665
22.465	1300	BP	.035	.22599
24.181	1073	PP	.100	.18652
24.426	843	PV	.099	.14654
29.619	1273	BV	.082	.21433
29.736	5233	I VH	.176	.91051

TOTAL AREA= 575233

Not Diesel

GC-5

RUN# 13 JAN 1, 1901 07

AREA%

PT AREA TYPE WIDTH

#3 9007799 1:1 500/

PID

HEWLETT-PACKARD PART NUMBER 5181-1219 PRINT THIS SIDE

RUN # 346 JAN 29, 1901 14:57:58

START

1.372
1.570
1.769
2.149
2.531
2.716
3.148
3.415
3.731
3.956
4.438
4.891
5.609
5.960
6.154
6.321
7.480
7.746
8.303
9.086
9.601
10.155
11.415
12.772
14.688
16.412
17.285
17.419

TIMETABLE STOP

Closing signal file M:SIGNAL .BNC

RUN# 346 JAN 29, 1901 14:57:58

SIGNAL FILE: M:SIGNAL.BNC

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.372	1139	PV	.077	.66117
1.570	2717	VV	.104	1.49824
1.769	20907	VV	.205	11.52879
2.149	17556	VV	.196	9.68094
2.531	2978	VV	.144	1.64216
2.716	3273	VV	.111	1.80484
3.148	16287	VV	.113	8.98669
3.415	5736	VV	.109	3.16301
3.731	3734	VV	.122	2.05905
3.956	12098	VV	.129	6.67123
4.438	21146	VV	.142	11.66058
4.891	11800	VV	.114	6.50690
5.609	193	PB	.016	.10643
5.960	1819	BV	.088	1.00306
6.154	2362	VV	.090	1.30248
6.321	5648	VP	.095	3.11449
7.480	2589	VV	.096	1.42766
7.746	5310	VP	.129	2.92810
8.303	13776	VV	.131	7.59653
9.086	1641	VP	.123	.90490
9.601	3245	PV	.233	1.78940
10.155	3515	VV	.114	1.93828
11.415	1422	PV	.155	.78414
12.772	5028	PV	.149	2.77260
14.688	1089	PV	.130	.60051
16.412	3445	VV	.130	1.89968
17.285	1239	VV	.086	.68322
17.419	9584	VV	.102	5.28442

TOTAL AREA= 181346
MUL FACTOR= 5.51400E+00

9-26

#4 9030800 1:1 500/

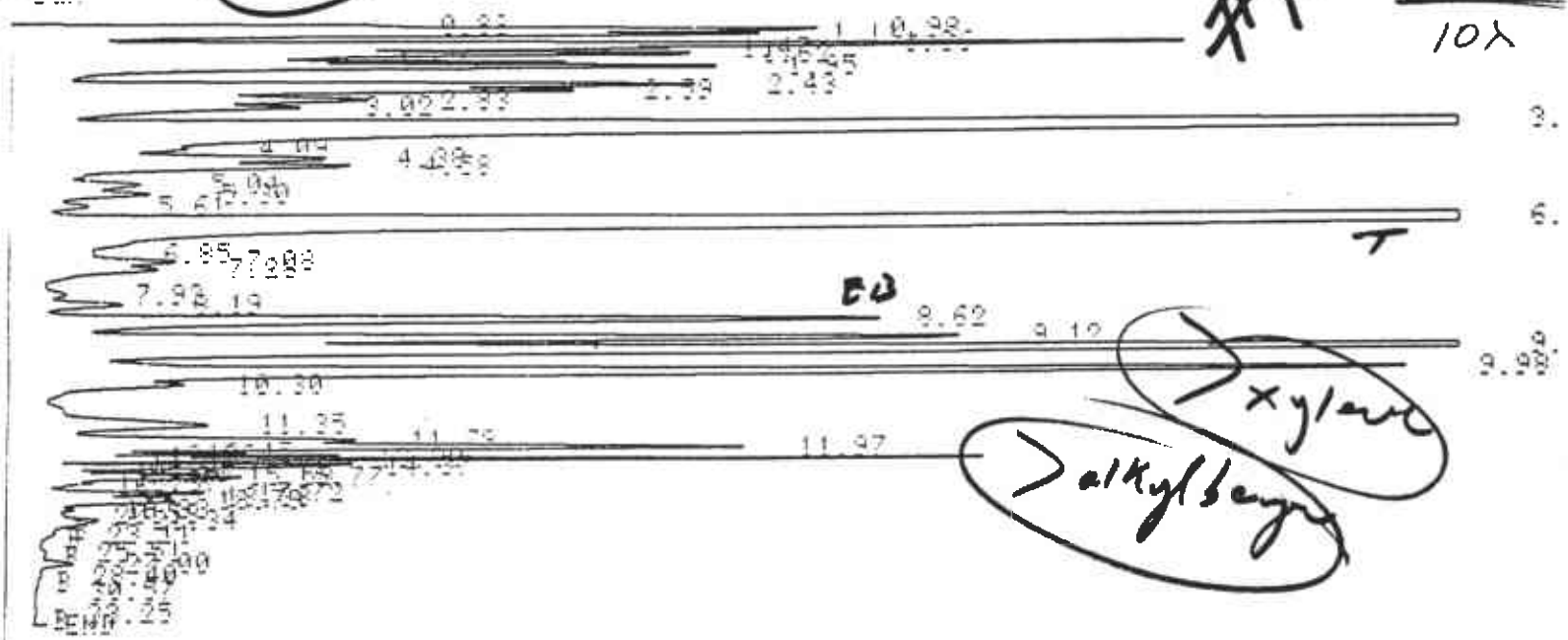
ODIFIED

BGN

FID

#10 - 906035

10λ



406 10:26 89/06/06

OD 7 MODIFIED CALCULATION: %

	AREA	BC	AREA %
99	12.6671	T	1.4853
11	9.0957	T	1.0665
35	15.0252	T	1.7619
60	12.9041	T	1.5131
55	14.5602	T	1.7073
43	11.5296	T	1.3520
59	10.0430	T	1.1775
83	9.0919	T	1.0661
50	172.9820	T	20.2845
38	8.5309	T	1.0003
53	9.2035	T	1.0440
04	220.2629	T	25.8289
62	20.6179	T	2.4177
12	20.4969	T	2.4037
41	47.6858	T	5.5919
98	24.8092	T	4.0818
[illegible]	[illegible]	[illegible]	[illegible]
96	10.7643	T	1.2622
30	28.9976	T	3.3886
04	15.0760	T	1.7679
77	9.6085	T	1.1267
72	11.3729	T	1.3336
79	10.0027	T	1.1729

PEAKS > AREA/HT REJECT

BC-7

19:09 89/06/06

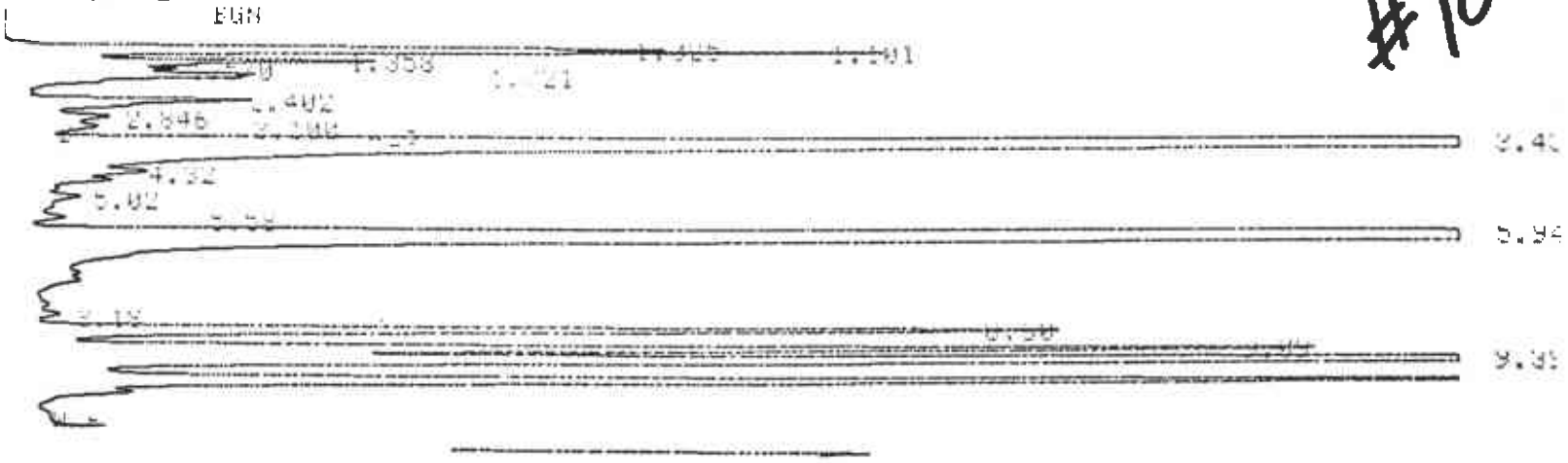
MODIFIED

#11

PID

9060358
10λ

#10'



LE 05 RUN 38 STARTED 10:29.6 89/06/06 CYNTHIA&MAILE'S
METHOD / BTEX ANALYSIS LAST EDITED 10:35.3 89/06/06
F AMT 1.0000000E-02

RT	AREA	BC	RT/10	KF	UG/LITER	NAME
025	195427	I	0.102	9.9999999E-16	0.0000	Unknown
101	246660	I	0.110	9.9999999E-16	0.0000	Unknown
358	176335	I	0.136	9.9999999E-16	0.0000	Unknown
570	49588	I	0.157	9.9999999E-16	0.0000	Unknown
721	171264	V	0.172	9.9999999E-16	0.0000	Unknown
402	126313	I	0.240	9.9999999E-16	0.0000	Unknown
846	38525	I	0.285	9.9999999E-16	0.0000	Unknown
000	2557		0.310	7.1787636E-05	183.6034	BENZENE
43	4082857	I	0.343	7.1787636E-05	29309.9395	BENZENE
72	113545	I	0.423	9.9999999E-16	0.0000	Unknown
02	33389	I	0.506	9.9999999E-16	0.0000	Unknown
54	4619803	I	0.595	6.5270726E-05	30153.7852	TOLUENE
50	569998	I	0.861	9.5333556E-05	5433.9897	ETHYL BENZENE
05	67859	I	0.910	7.3204106E-05	4925.5001	PARA XYLENE
55	1626826	I	0.959	6.2054136E-05	10095.1250	META XYLENE
75	956376	V	0.995	9.2547296E-05	8851.0156	ORTHO XYLENE
84	88187	V	1.134	9.9999999E-16	0.0000	Unknown

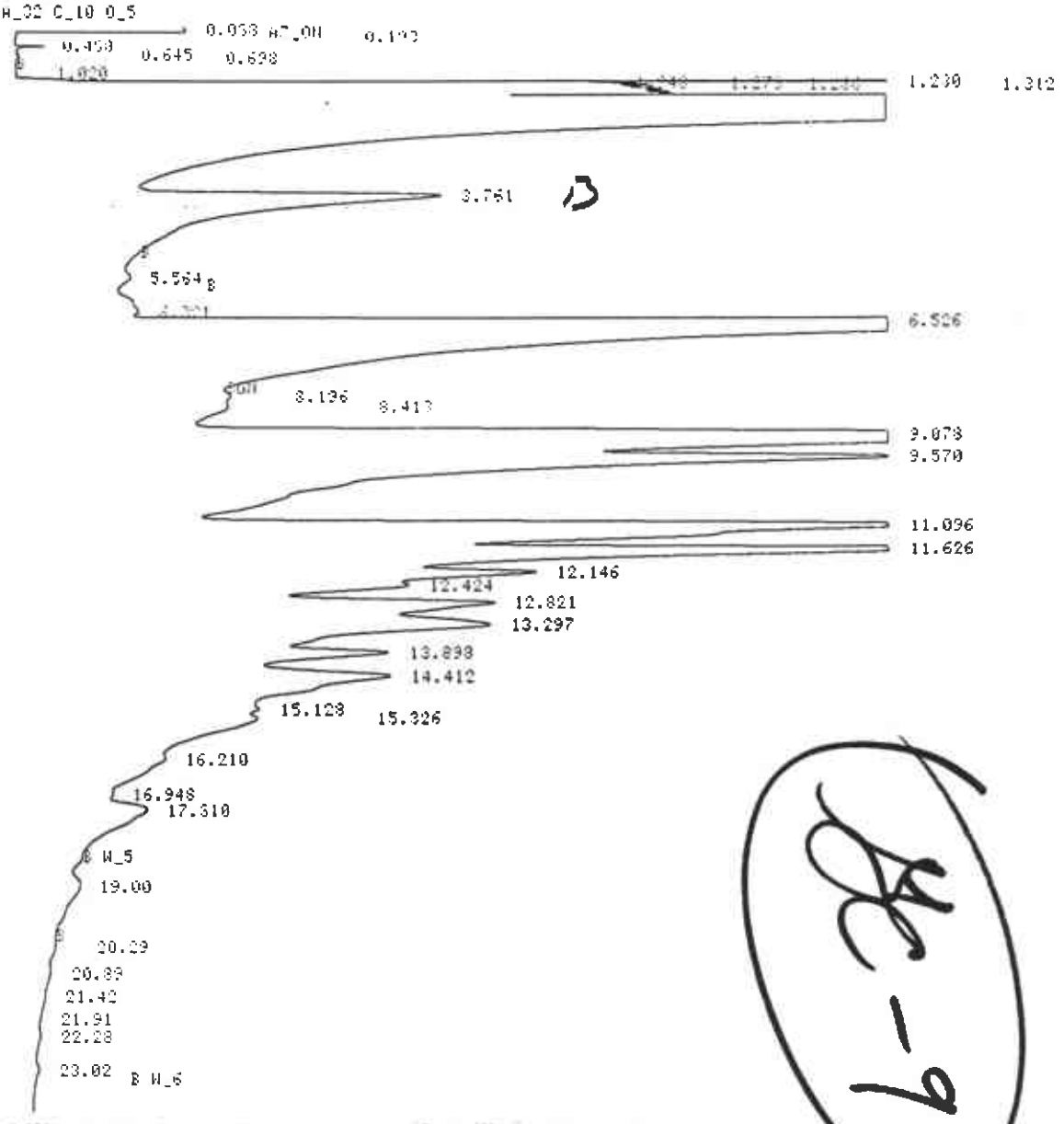
/ MATCHED COMPONENTS 91.00% OF TOTAL AREA
10 [illegible] 9.00% OF TOTAL AREA
./ 795548 TOTAL AREA

8-15

3.0uL 9060359 900:130.0W 6KRW

FILE 695 RUN 2 STARTED 13:45.2 89/06/13 DIESEL
% METHOD 1 DIESEL LAST EDITED 16:27.7 89/06/12

W_4 W_32 C_10 0_5



A-6-1

FILE 695 RUN 2 STARTED 13:45.2 89/06/13 DIESEL
% METHOD 1 DIESEL LAST EDITED 16:27.7 89/06/12

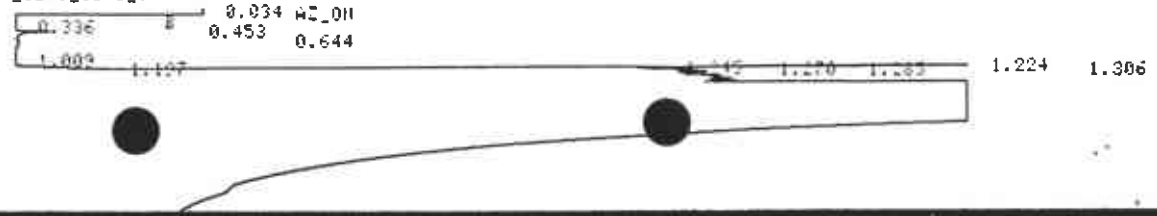
RT	AREA	HEIGHT	BC	AREA PERCENT	HEIGHT PERCENT
9.078	5350088		V	32.0150	
11.096	4103480		V	24.5820	
11.626	2428686		V	14.5279	

22 PEAKS > AREA REJECT 16717419 TOTAL AREA
0 PEAKS > HEIGHT REJECT 0.0000 TOTAL HEIGHT

3.15uL blank (CH_2Cl_2)

FILE 696 RUN 3 STARTED 14:26.2 89/06/13 DIESEL
% METHOD 1 DIESEL LAST EDITED 16:27.7 89/06/12

W_4 W_32 C_10 0_5



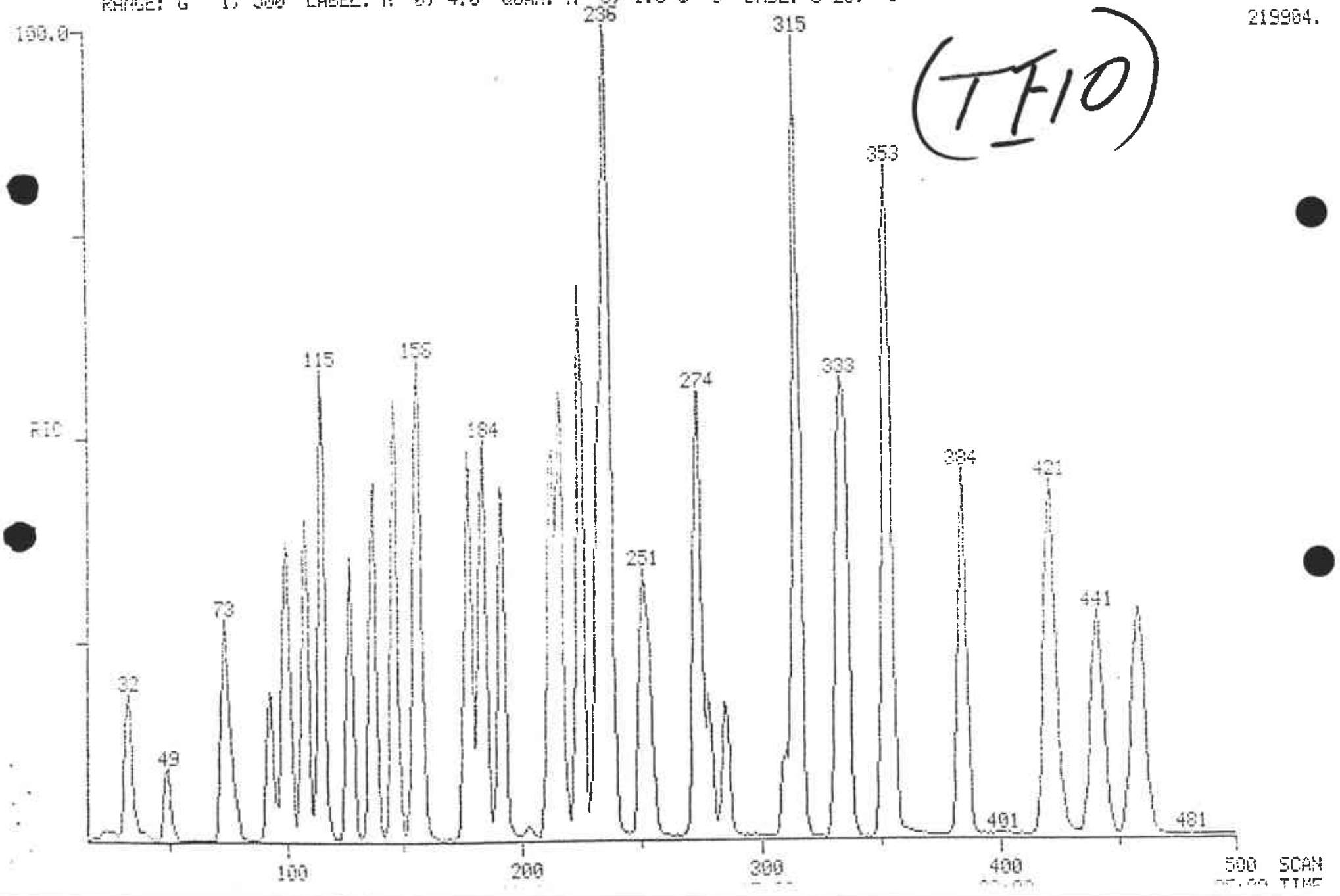
RIC
03/16/89 8:45:00
SAMPLE: HSL STD V0221898 (50UG/L)
CONDS.: GC DESC V0
RANGE: G 1, 500 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: VSTD031689 #1
CALI: VSTD031689 #3

SCANS 15 TO 500

219904.

(TF10)



RIC
03/16/89 12:09:00
SAMPLE: 1-6-B (100UL OF 5GM/5ML MEOH)
CONDS.: GC DESC VO
RANGE: G 1, 500 LASEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: V9030779 #1
CALI: V9030779 #3

SCANS 15 TO 500

(91I-11)