REPORT OF INVESTIGATION
SOIL VAPOR CONTAMINANT ASSESSMENT
CHEVRON SS 9-1153
3126 FERNSIDE BOULEVARD
ALAMEDA, CALIFORNIA

Prepared for

Chevron U.S.A. Inc.

Prepared by

EA Engineering, Science, and Technology, Inc.
Western Regional Operations

9 June 1989
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Prepared for

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CONTENTS

1. INTRODUCTION

1.1 SCOPE

At the request of Chevron U.S.A. Inc., EA conducted a soil vapor contaminant assessment (SVCA) at former Chevron Service Station (SS) 9-1153 in Alameda, California, on 4 May 1989. A follow-up SVCA was conducted on 10 May to define the magnitude and extent of soil-gas hydrocarbons onsite and offsite. This report describes the investigation and presents the results.

1.2 SITE SETTING

Former Chevron SS 9-1153 is located on the northwest corner of the intersection of Fernside Boulevard and Gibbons Drive (Figure 1). A newly constructed home resides on the property, and the area in front of the home entrance (adjacent to the southern boundary) has been fully landscaped. The residence is currently unoccupied.

The site is about 10 feet above sea level (MSL) and the topographic gradient is approximately flat (USGS 1959). The nearest surface water, a tidal canal, is located about 450 feet to the east at its closest point.

Groundwater flow is expected to be eastward toward the canal. The depth to groundwater at the site was measured as about 4.5 feet below grade on 4 May 1989 in monitoring well C-1 (installed by EMCON in August 1986), located near the southern site boundary.

The site is in a predominantly residential and commercial district, with the nearest houses adjacent to the northwestern property boundary (Figure 2). There is no school or hospital within 1,000 feet of the site, but the Marina Convalescent Center is located about 150 feet to the east (across Fernside Boulevard).

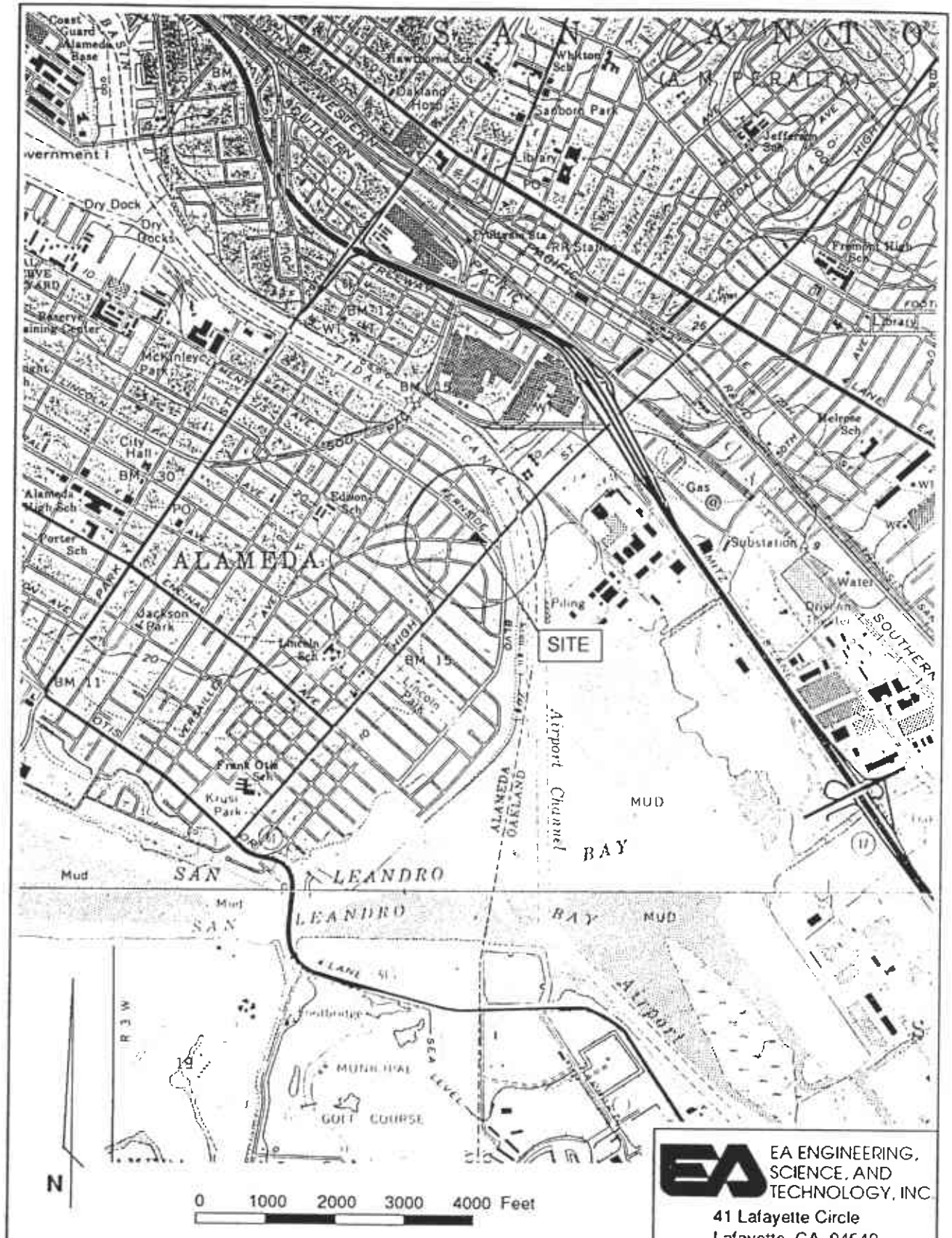

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Figure 1. Location and topography of former Chevron SS 9-1153, 3126 Fernside Blvd., Alameda, CA.

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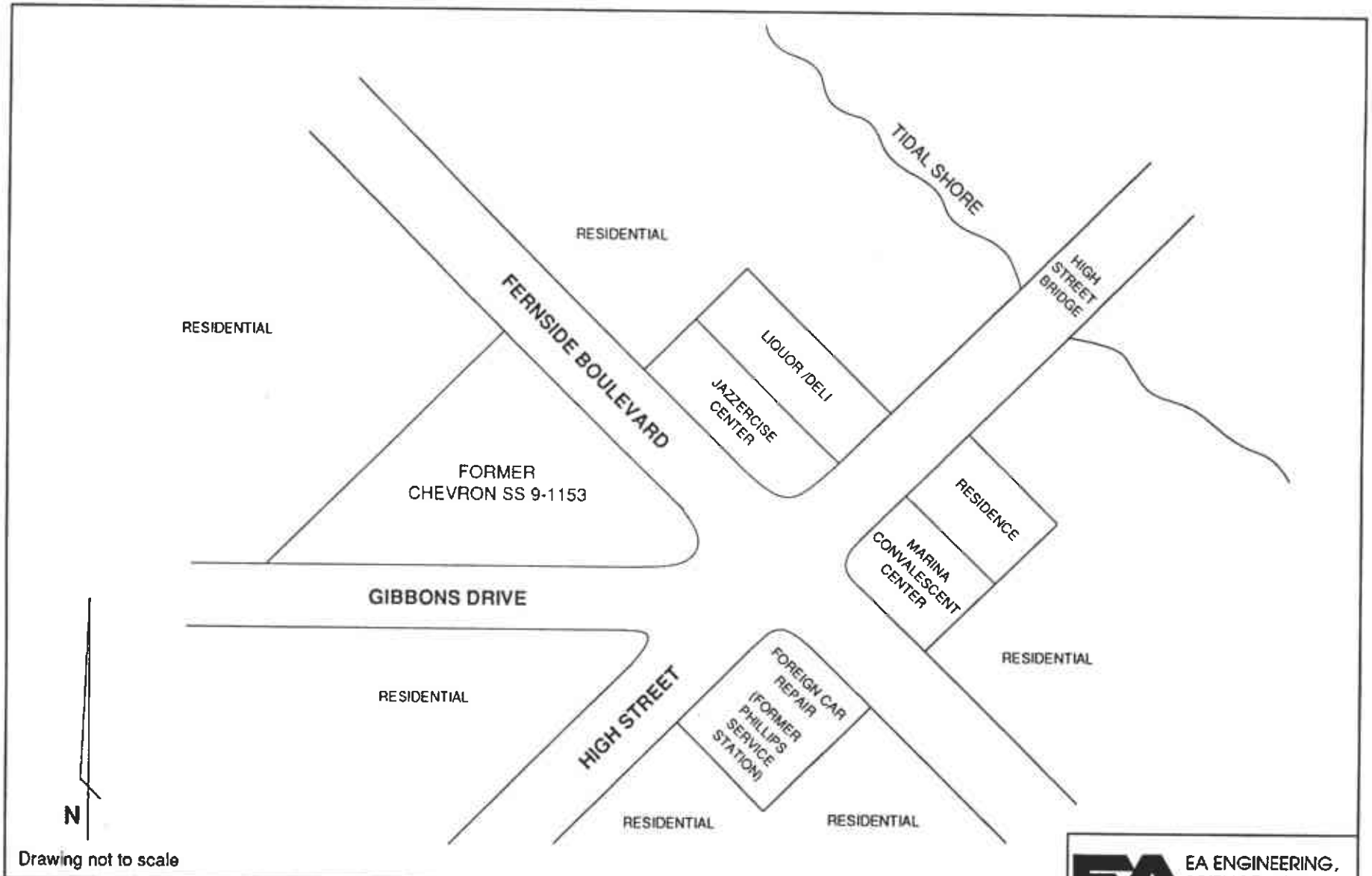

Figure 2. Land use in the vicinity of former Chevron SS 9-1153, Alameda, CA. May 1989.

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No known active underground storage tanks (UST) for petroleum products are located within 1,000 feet of the site, but a former Phillips service station was located about 150 feet to the southeast, at the present Foreign Car Repair facility.

1.3 SITE HISTORY

Chevron Service Station 9-1153 was demolished in 1986. The three underground product tanks, the product lines, the pump islands, and the waste oil tank were removed at that time by.

On 4 June 1986, Blaine Tech Services (BTS) took 12 soil samples and 1 water sample (Appendix A) at the site: 6 deep (10-12 feet) soil samples from the tank pit, 4 shallow (1-1.5 feet) soil samples from the two soil stockpiles adjacent to the tank pit, 1 deep soil sample (8 feet) from the waste oil tank pit, 1 deep (10 feet) soil sample in the vicinity of the former western pump island, and 1 subsurface water sample from the tank pit. No shallow soil samples were taken along the product trenches or near the pump islands. The soil and water samples were analyzed for TPH by Thermo Analytical Inc. (TMA).

In August 1986, EMCON (Appendix B) installed three monitoring wells on the site and took water samples from each of the wells on 4 September 1986. The water samples were analyzed for BTX and TPH.

On 21 July 1987, EA conducted an SVCA at the site of the former service station. Shallow (3 feet) soil gas samples were taken from 12 points: 8 samples onsite, 2 samples about 10 feet offsite near the northwestern site boundary, 1 sample about 60 feet offsite to the south (across Gibbons Drive), and 1 sample about 90 feet to the southeast (across High Street).

2. SOIL VAPOR CONTAMINANT ASSESSMENT

Following a subsurface gasoline release, as free product migrates downward towards the groundwater some of the gasoline will be adsorbed to the soils, and some will vaporize. In the case of a spill of sufficient volume to exceed the soil binding capacity, free liquid will reach groundwater, at which point it will float and may begin to vaporize and solubilize. On the basis of these and other physicochemical properties and behaviors of hydrocarbon mixtures, described in Appendix C, it can be seen that associated with any groundwater, soil, or free-product contamination there is vapor phase contamination. The SVCA technique takes advantage of this, and through the collection and analysis of soil vapor permits rapid delineation of the extent of contamination.

2.1 SVCA SAMPLING

On 4 May and 10 May 1989, EA conducted SVCA's at former Chevron SS 9-1153 in Alameda. The site is triangular-shaped with the southern boundary adjacent to Gibbons Drive, the northeastern boundary adjacent to Fernside Boulevard, and the northwestern boundary adjacent to a nearby residence (Figure 3). A newly-constructed two-story home (currently unoccupied and for sale) is now situated on the property. The entry and general surroundings have been landscaped. The current structures are shown as solid lines on Figure 3 whereas the former service station facilities are indicated by dashed lines.

Soil gas sampling points and existing monitoring wells are shown in Figure 4. For clarity, the designations of former station facilities are deleted in this figure and subsequent figures.

In May 1989 1988, soil gas samples were taken from 32 sample locations (Figure 4): three sampling points inside the existing house and garage, 14 points adjacent to the house and garage, 6 points along the southern boundary, 3 points in the southeastern

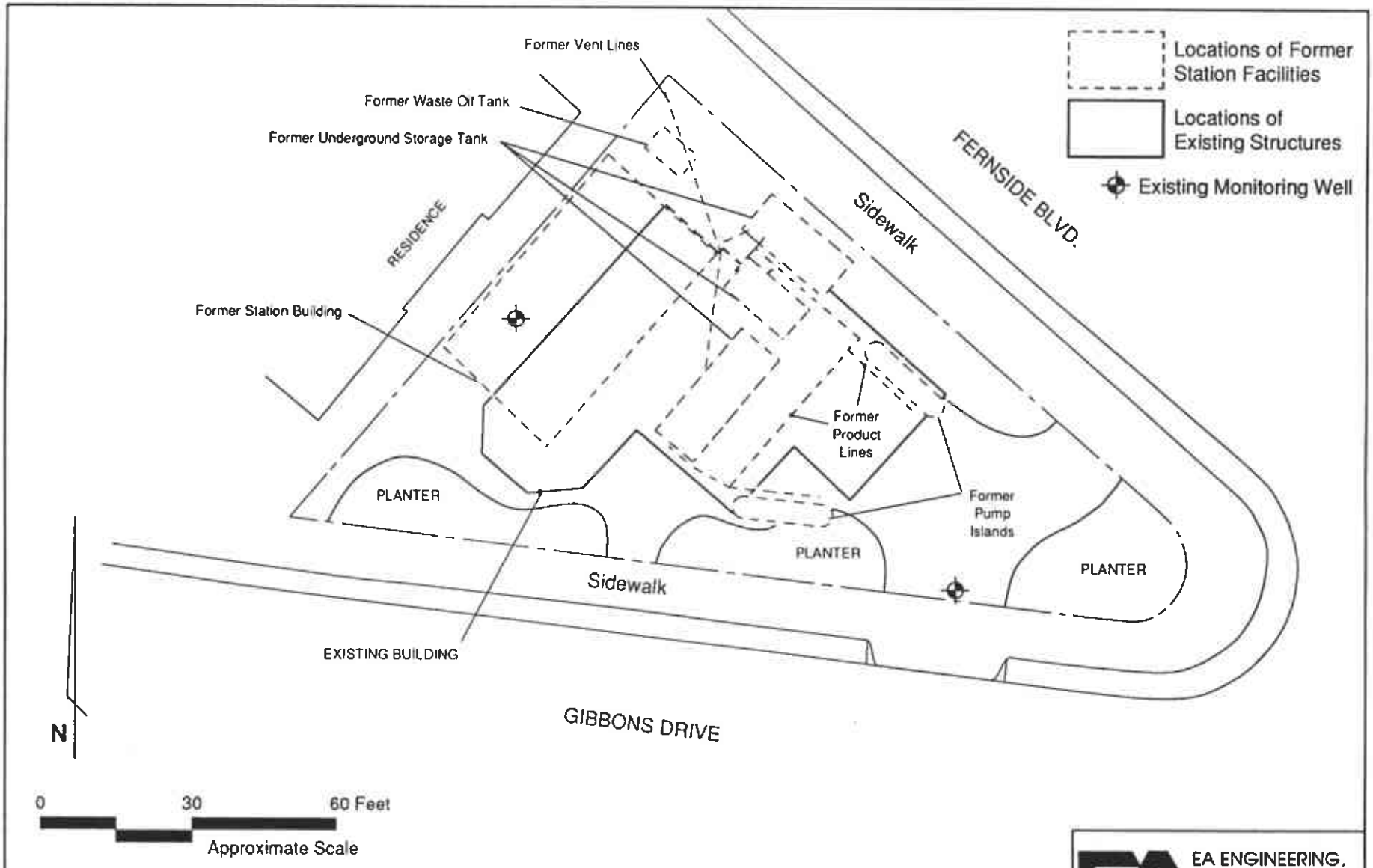

Figure 3. Locations of existing structures and former service station facilities at former Chevron SS 9-1153, Alameda, CA. May 1989.

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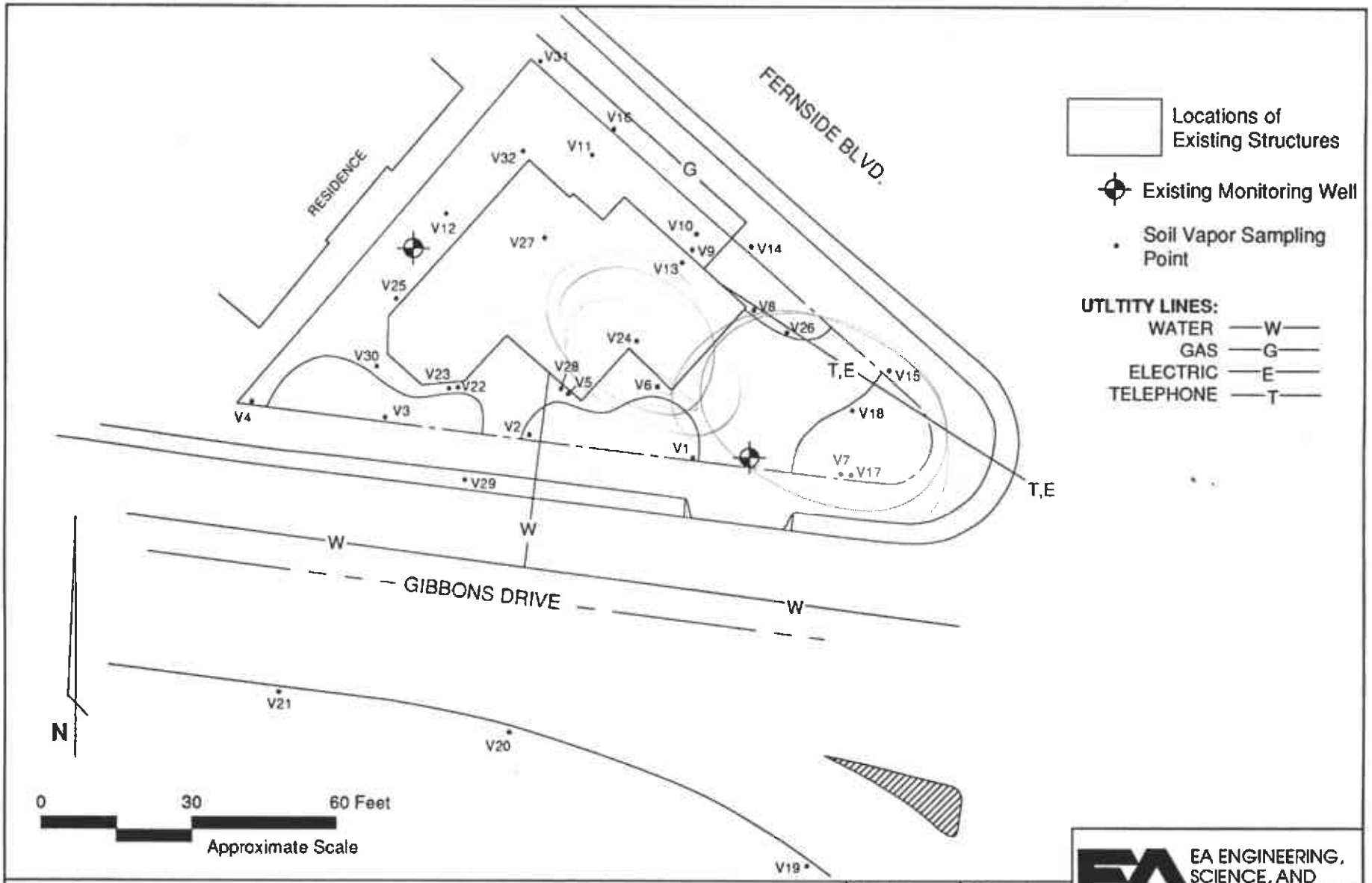

Figure 4. Location of soil vapor sampling points and underground utilities at former Chevron SS 9-1153, Alameda, CA. May 1989.

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planter, 4 points along the northeastern boundary, 3 points along the northwestern boundary, 1 point about 10 feet offsite to the south of the southern boundary, and 3 points about 60 to 80 feet offsite to the south (across Gibbons Drive).

The depth to groundwater at the site was measured at about 4.5 feet below grade; hence, only two sampling depths (2-3 feet and 4-4.5 feet) were incorporated during the SVCA's.

No sampling points were driven or sampled offsite to the east of the site (across Fernside Boulevard) during this survey.

Sampling points V10, V11, and V27 were taken in close proximity to the former tank field. Points V8, V9, and V13 were taken close to the former western pump island. Points V5, V6, and V28 were taken close to the former southern pump island, and V24 was sampled about midway between the two former pump islands.

In order to establish the comparability and reproducibility of data from the two surveys, sampling points V7 and V17, and V5 and V28 were sampled in close proximity to each other on 4 May and 10 May, respectively.

Vertical profiles, ranging in depths between 2 and 4.5 feet were made at about two-thirds of the sampling points. The shallow depth to groundwater (measured as 4.5 feet below grade) prevented the collection of soil gas samples below these depths. Also, water was sucked into the sampling probe (described in section 2.1.2) at shallow depths (2.5 to 3 feet) at sampling points V5, V9, V13, V28, and V30. These sampling locations were either close to the newly planted areas or near the house foundation.

Water was observed in the screened interval of the sampling probe after removal of the probe at deeper sampling points V19 and V27. Mud was also observed in the screened section upon removal of the probe at the deeper sampling depth of V24.

The samples were collected and analyzed according to the following protocol: First, a slotted tip at the end of a hollow, steel sampling probe is driven into the soil to a desired depth below ground surface; a vacuum pump is attached to purge approximately five probe volumes of vapor; purging vapors from the probe ensures that the sample of vapor taken at this depth is not contaminated by vapors collected higher in the section and that the sample represents vapors in the soils at that depth. Purging requires between 1 and 20 minutes. A vacuum gauge on the sampling apparatus (Figure 5) measures the vacuum between the tip of the probe and the pump. After the appropriate purging period, a valve is closed and the vacuum in the probe decays. The vacuum reading during purge and the vacuum release time are recorded on the SVCA Data Sheet.

In general, the soil's gas permeability is indicated by the vacuum release time and the vacuum during purge. A short vacuum-release time suggests that soil gases flow freely through the vadose zone to the probe; a long vacuum release time indicates a high resistance to soil gas transport, which may result in a hydrocarbon concentration measurement that is below the actual level. In most situations, vacuum release is rapid (within three minutes), and the sample is considered to be representative of soil vapors at the sampled depth.

The samples are collected through a septum with a microsyringe and injected into an HNU 421 chromatograph for analysis. The HNU 421 is a laboratory-size, temperature-programmable gas chromatograph equipped with a flame ionization detector (FID). The hydrogen-air flame ionizes compounds, generating an energy increase in the detector, which appears as an electrical signal. Vapor samples are injected into the gas chromatograph, separated on an analytical column, sensed by the detector, integrated, and reported as individual compounds on chromatograms. The instrument is operated isothermally at 57 C and the capillary column flow rate is 10 ml/min. These conditions ensure peak retention

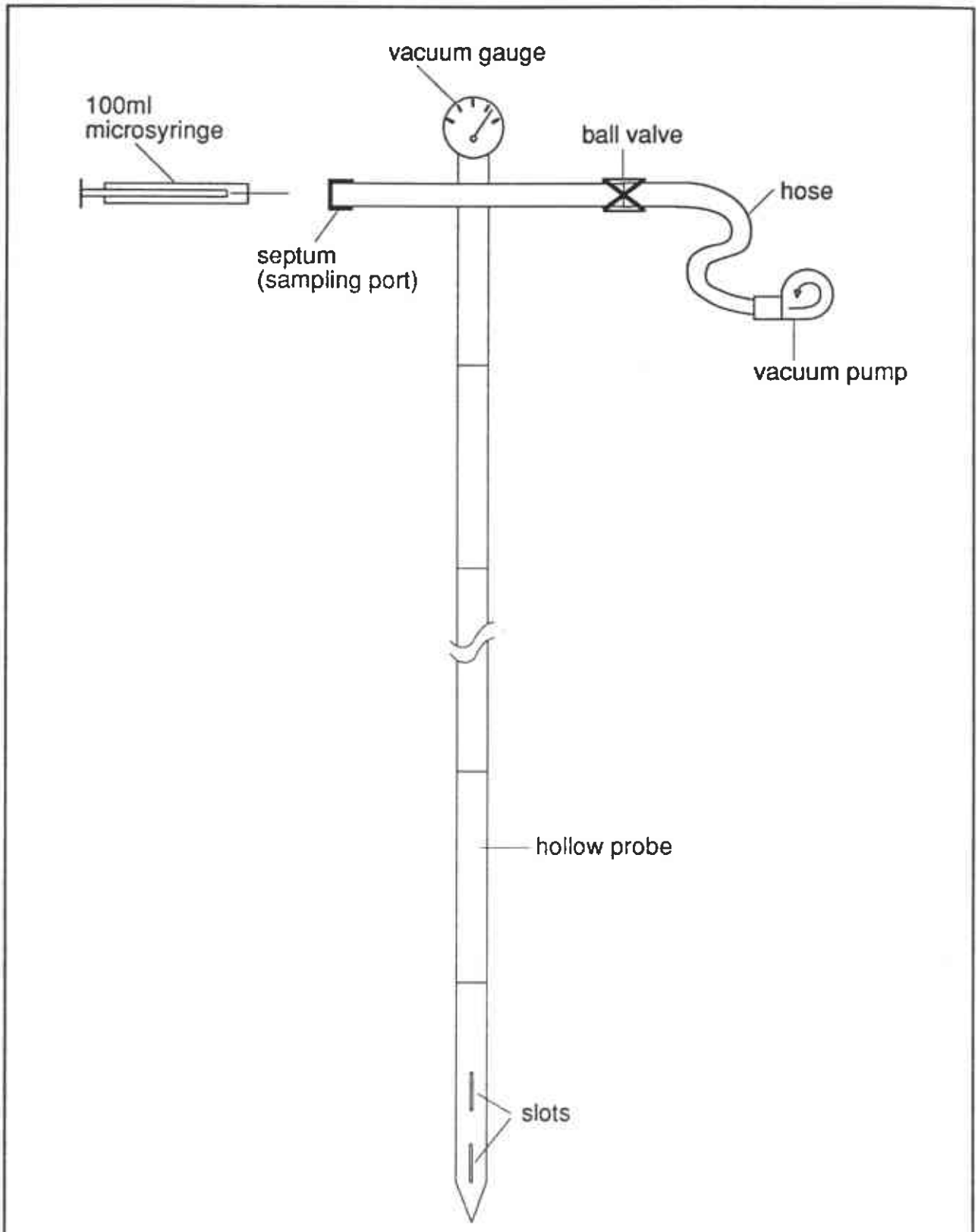

Figure 5. Schematic diagram of soil-gas sampling apparatus.

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time stability and prevent contaminant buildup within the column. Blanks and standards are run every 6-8 samples to verify that the system is free of contamination, and to ensure system reproducibility.

The chromatograph yields a response in the form of an electrical signal, measured in volts; this is recorded and integrated across time by a Shimadzu C-R3A integrator. The peak area is expressed as volt-seconds (V-sec). The instrument is calibrated with a multicomponent standard consisting of 9.6 ppm benzene, 9.3 ppm toluene, 9.4 ppm o-xylene, 17.7 ppm m,p-xylene, 9.5 ppm ethylbenzene, 9.2 ppm n-pentane, 9.5 ppm n-hexane, and 9.4 ppm iso-octane. The integrator calculates and stores the response ratio, V-sec:ppm. The ratio for each component of the standard is used to quantify the concentrations of identifiable vapors in field samples according to their V-sec values.

The concentrations of unidentified compounds are calculated in a similar manner. In Tables 1 and 2 that describe the results of the assessment, the column entitled "Peaks Prior to Benzene" represents the sum of the responses in V-sec for all peaks eluting prior to benzene, proportioned to the calibrated V-sec response for pentane. Similarly, the column entitled "Unidentified Peaks after Benzene" represents the sum of V-sec responses for unidentified components which elute after benzene, proportioned to the V-sec response for iso-octane. The column entitled "Total Volatile Hydrocarbons" represents the sum of all detected components (ppm).

2.2 SVCA RESULTS

The results of the SVCA conducted on 4 May and 10 May 1989, summarized from chromatograms in Appendix B, are presented in Tables 1 and 2. Soil-gas isoconcentration contours for total volatile hydrocarbons (TVH), benzene, and toluene at shallow (between 2 and 4.5 feet) sampling depths are presented in Figures 6-8.

TABLE 1 CONCENTRATIONS OF HYDROCARBON CONSTITUENTS IN SOIL VAPOR AT FORMER CHEVRON SS 9-1153, 3126 FERNSIDE BOULEVARD, ALAMEDA, CALIFORNIA, 4 MAY 1989

Sample Location	Depth (ft)	Vacuum (in. Hg)	Vacuum Release (min)	Peaks Prior to Benzene[a] (ppm)	Benzene (ppm)	Toluene (ppm)	Total Xylenes (ppm)	Ethyl-benzene (ppm)	Unidentified Peaks After benzene (ppm)[b]	Total Volatile Hydro-carbons (ppm)[c]
V1/A	2.5	22	0.25	770	25	<1	23	<1	940	1,800
V1/B	4.5	22	2	410	<1	16	1	<1	78	500
V2/A	2.5	21	0.25	4,100	80	69	17	<1	840	5,100
V2/B	4.5	22	0.5	24	<1	<1	<1	<1	1	25
V3/A	2.5	15	0	2,000	<1	70	1	<1	910	3,000
V3/B	4.5	18	0.5	1	<1	<1	<1	<1	1	2
V4/A	2.5	3	0	1	<1	<1	<1	<1	<1	1
V4/B	4.5	17	0.5	1	<1	<1	<1	<1	1	2
V5/A	2.5	3-17	0.5	2,600	250	2,400	2,400	450	6,500	15,000
V5/B	2.5	5	2	93	8	83	51	<1	310	550
V6/A	2	21	0.1	190	<1	<1	<1	3	5	200
V6/B	3	23	135	1,800	34	39	12	10	500	2,400
V7	2.5	15	0.1	23,000	2,200	2,700	200	43	8,800	37,000
V8/A	2.5	8	0	3	1	<1	<1	<1	2	6
V8/B	4.5	21	0.5	97	1	<1	1	<1	2	100
V9-HS	3	10	0	<1	<1	<1	<1	<1	<1	<1
V10/A	2.5	0.5	0	25	1	1	<1	<1	3	30
V10/B	4.5	22	1	11	1	1	<1	<1	3	15
V11/A	3	0.5	0	26	0.5	1	<1	<1	2	30
V11/B	4.5	21	0.25	360	2	5	2	<1	23	390
V12/A	2.5	0.5	0	1	<1	<1	<1	<1	1	3
V12/B	4.5	21	7	37	<1	<1	<1	<1	3	40

a. Early peaks from blank data subtracted from total peaks prior to benzene. Quantification based on V-sec:ppm ratio for pentane (see text).
b. Quantification based on V-sec:ppm ratio for iso-octane (see text).
c. Summation of all detected constituents (see text).
HS = Headspace sample.

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TABLE 1 (Cont.)

Sample Location	Depth (ft)	Vacuum (in. Hg)	Vacuum Release (min)	Peaks Prior to Benzene[a] (ppm)	Benzene (ppm)	Toluene (ppm)	Total Xylenes (ppm)	Ethyl-benzene (ppm)	Unidentified Peaks After benzene (ppm)[b]	Total Volatile Hydro-carbons (ppm)[c]
V13/A	3	5	0	<1	<1	<1	<1	<1	1	1
V13/B	4.5	2.7	2	<1	<1	1	<1	<1	2	3
V14	2.5	17	0	13,000	360	310	340	69	2,900	17,000
V15	2.5	19	1	620	8	7	<1	<1	74	710
V16	2.25	17	1	1	<1	<1	<1	<1	2	3

BLANK DATA

Test Time	Peaks Prior to Benzene (ppm)[b]	Benzene (ppm)	Toluene (ppm)	o-Xylene (ppm)	m,p-Xylene (ppm)	Ethyl-benzene (ppm)	Unidentified Peaks After Benzene (ppm)[c]	Total Volatile Hydro-carbons (ppm)[d]
0829	78	0.1	<0.1	<0.5	<0.5	<0.5	<0.1	78
0844*	2	<0.1	-	-	-	-	-	2
1016	6	<0.1	<0.1	<0.5	<0.5	<0.5	0.6	7
1100	7	<0.1	<0.1	<0.5	<0.5	<0.5	<0.1	7
1355	17	<0.3	<0.1	<0.5	<0.5	<0.5	<0.5	18
1415	3	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	3
1548	4	<0.1	<0.1	<0.5	<0.5	<0.5	0.2	4

- Not required to be quantified.

TABLE 1 (Cont.)

PERCENTAGE OF STANDARD RECOVERED

Test Time	Benzene (ppm)	Toluene (ppm)	o-Xylene (ppm)	m,p-Xylene (ppm)	Ethyl-benzene (ppm)	n-Pentane (ppm)	n-Hexane (ppm)	iso-Octane (ppm)
0858*	100	100	100	100	100	100	100	100
0934**	100	100	100	100	100	100	100	100
1128	101	112	127	119	126	131	105	105
1344	95	113	132	129	133	105	93	95
1539**	100	100	100	100	100	100	100	100
1719	94	86	74	75	75	68	85	107

* Calibrated
** Recalibrated.

TABLE 2 CONCENTRATIONS OF HYDROCARBON CONSTITUENTS IN SOIL VAPOR AT FORMER CHEVRON SS 9-1153, 3126 FERNSIDE DRIVE, ALAMEDA, CALIFORNIA, 10 MAY 1989

Sample Location	Depth (ft)	Vacuum (in. Hg)	Vacuum Release (min)	Peaks Prior to Benzene[a] (ppm)	Benzene (ppm)	Toluene (ppm)	Total Xylenes (ppm)	Ethyl-benzene (ppm)	Unidentified Peaks After benzene (ppm)[b]	Total Volatile Hydro-carbons (ppm)[c]
V17	2.5	1	0	37,000	2,300	2,500	670	150	11,000	54,000
V18	2.5	20	10	8,400	490	220	32	10	2,900	12,000
V19/A	2.5	1	0	1	<1	<1	<1	<1	<1	1
V19/B	4.5	2	0.25	<1	<1	<1	<1	<1	<1	<1
V20/A	2.5	1	0	3	<1	<1	<1	<1	<1	3
V20/B	4	1	0	2	<1	<1	<1	<1	<1	2
V21/A	2.5	1	0	9	<1	<1	<1	<1	1	10
V21/B	4	3	0.5	62	<1	<1	<1	<1	<1	62
V22	2.5	20	10	77	7	3	<1	<1	17	100
V23	2	2	1	270	<1	1	<1	<1	30	300
V24/A	2.5	1	0	<1	<1	<1	<1	<1	<1	<1
V24/B	4	2	0.25	<1	<1	<1	<1	<1	<1	<1
V24-HS	4	–	–	1,200	[illegible]	500	340	48	790	3,000
V24/C	3.5	3	0.5	7	<1	<1	<1	<1	2	9
V25	2.5	20	15	4	<1	<1	<1	<1	5	9
V26	2	1	0	33	1	<1	<1	<1	1	35
V27	0	0	0	<1	<1	<1	<1	<1	<1	<1
V27/A	2	15	5	56	<1	<1	<1	<1	1	57
V27/B	4	10	5	540	<1	15	<1	<1	62	620
V28/A	2	2	0.1	120	10	25	42	<1	130	330
V28/B	2.5	1	0.5	73	<1	1	6	<1	26	110

a. Early peaks from blank data subtracted from total peaks prior to benzene. Quantification based on V-sec:ppm ratio for pentane (see text).
b. Quantification based on V-sec:ppm ratio for iso-octane (see text).
c. Summation of all detected constituents (see text).
– Indicates not quantifiable.
HS = Headspace sample.

TABLE 2 (Cont.)

Sample Location	Depth (ft)	Vacuum (in. Hg)	Vacuum Release (min)	Peaks Prior to Benzene[a] (ppm)	Benzene (ppm)	Toluene (ppm)	Total Xylenes (ppm)	Ethyl-benzene (ppm)	Unidentified Peaks After benzene (ppm)[b]	Total Volatile Hydro-carbons (ppm)[c]
V29	2.5	1	0	2,800	5	49	<1	<1	670	3,500
V30	2	10	5	29	<1	<1	<1	<1	2	31
V31	2.5	1	0	<1	<1	<1	<1	<1	<1	<1
V32	2.5	1	0	2	<1	<1	<1	<1	<1	2

BLANK DATA

Test Time	Peaks Prior to Benzene (ppm)[b]	Benzene (ppm)	Toluene (ppm)	o-Xylene (ppm)	m,p-Xylene (ppm)	Ethyl-benzene (ppm)	Unidentified Peaks After Benzene (ppm)[c]	Total Volatile Hydro-carbons (ppm)[d]
0848	1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.1	1
1144	6	<0.1	<0.1	<0.5	<0.5	<0.5	<0.1	6
1355	2	<0.1	<0.1	-	-	-	-	2
1448	33	<0.1	<0.1	<0.5	<0.5	<0.5	14	47
1506	3	<0.1	-	-	-	-	-	3
1658	3	<0.1	<0.1	<0.5	<0.5	<0.5	<0.1	3

PERCENTAGE OF STANDARD RECOVERED

Test Time	Benzene (ppm)	Toluene (ppm)	o-Xylene (ppm)	m,p-Xylene (ppm)	Ethyl-benzene (ppm)	n-Pentane (ppm)	n-Hexane (ppm)	iso-Octane (ppm)
0859*	100	100	100	100	100	100	100	100
1111**	100	100	100	100	100	100	100	100

TABLE 2 (Cont.)

Test Time	Benzene (ppm)	Toluene (ppm)	o-Xylene (ppm)	m,p-Xylene (ppm)	Ethyl-benzene (ppm)	n-Pentane (ppm)	n-Hexane (ppm)	iso-Octane (ppm)
1330	114	104	88	102	104	108	108	106
1544	108	93	66	84	84	105	105	101
1747	118	117	126	142	137	112	103	102
1833	122	125	123	155	153	109	114	105

GASOLINE STANDARD[d]

Sample	Peaks Prior to Benzene[a] (ppm)	Benzene (ppm)	Toluene (ppm)	o-Xylene (ppm)	m,p-Xylene (ppm)	Ethyl-benzene (ppm)	Unidentified Peaks After benzene (ppm)[b]	Total Volatile Hydro-carbons (ppm)[c]
Chevron Super Unleaded	160,000	15,000	25,000	2,700	7,500	2,100	21,000	230,000

* Calibrated.
** Recalibrated.
d. Fresh gasoline sample (1 ul of the headspace) analyzed on 18 April 1989.

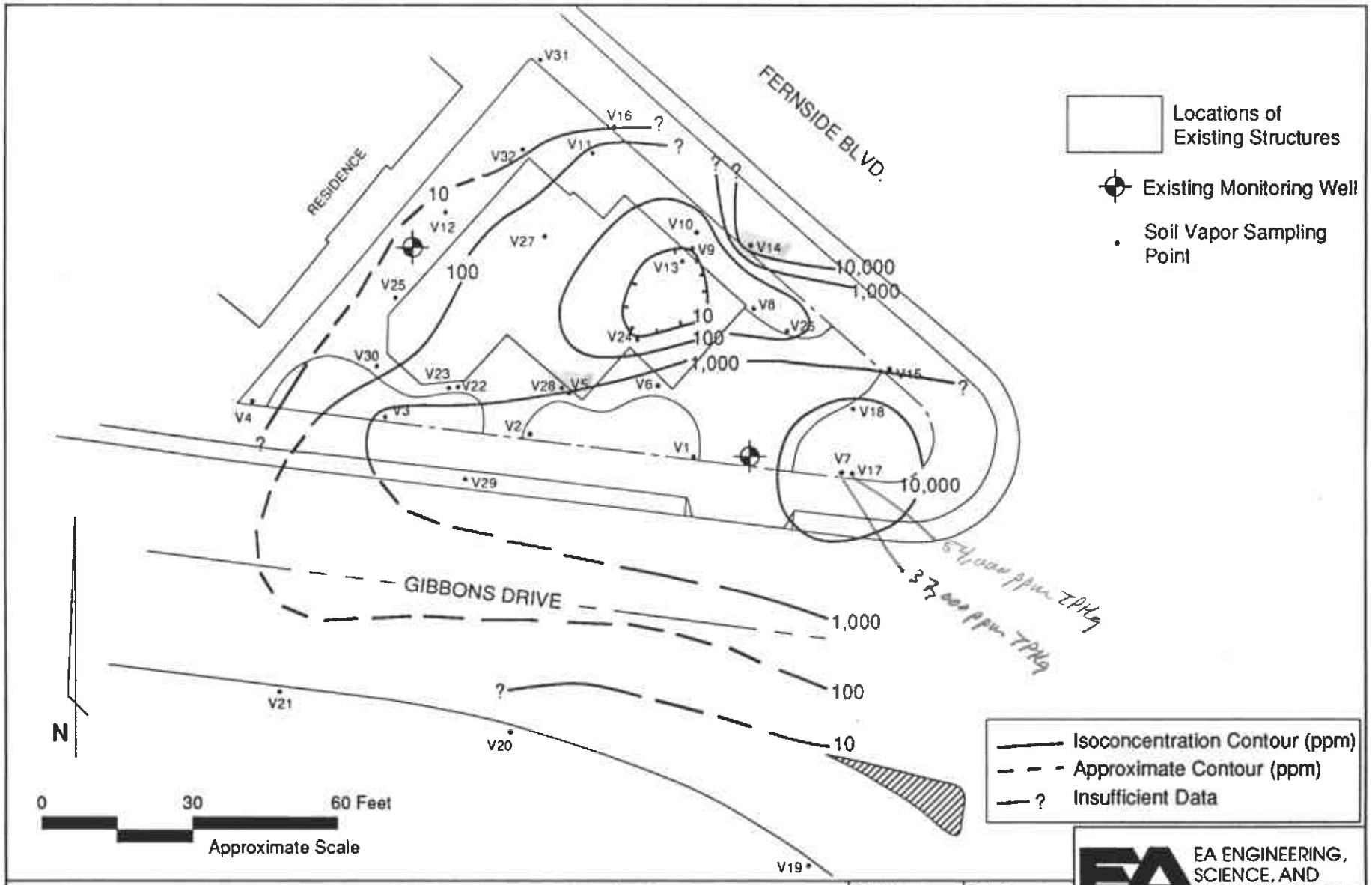

Figure 6. Isoconcentration contours (ppm) of total volatile hydrocarbons (TVH) in the shallow soil gas (at depths between 2 and 4.5 feet) at former Chevron SS 9-1153, Alameda, CA. May 1989.

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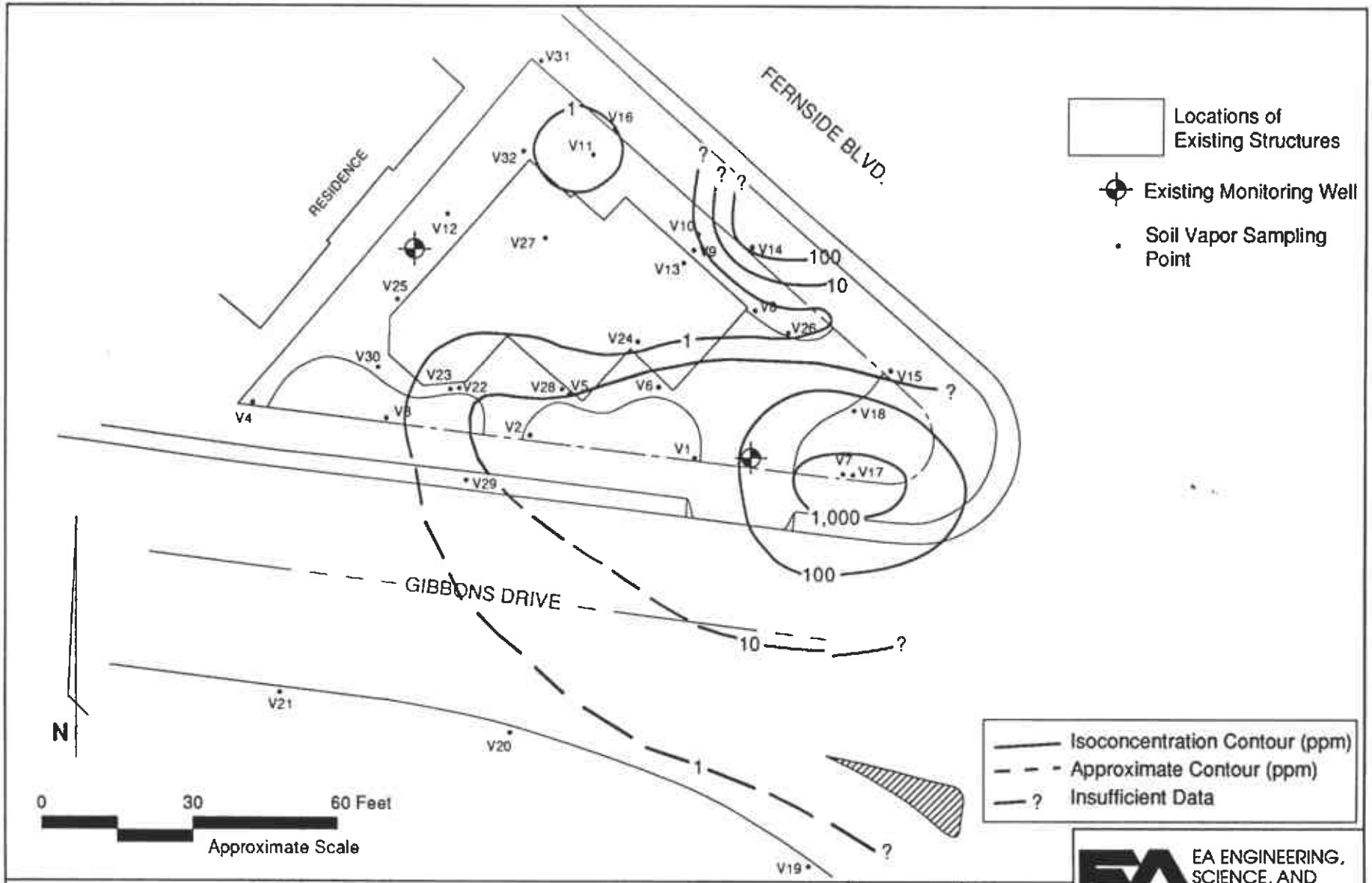

Figure 7. Isoconcentration contours (ppm) of benzene in the shallow soil gas (at depths between 2 and 4.5 feet) at former Chevron SS 9-1153, Alameda, CA. May 1989.

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Lafayette, CA. 94549

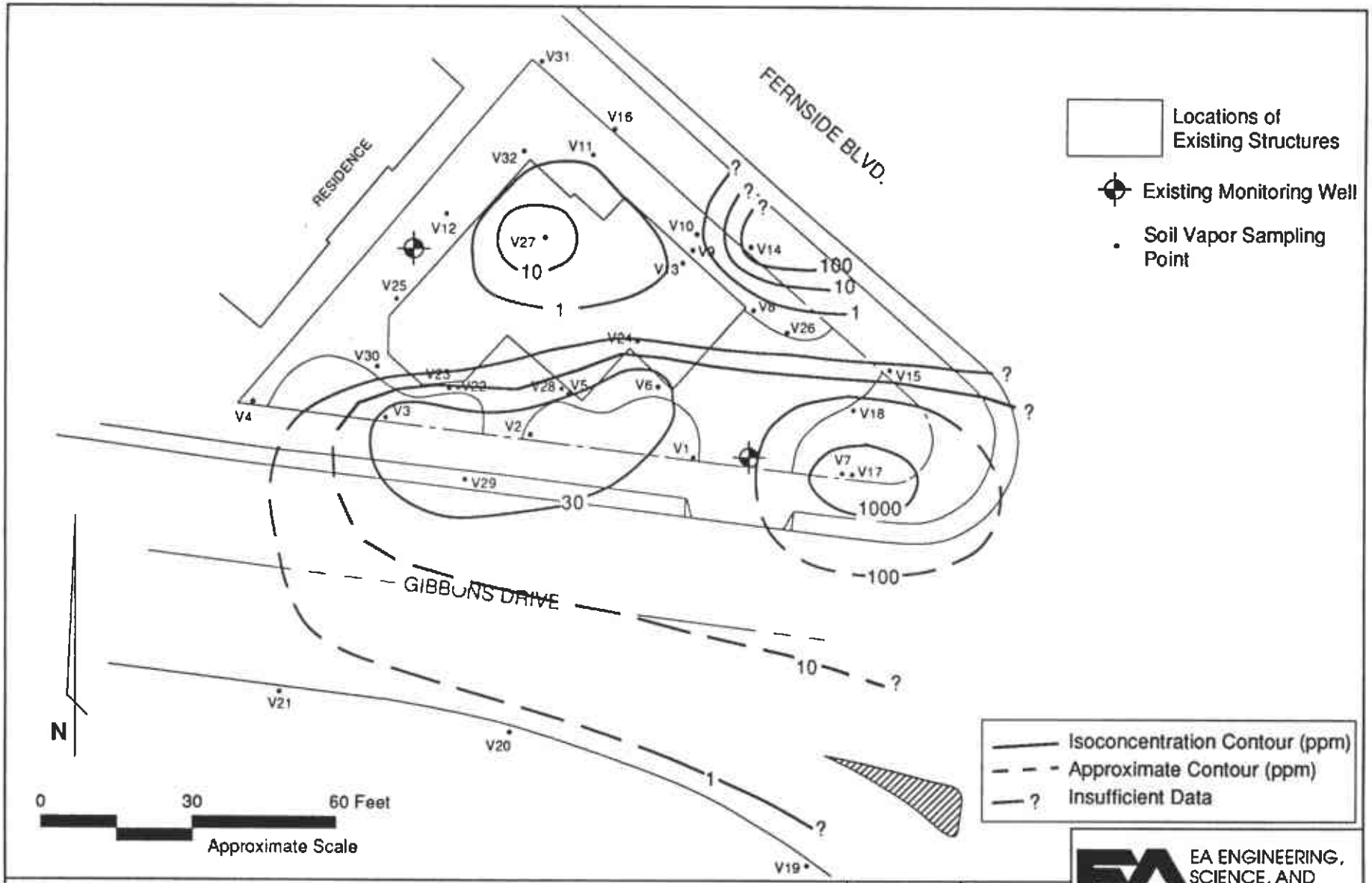


Figure 8. Isoconcentration contours (ppm) of toluene in the shallow soil gas (at depths of 2 to 4.5 feet) at former Chevron SS 9-1153, Alameda CA. May 1989.

Drawn	Date
MAE	6/1/89
Reviewed	Date
MO	6/9/89

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.
41 Lafayette Circle
Lafayette, CA. 94549

Additionally, individual concentrations of TVH, and benzene, toluene, xylenes, and ethylbenzene (BTXE) for sampling points V5/A (where water was pulled into the sampling apparatus) and V24/B (where the headspace of the mud in the probe screen was analyzed as described in Section 2.1) are presented in Figure 9. These data, which are not incorporated into the soil gas contours, are presented separately since they may not reflect actual soil gas concentrations at these locations.

During sampling, soil vacuums were observed to release relatively quickly (<7 minutes) for most of the samples (Table 1 and 2); hence, this suggests a relatively free flow of soil gas into the SVCA sampling probe, and the measured concentrations in soil vapor samples should be representative of actual concentrations of vapors in the soils. However, the soil vacuum released slowly release (>10 minutes) at sampling points V6/B, V18, V22, and V25; these relatively slow release times suggest poor transport of soil gas into the sampling probe and that the hydrocarbon levels reported for these samples may be lower than actual soil gas hydrocarbon concentrations.

To compare samples analyzed on two different days, concentrations at adjacent sampling points from on 4 May and 10 May are presented as follows:

Sample Point	Date	Benzene (ppm)	Toluene (ppm)	TVH (ppm)
V7	4 May	2,200	2,700	37,000
V17	10 May	2,300	2,500	54,000
V5/B	4 May	8	83	550
V28/A	10 May	10	25	330

Comparable values indicate reliable reproducibility of the data collected.

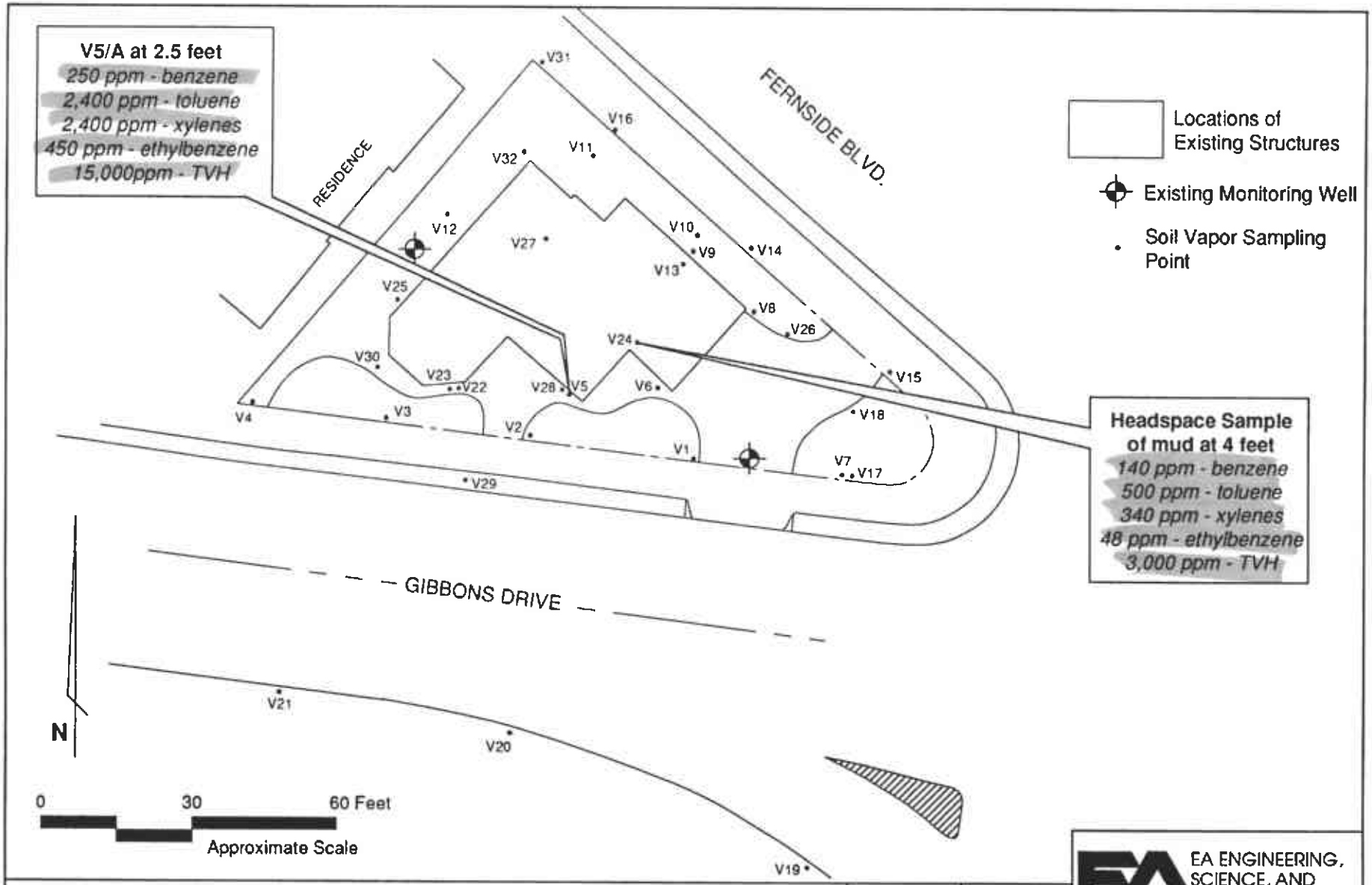


Figure 9. Concentrations (ppm) of TVH and BTEX in sample point V5/A (water in sampling apparatus) and in a head- space sample of the mud in the screened section of V24, at former Chevron SS 9-1153, Alameda, CA. May 1989.

Drawn	MAE	Date	6/5/89
Reviewed	MO	Date	6/9/89

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.
41 Lafayette Circle
Lafayette, CA. 94549

The highest concentrations of petroleum hydrocarbons in soil gas (Figure 5) were measured at shallow depths (2.5 to 3 feet) at the southeast site corner (V17): the concentration of TVH was 54,000 ppm, benzene was 2,300 ppm, and toluene was 2,500 ppm. The sample of soil vapors collected midway along the northeast boundary (V14) contained a concentration of TVH at 17,000 ppm, benzene at 360 ppm, and toluene at 310 ppm.

High concentrations of TVH (2,100 to 54,000 ppm) were measured along the southern site boundary and at one sample point (V14) on the northeastern site boundary, northeast of the former eastern pump island. No samples were collected northeast of the site across Fernside Drive to offset the high concentrations of TVH in sampling points driven along the northeast boundary of the site. High concentrations of TVH (2,400 ppm) were also measured in the planter (V6/B), adjacent to the existing garage. Relatively high concentrations of TVH (620 ppm) were detected under the [redacted] of the new building (V27\B). This sample is also located in the vicinity of the former tank field. Low levels (3 to 10 ppm) of TVH were detected in the soil gas under the existing garage (V13 and V24).

Low to moderate concentrations (1 to 390 ppm) of TVH were detected at the remaining soil gas sampling points adjacent to the western, northern, and eastern perimeters of the current building. These levels appeared to decrease to 10 ppm adjacent to the northwest site boundary and about 60 feet offsite south of the southern boundary (across Gibbons Drive). A concentration of TVH of 62 ppm was measured at V21/B which is located about 60 feet offsite to the south of the western site corner.

Moderate to high conecntrations of benzene in the soil-gas (10 to 2,300 ppm) were detected on the southwestern quadrant of the site and at the midway point (V14) of the northeast site boundary (Figure 7). Low to moderate levels (1 to 10 ppm) were detected near the south side of the existing building. Benzene levels in

the soil gas appeared to decrease to 1 ppm on the western, northern, and eastern perimeters of the building and under the building. Concentrations of benzene also appeared to decrease to 1 ppm about 70 feet offsite to the south of the southeastern site corner.

The pattern of concentrations of toluene (Figure 8) is similar in concentration and extent as the apparent distribution of benzene except that 15 ppm toluene was detected in a sample collected from under the existing kitchen (V27/B) at a depth of 4.0 feet and 49 ppm toluene was measured in a sample collected about 10 feet offsite to the south (V29). Toluene concentrations in the soil gas appeared to decrease to 1 ppm on the western and eastern perimeters of the existing building, along the northwest site boundary, along the upper half of the northeastern boundary, and about 60 feet offsite, south of the southeastern site corner.

High concentrations of TVH and BTXE were measured in samples collected from the planter near the entrance of the existing house (V5/A) where water was pulled into the sampling apparatus and under the garage (V24) in a headspace sample of the mud pulled into the screened section of the probe (Figure 8). Soil-gas concentrations measured in samples collected earlier at these points were relatively low. However, readings taken from the equilibrated entrapped soil gas samples from the inside of the moist and mud stricken screening-probe, gave higher values for petroleum hydrocarbons. These higher values can be attributed to the formation of soil gas at an accelerated rate, in a confined space, due to the partition between the hydrophilic and hydrophobic phases at ambient temperature and under partial pressure conditions.

2.3 SVCA DISCUSSION

One of the highest concentrations of aromatics in the soil gas was detected at the southeastern property boundary (V7) where the concentration of TVH measured 37,000 ppm, benzene was 2,200 ppm, toluene was 2,700 ppm, xylenes were 200 ppm, and ethylbenzene was 43 ppm. The percent of aromatic constituents in the soil gas at this point is therefore about 14 percent. For comparison, a typical sample of the headspace above fresh gasoline (Table 1) contained 160,000 ppm TVH, 15,000 ppm benzene, and 25,000 ppm toluene, 10,000 ppm xylenes, and 2,100 ppm ethylbenzene. The percent of aromatic constituents in this gasoline headspace sample is about 33 percent. The high fraction of aromatics relative to TVH at point V7 (and others) suggests that the soil gas hydrocarbons may have emanated from a relatively fresh or continuing source.

In contrast, the percent of aromatics in sample V3/A was about 2 percent. The majority of constituents detected at this point eluted before benzene (Peaks Prior to Benzene). These factors suggest that the soil gas hydrocarbons are either further from a potential source or are somewhat weathered.

The highest percentages of aromatics detected in all of the samples were 37 percent and 34 percent at V5/A and V24-HS, respectively. These values do not necessarily reflect the hydrocarbon concentrations in the soil gas since water was pulled into the sampling apparatus at V5 and the headspace of the mud in the probe screen at V24 was analyzed separately from the soil gas samples. However, this data indicated heterogeneous distribution of subsurface contamination.

The vertical profiles of soil gas hydrocarbons along the southern portion of the site (V1, V2, V3, and V28) show much higher levels of BTXE and TVH at shallow sampling depths (between 2 and 2.5 feet) rather than in deeper sampling depths (between 4 and 4.5

feet). In contrast, vertical profiles conducted on the northern and eastern portions of the site (V8, V11, V12, and V27) indicate higher soil gas hydrocarbon concentrations at the deeper sampling depths (4 to 4.5 feet). The difference in vertical distributions may be due to the type and extent of subsurface contamination and points to the possibility of the existence of a shallow source(s) in the southern portion and deeper source(s) in the northern portion.

3. CONCLUSIONS

EA conducted soil vapor contaminant assessments (SVCA) at former Chevron SS 9-1153 in Alameda, California, on 4 and 10 May, 1989. A newly built two-story home, which is currently unoccupied, is situated on the property.

The current investigation measured high concentrations of total volatile hydrocarbons (TVH) and aromatic hydrocarbons (BTXE) in the shallow soil gas (2.5 feet) along the southern site boundary and about midway up the northeast boundary. The highest levels of TVH and aromatics were detected near the southeast corner about 40 feet southeast of the former pump islands. The high TVH and BTXE levels detected on the northeast boundary were located at a point which was approximately 10 feet northeast of the former western pump island. Low concentrations of TVH and aromatics were detected along the northwest site boundary.

Moderate to high concentrations of TVH and relatively low concentrations of the aromatics were measured in the soil gas near the southern portion of the existing building. Low to moderate levels of TVH and low levels of the aromatics were detected adjacent to the northeast side of the building. Low concentrations of TVH and aromatics were measured adjacent to the northwest side of the building.

Moderate to high TVH concentrations and moderate toluene levels were detected in the deeper soil gas (4 feet) under the existing kitchen. Low petroleum hydrocarbons were detected at shallow and deeper depths under the existing garage.

High concentrations of aromatics were detected at a sample point (where water was initially pulled into the sampling apparatus at a shallow depth) near the entrance of the existing building.

This suggests that the shallow groundwater in this area may be contaminated even though comparable contamination in the soil gas was not detected.

TVH and high aromatics were detected in a headspace sample of the mud (in the screened section of the probe) at a depth of 4 feet under the existing garage.

TVH decreased to 10 ppm and benzene and toluene decreased to 1 ppm each within the northwestern site boundary and about 60 feet offsite to the south (across Gibbons Drive) from the southwestern site corner, the area of the site which contained the highest concentrations of soil gas hydrocarbons.

CONTENTS

4. REFERENCES

API (American Petroleum Institute). 1985. Laboratory Study on Solubilities of Petroleum Hydrocarbons in Ground Water. Publ. 4395. API, Washington D.C.

Bruell, G.J. and G.E. Hoag. 1986. The diffusion of gasoline range hydrocarbon vapors in porous media--experimental methodologies, in Proceedings of the Joint NWWA/API Conference on Petroleum Hydrocarbons and Organic Chemicals in Ground Water, Houston, Texas.

EA Engineering, Science, and Technology, Inc. 1987. Risk Assessment, Vicinity, of Former Chevron Service Station 9-1153, Fernside and Gibbons, Alameda, Ca. Prepared by EA for Chevron U.S.A. Inc., San Ramon, California.

Hinchee, R.E. and H.J. Reisinger. 1987. A practical application of multiphase transport theory to ground-water contamination problems. Ground Water Monitoring Rev. [Winter 1987]:84-92.

Lyman, W.J., W.F. Reehl, and D.H. Rosenblatt. 1982. Handbook of Chemical Property Estimation Methods--Environmental Behavior of Organic Compounds. McGraw-Hill, New York.

RWQCB (San Francisco Bay Regional Water Quality Control Board). 1985. Guidelines for Addressing Fuel Leaks. RWQCB, Oakland.

APPENDIX A

Blaine Tech Services Soil Results

BLAINE
TECH SERVICES

P.O. BOX 5745
SAN JOSE, CA 95150
(408) 723-3974

June 19, 1986

Chevron USA, Inc.
2 Annabel Lane, Suite 200
San Ramon, CA 94583

Attention: Vicki Hobbs

Re: Field sampling at Chevron Station #1153
Fernside Blvd.
Alameda, CA
on
June 4, 1986

SAMPLING REPORT

Sampling was performed in accordance with approved methodology at the locations shown on the accompanying site diagram. The lab numbers assigned to the samples are given on the site diagram. Samples were collected in appropriate containers, which were sealed, chilled and transported to the laboratory for analysis. Analytical services were provided by Thermo Analytical, Inc/ERG with a separate report and billing invoice referencing their lab numbers.

Tanks

age — unspecified

type — one 550 gallon waste oil
one 750 gallon waste oil
one 3,000 gallon gasoline
one 6,000 gallon gasoline
one 8,000 gallon gasoline

reason for removal — discontinuation of on site storage

Reportage

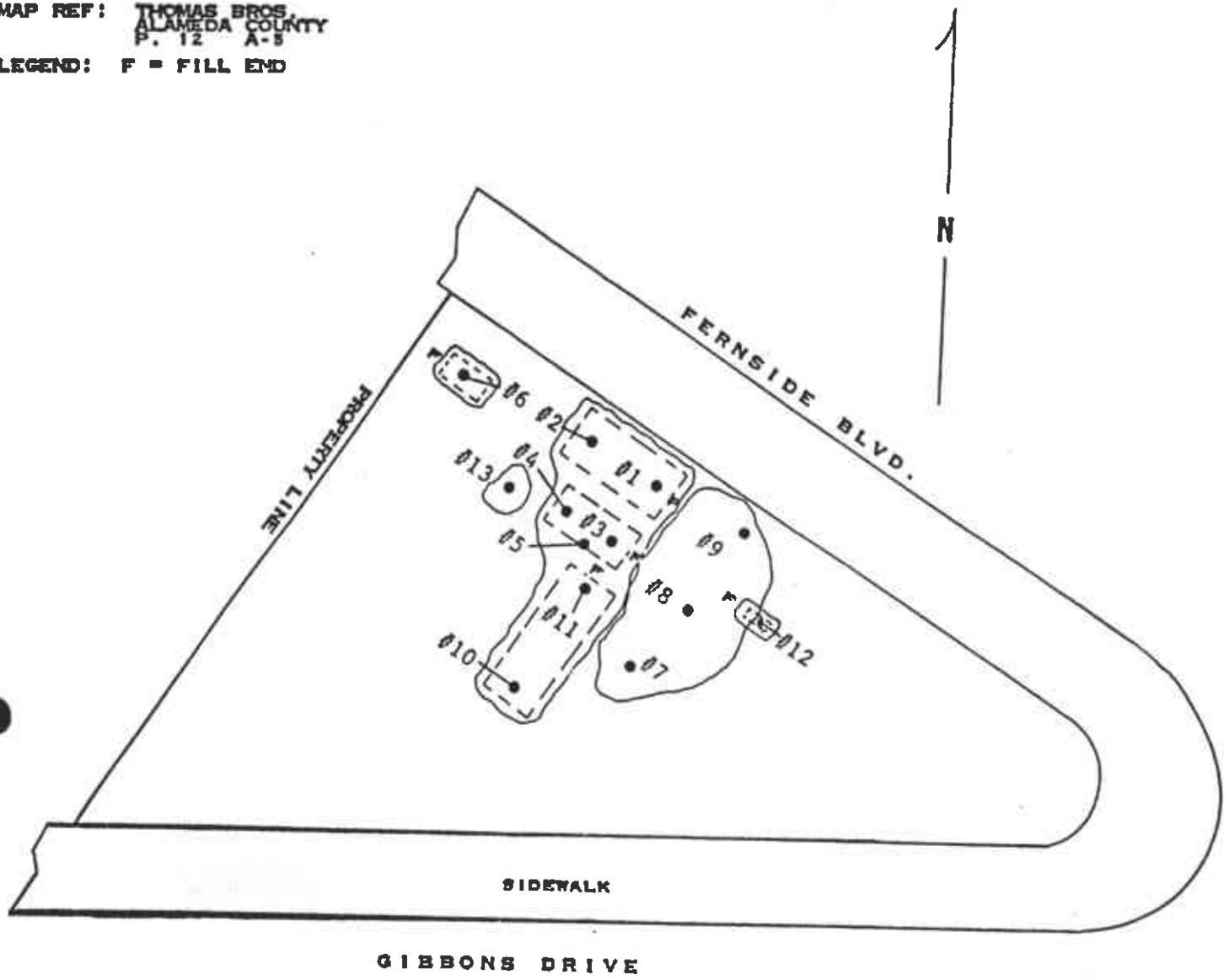
Submission to the Regional Water Quality Control Board and the Fire Department should include copies of both the sampling report and the laboratory report. The property owner should attach a cover letter and submit all documents together in a package.

BLAINE
TECH SERVICES

SAMPLING REPORT 86155F1 6-4-86 CHEVRON STATION NO. 1153, FERNSIDE BLVD., ALAMEDA, CA

MAP REF: THOMAS BROS., ALAMEDA COUNTY P. 12 A-5

LEGEND: F = FILL END



#1 SOIL FROM 11'
ANALYSIS FOR GASOLINE
AT THERMO ANALYTICAL, INC/ERG
TMA/ERG LAB NO. 7920-1

#2 SOIL FROM 12'
ANALYSIS FOR GASOLINE
TMA/ERG LAB NO. 7920-2

#3 SOIL FROM 10'
ANALYSIS FOR GASOLINE
TMA/ERG LAB NO. 7920-3

#4 SOIL FROM 10.5'
ANALYSIS FOR GASOLINE
TMA/ERG LAB NO. 7920-4

#5 SUBSURFACE WATER SAMPLE
ANALYSIS FOR GASOLINE
TMA/ERG LAB NO. 7920-5

#6 SOIL FROM 8'
ANALYSIS FOR WASTE OIL
TMA/ERG LAB NO. 7920-6

#7 SOIL FROM STOCKPILE AT
1' BELOW SURFACE
ANALYSIS FOR GASOLINE
TMA/ERG LAB NO. 7920-7

#8 SOIL FROM STOCKPILE AT
2' BELOW SURFACE
ANALYSIS FOR GASOLINE
TMA/ERG LAB NO. 7920-8

#9 SOIL FROM STOCKPILE AT
1' BELOW SURFACE
ANALYSIS FOR GASOLINE
TMA/ERG LAB NO. 7920-9

#10 SOIL FROM 10'
ANALYSIS FOR GASOLINE
TMA/ERG LAB NO. 7920-10

#11 SOIL FROM 12'
ANALYSIS FOR GASOLINE
TMA/ERG LAB NO. 7920-11

#12 SOIL FROM 10'
ANALYSIS FOR GASOLINE
TMA/ERG LAB NO. 7920-12

#13 SOIL FROM STOCKPILE A
12-18" BELOW SURFACE
ANALYSIS FOR WASTE OIL
TMA/ERG LAB NO. 7920-13

SAMPLING PERFORMED BY
FRANK A. CLINE

DIAGRAM PREPARED BY
TAMMIE STALLINGS

Tammie Stallings

The following addresses have been listed here for your convenience:

Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street
Room 6040
Oakland, CA 94607
ATTN: Dale Bowyer

Alameda Bureau of Fire Prevention
1300 Park Street
Alameda, CA 94504
ATTN: Albert L. Smith

If I can be of any further assistance, please call.

Richard C. Blaine

RCB/tls

Pt 2 of the rem
SS 9-1153-001

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

RECEIVED

MEMORANDUM

September 18, 1986
Project 800-75.01

Gettler-Ryan Inc.
1992 National Avenue
Hayward, California 94545

Attention: Mr. Jeffrey M. Ryan

Re: Former Chevron Service Station, Fernside Blvd. and Gibbons Drive, Alameda, California
Station # 1153

Gentlemen:

This memorandum documents the installation of three monitoring wells (C-1 through C-3) on August 18, 1986 by EMCON Associates at the former Chevron service station located at Fernside Boulevard and Gibbons Drive in Alameda, California. The locations of the monitoring wells are shown on the attached Figure 1.

The borings for Wells C-1, C-2, and C-3 were drilled using continuous-flight hollow-stem auger drilling equipment, and were logged by an EMCON geologist. Soil samples for logging were obtained from auger return materials and by advancing a California modified split-spoon sampler into undisturbed soil beyond the tip of the auger. Upon completion, all borings were converted to 3-inch monitoring wells. Well details accompany the attached Exploratory Boring Logs.

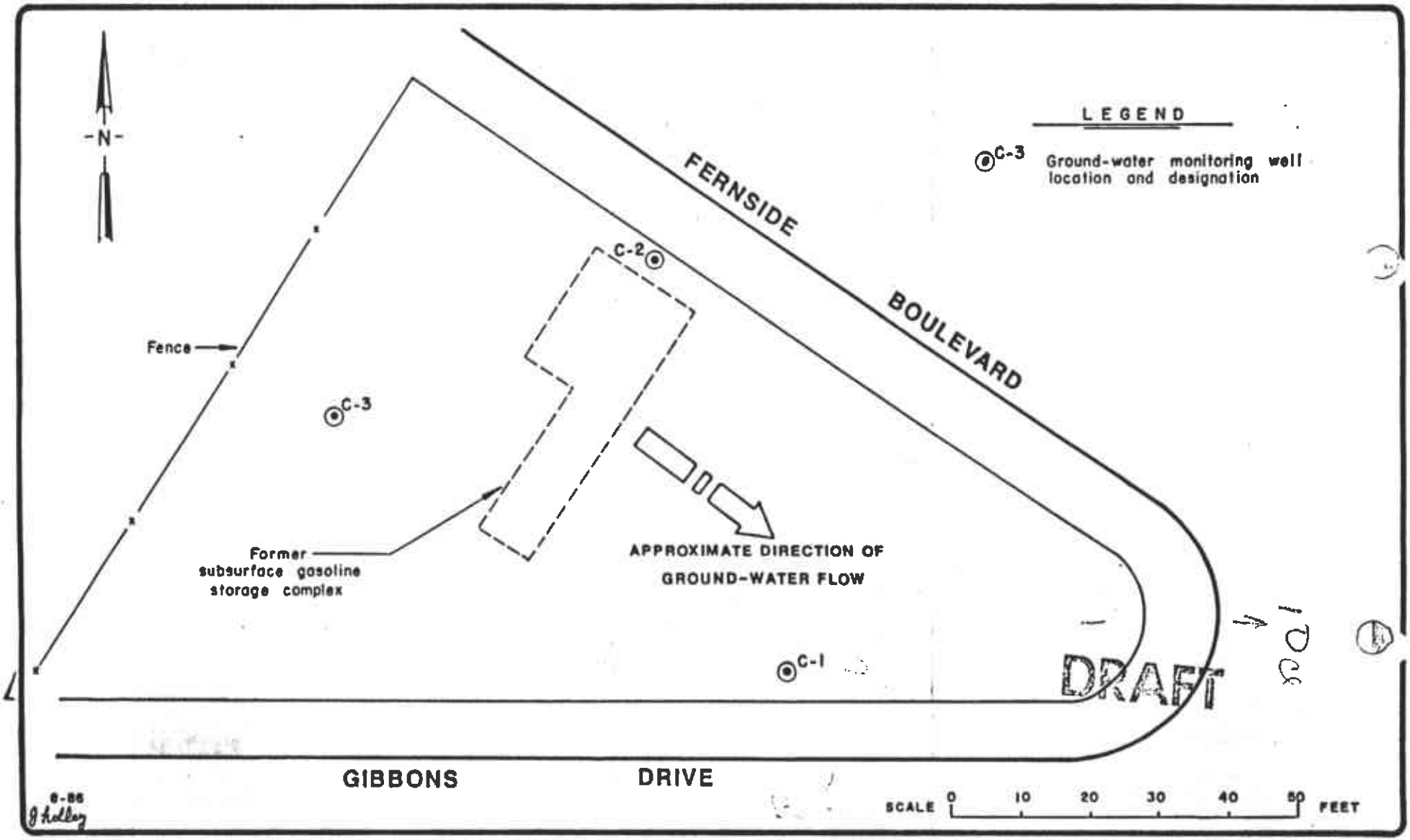
The borings encountered interbedded sand, silty sand, and clayey sand to the total depth explored of 22-1/2 feet. Ground water was encountered at a depth of approximately 4 feet. Strong product odor was noted in soils from Borings C-1 and C-2 from depths ranging between 1-1/2 and 5-1/2 feet. Faint product odor was noted in sand fill from Boring C-3 at a depth of 1 foot, and in soils from Boring C-1 at 9 feet.

The monitoring wells were field-checked for water level and presence of floating product by EMCON on September 4, 1986. No floating product was found in any of the wells. Therefore, ground water samples were collected from each of the wells. Prior to sampling, four casing volumes of water

were purged from the wells using a suction pump. The ground-water samples were then colleted using a teflon bailer. The samples were placed on ice and delivered directly to a certified analytical laboratory. The samples were analyzed for the presence of gasoline and BTX (benzene, toluene, xylene) compounds. Gasoline was detected in ground-water samples from C-1, C-2 and C-3 at 15,000 parts per billion (ppb), 1,000 ppb and 50 ppb, respectively. Certified analytical reports and methods of analysis are attached.

If you have any questions regarding the contents of this memorandum, please do not hesitate to call.

Susan M. Willhite



EMCON Associates

GETTLER-RYAN INC.
SUBSURFACE HYDROGEOLOGIC INVESTIGATION
FORMER CHEVRON SERVICE STATION, FERNSIDE BLVD. & GIBBONS DR.
ALAMEDA, CALIFORNIA

MONITORING WELL LOCATION MAP

FIGURE 1

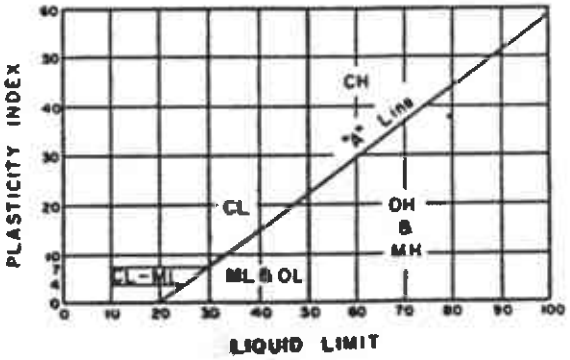
PROJECT NO. 800-75.01

MAJOR DIVISIONS		SYMBOLS	TYPICAL SOIL DESCRIPTIONS
COARSE GRAINED SOILS (More than 1/2 of soil > no. 200 sieve size)	GRAVELS (More than 1/2 of coarse fraction > no. 4 sieve size)	GW	Well graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS (More than 1/2 of coarse fraction < no. 4 sieve size)	SW	Well graded sands or gravelly sands, little or no fines
		SP	Poorly graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS (More than 1/2 of soil < no. 200 sieve size)	SILTS & CLAYS LL < 50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS LL > 50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils

CLASSIFICATION CHART
(Unified Soil Classification System)

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL	3" to No. 4	76.2 to 4.76
coarse	3" to 3/4"	76.2 to 19.1
fine	3/4" to No. 4	19.1 to 4.76
SAND	No. 4 to No. 200	4.76 to 0.074
coarse	No. 4 to No. 10	4.76 to 2.00
medium	No. 10 to No. 40	2.00 to 0.420
fine	No. 40 to No. 200	0.420 to 0.074
SILT & CLAY	Below No. 200	Below 0.074

GRAIN SIZE CHART



PLASTICITY CHART

METHOD OF SOIL CLASSIFICATION

EMCON ASSOCIATES

NOTES:

Logs of Exploratory Borings

2.5 YR, 6/2 — Denotes color as field checked to Munsell Soil Color Charts (1975 Edition)

 Denotes undisturbed sample taken in 2-inch split-spoon sampler.

 Denotes disturbed sample (bag sample).

▽ Denotes first observation of groundwater.

▼ Denotes static ground-water level.

NR No recovery

Penetration — Sample drive hammer weight = 140 pounds, drop = 30 inches. Blows required to drive sampler 1 foot are indicated on logs.

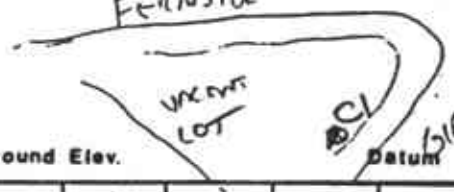
LOG OF EXPLORATORY BORING

EMCON ASSOCIATES

PROJECT No. 800-75.01 DATE 8-18-86
CLIENT GR ORDON
LOCATION ALAMEDA
LOGGED BY EBL DRILLER BAYLAND

BORING No. G1
Sheet 1 of 1

Field location of boring:



Ground Elev. Datum

Drilling method H-S AUGER
Hole dia. 8"

Casing installation data 3" PVC SLOTTED CASING INSTALLED FROM 22 TO 2 FEET; SOLID TO SURFACE; SAND PACK TO 16"; BENTONITE TO 14"; CONCRETE TO SURFACE.

Water level	4.5'	4.1'		
Time	13.05	16.06		
Date	8-18-86	8-18-86		

Pocket Torr vane TSF	Pocket Penetrometer TSF	Blows/ft. or Pressure PSI	Type of Sample	Sample Number	Depth	Sample	Soil Group Symbol (U.S.C.S.)	DESCRIPTION
					2		SW	SAND FILL: BROWN (10YR, 5/3); 10-20% FINES; 70-80% FINE SAND; 10-20% MED SAND TO FINE GRAVEL; LOOSE; DRY; NPO.
		4/4/4	DR-L	(1)	4		SP	@ 1½ FEET; STRONG GAS ODOR.
	25		100%		6		SC	SAND; DARK GRAY (2.5Y, N4); 5-10% FINES; FINE SAND; LOOSE; WET; STRONG GAS ODOR.
					8			
	3.0	1/8/16	DR-L	(2)	10			CLAYEY SAND; DARK GRAY (2.5Y, N4); 30-40% FINES; FINE SAND; VERY STIFF; WET; STRONG GAS ODOR.
			100%		12			@ 9-10½ FT: DARK GRAYISH BROWN (2.5Y, 4/2); FAINT GAS ODOR.
					14		SP	
		7/12/18	DR-L	(3)	16			SAND; OLIVE BROWN; (2.5Y, 4/4); 5-10% FINES; 80-90% FINE SAND; 5-10% MEDIUM SAND; MEDIUM DENSE; WET; NO GAS ODOR.
			100%		18			
		12/24/30	DR-L	(4)	20			@ 19-20½ FEET; 5% COARSE SAND TO FINE GRAVEL; VERY DENSE; NPO.
		14/12/17	DR-L	(5)	22		SC	CLAYEY SAND: GRAYISH BROWN (2.5Y, 5/2); 25-35% FINES; 60-80% FINE SAND; VERY STIFF; WET; NPO.
	3.0		100%					
								BOTTOM OF BORING AT 22½ FEET.

PRELIMINARY

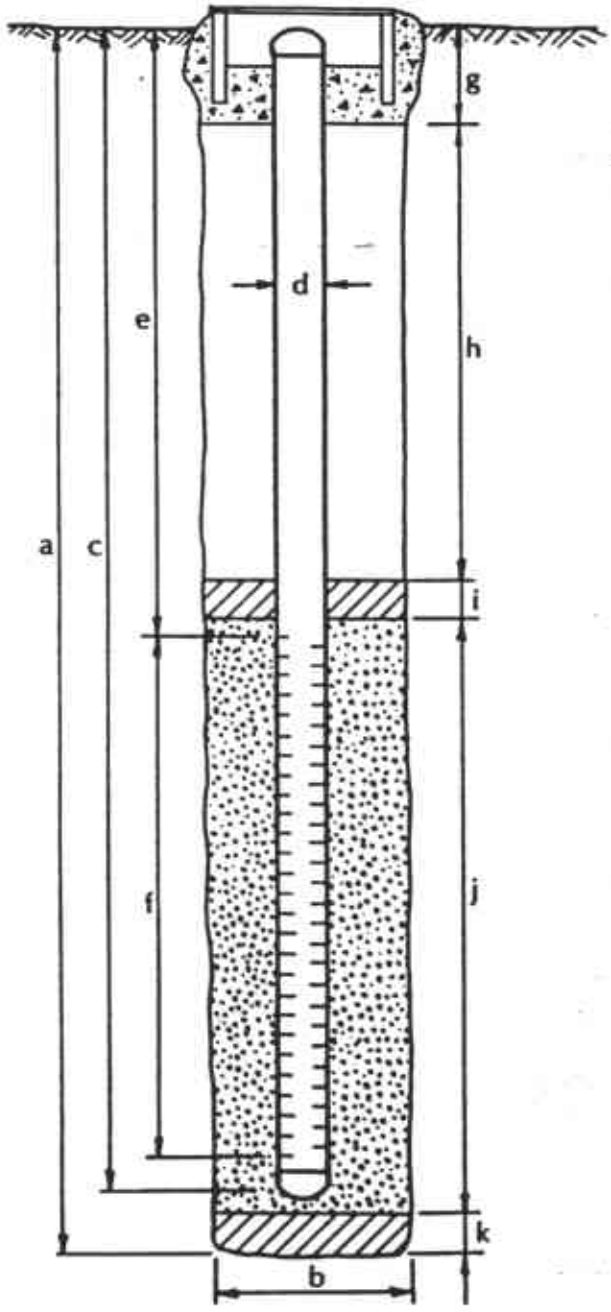
WELL DETAIL

PROJECT NUMBER 600-75.01
PROJECT NAME G-P (Hayward)
COUNTY ALAMEDA
WELL PERMIT NO.

BORING / WELL NO. C-1
TOP OF CASING ELEV.
GROUND SURFACE ELEV. 7'± MSL
DATUM USGS

DRAFT

G-5 vault box (Std.)



EXPLORATORY BORING

a. Total depth 22½ ft.
b. Diameter 8" in.
Drilling method Hollow-Stem Auger

WELL CONSTRUCTION

c. Casing length 22 ft.
Material Schedule 40 PVC
d. Diameter 3 in.
e. Depth to top perforations 2 ft.
f. Perforated length 20 ft.
Perforated interval from 22 to 2 ft.
Perforation type Machine Slot
Perforation size .020 inch
g. Surface seal 1.2 ft.
Seal material Cement Grout
h. Backfill 0 ft.
Backfill material
i. Seal 0.3 ft.
Seal material Bentonite
j. Gravel pack (22 to 1.5 feet) 20.5 ft.
Pack material Coarse Monterey Sand
k. Bottom seal 0.5 ft.
Seal material Bentonite

PLATE

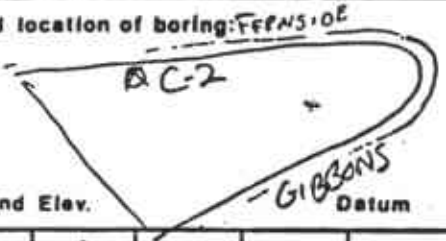
LOG OF EXPLORATORY BORING

EMCON ASSOCIATES

PROJECT No. 800-75.01 DATE 8-18-86
CLIENT GR CANYON
LOCATION ALAMEDA
LOGGED BY EBL DRILLER BAYLAND

BORING No. G-2
Sheet 1 of 1

Field location of boring: FENCE



Ground Elev. Datum

Drilling method HS AUGER
Hole dia. 8"

Casing installation data 3" PVC SLOTTED CASING INSTALLED FROM 22 TO 2 FEET; SOLID CASING FROM 2 FEET TO SURFACE. SAND PACK TO 16"; BENTONITE TO 14"; CONCRETE TO SURFACE.

Water level	4.1'			
Time	16:04			
Date	8-18-86			

Pocket Torr vane TSF	Pocket Penetrometer TSF	Blows/ft. or Pressure PSI	Type of Sample	Sample Number	Depth	Sample	Soil Group Symbol (U.S.C.S.)	DESCRIPTION
					2		SW	SAND-FILL; OLIVE GRAY; (5Y, 4/2); 10-20% FINES; 55-65% FINE SAND; 10-20% MEDIUM TO COARSE SAND; 10-20% FINE TO COARSE GRAVEL; LOOSE; MOIST; NO PRODUCT ODOR.
		1/1/1	DR-L 33%	(1)	4		SM	SILTY SAND; VERY DARK GRAY (2.5Y, N2); 15-25% FINES; 70-80% FINE SAND; LOOSE; WET; STRONG GAS ODOR
					6			
					8		SC	
1.0		3/6/5	DR-L 100%	(2)	10			CLAYEY SAND; OLIVE GRAY (5Y, 4/2); 30-40% FINES; FINE SAND; STIFF; WET; NO PRODUCT ODOR
					12			
		7/19/19	DR-L 100%	(3)	14		SP	SAND; OLIVE BROWN (2.5Y, 4/4); 5-10% FINES; 80-90% FINE SAND, 5-10% MEDIUM SAND; DENSE; WET; NO PRODUCT ODOR.
					16			
					18			
					20			
		15/15/15	DR-L 100%	(4)	22			@ 20½-22 FEET; 10-15% FINES; MEDIUM DENSE TO DENSE; NO PRODUCT ODOR.
					24			BOTTOM OF BORING AT 22 FEET
					26			
					28			
					30			

PRELIMINARY

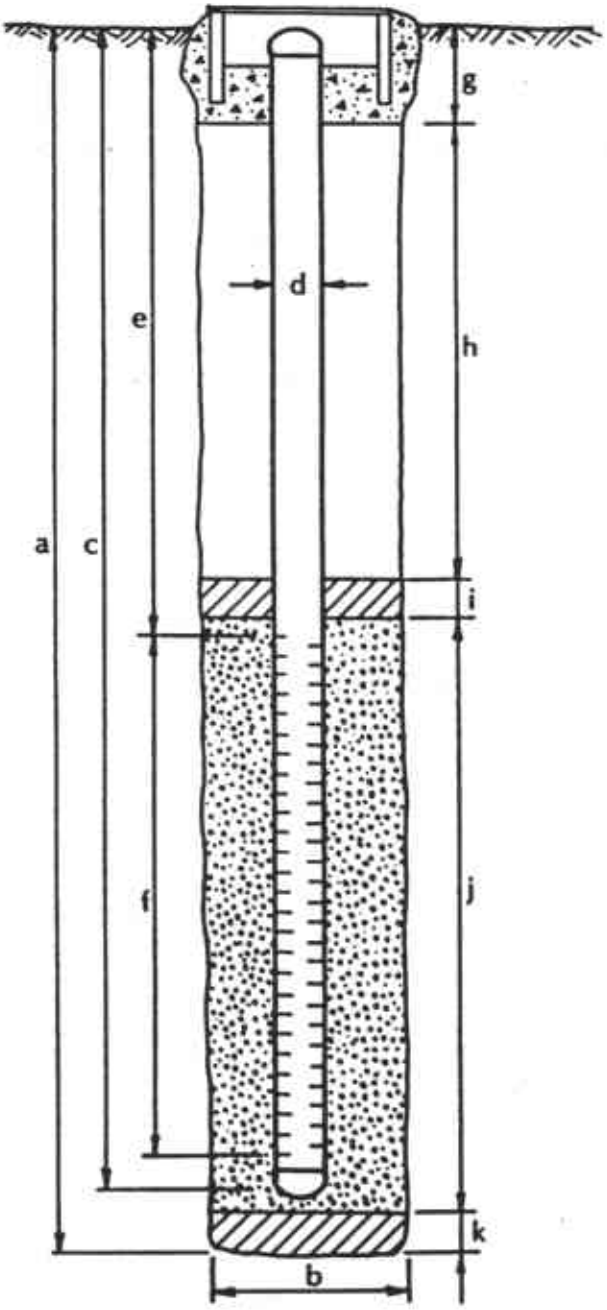
WELL DETAIL

PROJECT NUMBER 800-75.01
PROJECT NAME GR CHEVRON
COUNTY ALAMEDA
WELL PERMIT NO.

BORING / WELL NO. C-2
TOP OF CASING ELEV.
GROUND SURFACE ELEV. 7' ± MSL
DATUM USGS

G-5 vault box (Std.)

DRAFT



EXPLORATORY BORING

a. Total depth 22 ft.
b. Diameter 8 in.
Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. Casing length 22 ft.
Material Schedule 40 PVC
d. Diameter 3 in.
e. Depth to top perforations 2 ft.
f. Perforated length 20 ft.
Perforated interval from 22 to 2 ft.
Perforation type Machine Slot
Perforation size .020 inch
g. Surface seal 1.2 ft.
Seal material Cement Grout
h. Backfill -0- ft.
Backfill material
i. Seal 0.3 ft.
Seal material Bentonite
j. Gravel pack (22 to 1.5 Feet) 20.5 ft.
Pack material Coarse Monterey Sand
k. Bottom seal -0- ft.
Seal material

PLATE

LOG OF EXPLORATORY BORING

EMCON ASSOCIATES

PROJECT No. 800-75.01 DATE 6-18-86
CLIENT GR CHEVRON
LOCATION ALAMEDA
LOGGED BY EBL DRILLER BAYLAND

BORING No. C-3
Sheet 1 of 1

Field location of boring: SIDE PLACE C-3 GILBERTS

Ground Elev. Datum

Drilling method H-S AUGER
Hole dia. 8"

Casing installation data 3" PVC SLOTTED CASING INSTALLED FROM 22 TO 2 FEET; SOLID PVC FROM 2 FEET TO SURFACE; SAND PACK FROM 22' TO 18"; BENTONITE FROM 18" TO 14"; CONCRETE FROM 14" TO SURFACE.

Water level	4.0'			
Time	16:16			
Date	6-18-86			

Pocket Torvane TSF	Pocket Penetrometer TSF	Blows/ft. or Pressure PSI	Type of Sample	Sample Number	Depth	Sample	Soil Group Symbol (U.S.C.S.)	DESCRIPTION
					2		SM	SAND-FILL; OLIVE GRAY (5Y, 4/2); 10-20% FINES - 60-70% FINE SAND; 10-20%, MEDIUM TO COARSE SAND; 10-20%. FINE TO COARSE GRAVEL; CONCRETE FRAGMENTS; MOIST; DRY TO MOIST; FAINT GAS ODOR.
		2/5/7	IR-L 20%	(1)	4		SP	
					6			SAND; VERY PALE GRAYISH BROWN (10YR, 3/2); 5-10% FINES; FINE SAND; 10-20% MEDIUM TO COARSE SAND; LOOSE; MOIST; NO PETROLEUM ODOR
					8		SM	
	2.0	5/8/11	IR-L 100%	(2)	10			CLAYEY SAND; GRAYISH BROWN (10YR, 5/2); 40-50% FINES; FINE SAND; STIFF; WET; NO PETROLEUM ODOR; ROOT FRAGMENTS AND HOLES.
					12			
		9/25/35	IR-L 100%	(3)	14		SP	SAND; BROWN (10YR, 4/3); 5-10% FINES. FINE SAND; 5-10% MEDIUM SAND; DENSE; WET; NO PETROLEUM ODOR.
	3.0				16		SC	
					18		SP	CLAYEY SAND; BROWN (10YR, 5/3); 25-35% FINES; FINE SAND; VERY STIFF; WET; NO PETROLEUM ODOR.
					20			
		12/14/12	DRL 100%	(4)	22		SC	SAND; BROWN (10YR, 4/3); >10% FINES; 80-90% FINE SAND; MEDIUM DENSE; WET; NPD
	1.5				24			CLAYEY SAND; DARK GRAY (2.5Y, N4); 35-45% FINES; FINE SAND; STIFF; WET; NPD
					26			BOTTOM OF BORING AT 22 FEET
					28			
					30			

PRELIMINARY

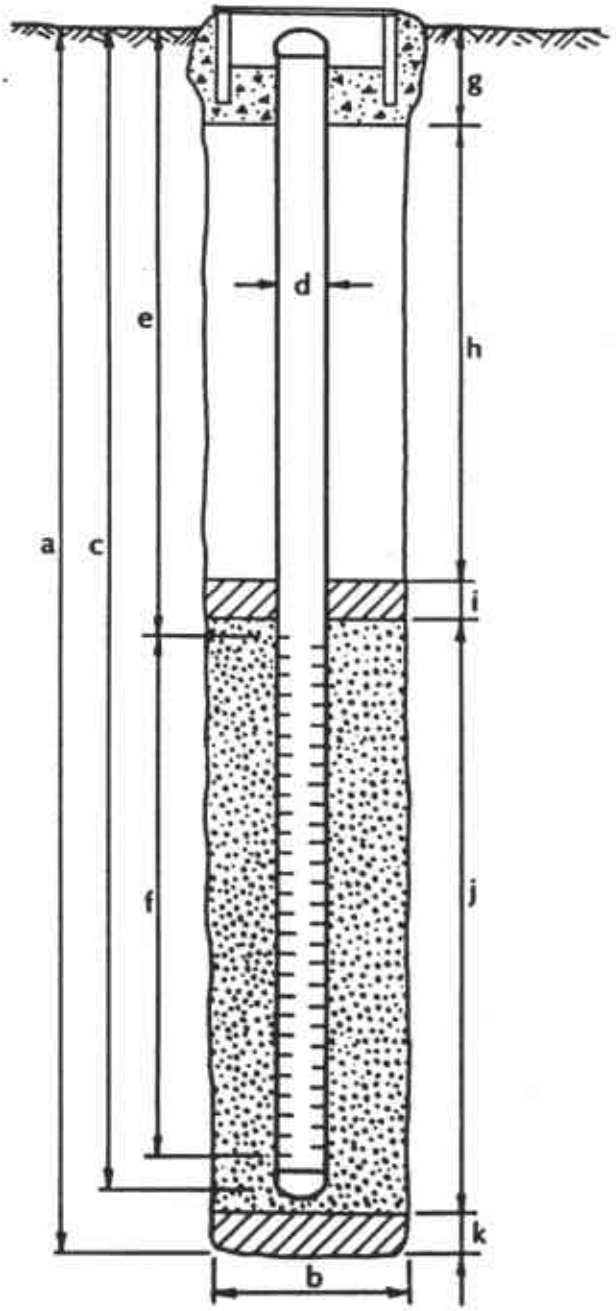
WELL DETAIL

EMCON ASSOCIATES

PROJECT NUMBER 800-75.01
PROJECT NAME GR CHEVRON
COUNTY ALAMEDA
WELL PERMIT NO.

BORING / WELL NO. C-3
TOP OF CASING ELEV.
GROUND SURFACE ELEV. 7'± MSL
DATUM USGS

G-5 vault box (Std.)



EXPLORATORY BORING

a. Total depth 22 ft.
b. Diameter 8 in.
Drilling method HOLLOW STEM AUGER

WELL CONSTRUCTION

c. Casing length 22 ft.
Material SCHEDULE 40 PVC
d. Diameter 3 in.
e. Depth to top perforations 2 ft.
f. Perforated length 20 ft.
Perforated interval from 22 to 2 ft.
Perforation type MACHINED SLOT
Perforation size .010 INCH
g. Surface seal 1.2 ft.
Seal material CEMENT GROUT
h. Backfill 0 ft.
Backfill material
i. Seal 0.8 ft.
Seal material BENTONITE
j. Gravel pack (22 TO 1.5 FEET) 20.5 ft.
Pack material COARSE MONTEREY SAND
k. Bottom seal 0 ft.
Seal material

PLATE

LABORATORY METHODS

The method of analysis is taken from EPA methods 5030, 8015, 8020 and 602. Five milliliters of water sample or 50 microliters of methanol extract of a solid soil sample mixed in 5 milliliters of reagent are purged using an inert gas to transfer the analyze compounds from the liquid phase to the vapor phase. The vapor is passed through a sorbent tube in which the compounds of interest are trapped. When the purging of the liquid sample is complete, the sorbent trap is heated and back-flushed with the inert gas, and the compounds are transferred in this gas to a gas chromatograph. The compounds enter a chromatographic column that is temperature programmed to separate the compounds. The compounds are eluted off the column in the gas phase and enter a photo-ionization detector followed in series by a flame-ionization detector. The latter combination allows for discrimination between aliphatic and aromatic compounds. Quantitation is performed by integration under all peaks obtained. Benzene, toluene, xylene, and ethylbenzene are quantitated by comparison to fresh or evaporated gasoline standards.

EMCON ASSOCIATES • CHEMICAL LABORATORIES

Analysis • Consultation • Research • Environmental Studies
State Approved Water Laboratory

CERTIFIED ANALYTICAL REPORT

Report to: Gettler-Ryan
1992 National Ave.
Hayward, CA 94545

Project Number: 800-75.01

Location: Chevron, Alameda

Sample Type: WATER
Units: ug/l

Sample Designation:	C01	C02	C03
Field Date:	09/04/86	09/04/86	09/04/86
Laboratory Number:	E86-0809	E86-0809	E86-0809
Benzene	[redacted]	49	3.2
Toluene	[redacted]	18	5.4
Xylenes and Ethylbenzene	[redacted]	84	5.8
Volatile Hydrocarbons due to Gasoline	[redacted]	1100	50

Reported by: Phyllis Murphy Date: 9-15-86

1921 RINGWOOD AVENUE, SAN JOSE, CALIFORNIA 95131 TELEPHONE (408) 275-1444

APPENDIX C

Principles of Soil Vapor Contaminant Assessment

APPENDIX C: PRINCIPLES OF SOIL VAPOR CONTAMINANT ASSESSMENT

The soil vapor survey, or SVCA, technique takes advantage of the behavior of hydrocarbon mixtures and the physicochemical properties of the individual components in the subsurface. Following a subsurface gasoline release, free product will migrate downwards towards the groundwater, some of the gasoline will volatilize, and some will adsorb to the soils. In the case of a spill of sufficient volume to exceed the soil binding capacity, free liquid will reach groundwater, at which point it will float and may begin to vaporize and solubilize.

Like most hydrocarbon liquids, gasoline is a complex mixture of many compounds, each with its own physicochemical properties. The contaminants found in groundwater located beneath a layer of floating hydrocarbon are generally less hydrophobic and are generally found in concentrations proportional to the hydrocarbon/water partition coefficient (i.e., the relative solubility of a given compound in the bulk hydrocarbon to its solubility in water) and to their percent composition in the gasoline. It may be noted that concentration of total benzene, toluene, and xylenes in product-saturated water may exceed 10-20 mg/L (API 1985a).

Hydrocarbons will also volatilize into the air- or gas-filled soil interstices. Volatilization is largely a function of vapor pressure. The natures of the contaminant mixtures, in terms of specific component mixtures, in either the aqueous or vapor phase, are distinctly different from each other and from the gasoline. That is, the more hydrophilic hydrocarbons will be more likely to move into groundwater, while the more volatile compounds are more likely to move into the vapor phase, and the compounds that are both less volatile and more hydrophobic are more likely to remain in the free product or be adsorbed to soils (Hinchee and Reisinger 1987).

Hydrocarbons not remaining in the free product will partition into either groundwater or soil vapor and migrate as the result of a variety of interacting forces. In groundwater, contaminants will migrate with the groundwater flow, interacting with the rock or soil geological medium. As the contaminants pass through a medium, organic constituents in the medium interact with the contaminants, and some are adsorbed or bound to particle surfaces (Bruell and Hoag 1986). The result is a net retardation in the velocity of movement of those compounds relative to that of the groundwater in which they are dissolved. The process is analogous to laboratory chromatography. The compound with the least affinity for the porous medium is least retarded and therefore moves most rapidly. This compound, then, is present at the leading edge of a contaminant plume.

The affinity of a compound for the soil porous medium is partly a function of the compound's hydrophobicity--that is, the more hydrophobic a compound the more likely it is to adsorb to the solid medium. Aqueous solubility is a good indicator of hydrophobicity: the more soluble a compound is, the less hydrophobic and more hydrophilic it is, and vice versa. Vapor pressure is a good indicator of volatility; compounds with higher vapor pressures are more volatile.

In determining the environmental fate of various hydrocarbon compounds in a hydrocarbon mixture such as gasoline, those which have a high vapor pressure are more likely to move into the vapor phase, or evaporate. Compounds with high solubility are more likely to move into groundwater from the free product and, once in groundwater, tend to move more rapidly. Compounds of low vapor pressure and low solubility tend to remain in the free product or be adsorbed to the solid matrix and remain relatively immobile.

Dissolved compounds will tend to volatilize from the aqueous phase. The Henry's Law constant is the equilibrium ratio of a

compound's concentration in the vapor phase to its concentration in the aqueous phase. The higher a compound's Henry's Law constant, the greater its tendency to volatilize from water into air.

Figure C-1 graphically illustrates the vapor pressure, aqueous solubility, and Henry's Law constants, and their relationships, for selected hydrocarbons typically found in gasoline. The Henry's Law constant is approximated here as the ratio of vapor pressure to solubility.

The Henry's Law constant is directly related to the tendency of compounds to volatilize, as opposed to solubilizing. Compounds with Henry's Law constants greater than 0.001 (atm· m^3/mole) volatilize from water into air very rapidly (Lyman et al. 1982); those with Henry's Law constants greater than 0.01 (atm· m^3/mole) are generally volatilized so rapidly that they are seldom found in gasoline-contaminated groundwater. It may be observed (Figure C-1) that tetraethyl lead (TEL) has an extremely low solubility and a relatively low vapor pressure. As a result, this constituent would not be expected to solubilize and migrate in groundwater, and although its low vapor pressure would indicate slow volatilization, its Henry's Law constant indicates that it may be more rapidly volatilized than solubilized. The fate of TEL would be expected to be long-term binding to the soil.

On the basis of these properties it can be seen that associated with any groundwater, soil, or free-product contamination is vapor phase contamination. The SVCA technique takes advantage of this, and through the collection and analysis of soil vapor permits a rapid, cost-effective delineation of the extent of contamination.

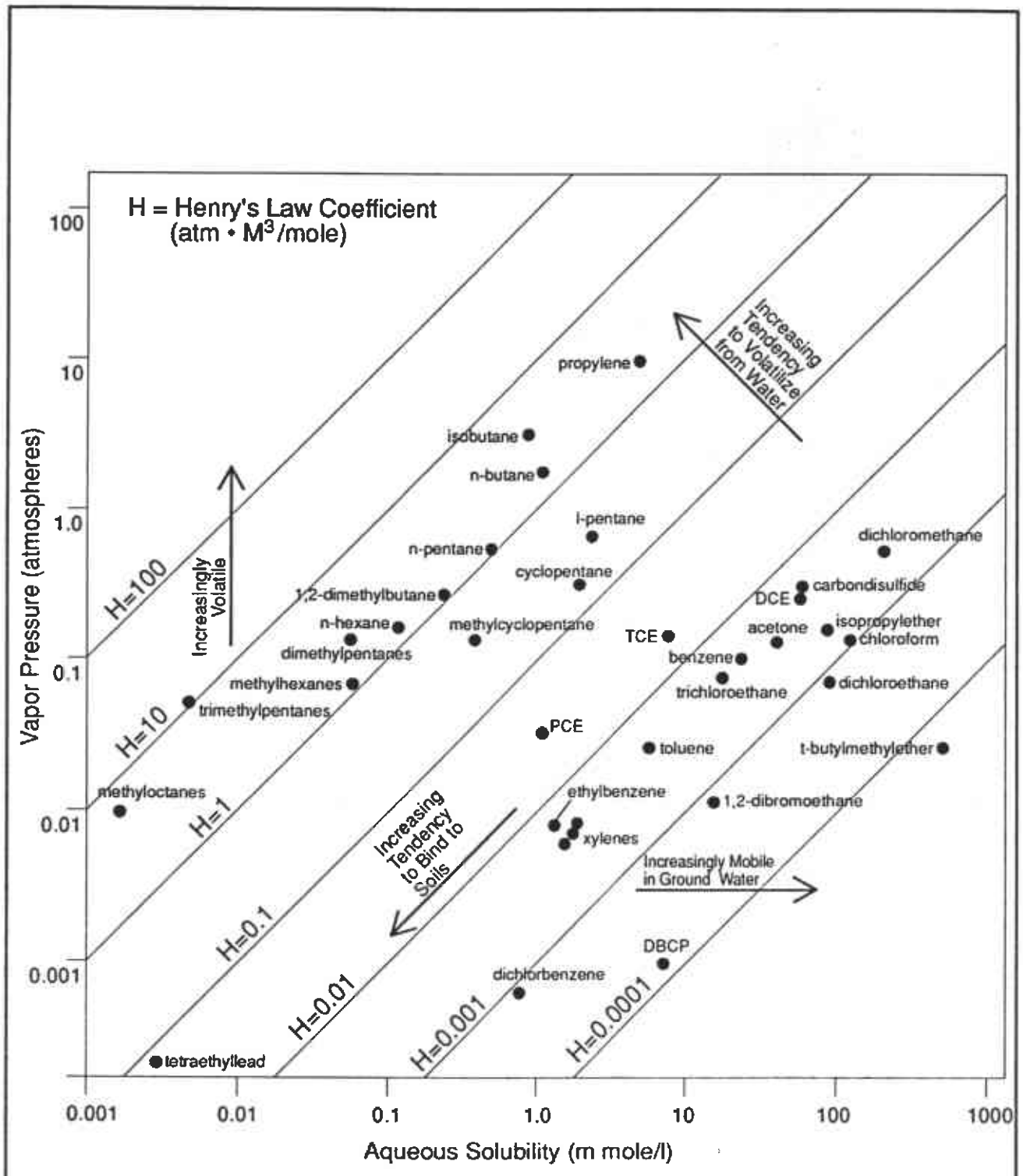


Figure C-1. Vapor pressures, solubilities, and corresponding Henry's Law constants of selected volatile chemicals.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.
41 LAFAYETTE CIRCLE
LAFAYETTE, CA. 94549

APPENDIX D

SVCA Data Sheets and Chromatograms

APPENDIX D

SVCA Data Sheets and Chromatograms 4 May 1989

SVCA DATA SHEET

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

Project Number: 10705.63 | Gas Chromatograph: HNu 421

Station Number: 9-1153 | Analysts: MME/PP | Date: 5/4/89

Site Location: 3176 Fernside Boulevard, Alameda, CA (HS = High Sensitivity)

SAMPLE LOCATION	TIME	DEPTH (ft)	PURGE TIME (Min)	VACUUM (IN Hg)	VACUUM RELEASE (Min)	VOLUME INJECTED (µl)	COMMENTS
Startup	800	–	–	–		–	
Blank	829	–	–	–	–	100	High initial peak
Blank	844	–	–	–	–	50	
SH#4	850	–	–	–	–	↓	GW = 4.5' below grade
SH#4	858	–	–	–	–	50	Changed syringe.
V1/A	909	2.5	3	22	0.25	50	Atm = 60, Odor. Tight soil at 3'
V1/B	923	4.5	5	22	2	↓	
SH#4	934	–	–	–	–	↓	
V2/A	946	2.5	2	21	0.25	25	
V2/A	958	–	–	–	–	–	Reprocess on Int
V3/A	1001	2.5	2	15	0	50	
V1/B	1013	–	–	–	–	–	Reprocess on Int
Blank	1016	–	–	–	–	50	
V4/A	1031	2.5	1	3	0	↓	
V4/B	1042	4.5	2	17	0.5	↓	
V4/B	1052	–	–	–	–	–	Reprocess on Int
Blank	1100	–	–	–	–	50	Shutoff GC, Int: Reknit
V3/B	1112	4.5	3	18	0.5	↓	
SH#4	1128	–	–	–	–	↓	Wax plunger Tip.
V2/B	1136	4.5	2	22	0.5	↓	
V5/A	1151	2.5	(2) 1+1	17,3	0.5	25	Sucked water into Sampling Syr. Mostly runoff from sprinklers. Took sample of soil gas after purging for 2'. Collected trap water in VOA. (V5-HS)
V5-HS	1204	2.5	2	3-17	0.5	25	
V6/A	1216	2	2	21	0.1	50	
V7	1235	2.5	2	15	0.1	50	Sample too large Backout
V7	1251	2.5	1	15	0.1	10	Resampled.
V8/A	1308	2.5	2	8	0	50	
V9-HS	1317	3	0.1	10	0	50	Sucked water Shut HS.
V10/A	1325	2.5	1	0.5	0	50	
SH#4	1344	–	–	–	–		
Blank	1355	Poor	Blank	–	–		1415 Short Blank
V11/A	1405	3	1	0.5	0		
V12/A	1418	2.5	1	0.5	0	↓	

SVCA DATA SHEET

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

Project Number: 10705.63 | Gas Chromatograph: HNu 421

Station Number: 9-1153 | Analysts: MME / PP | Date: 5/4/89

Site Location: 3126 Fernside Boulevard, Alameda, CA (XS = High Gibbons)

SAMPLE LOCATION	TIME	DEPTH (ft)	PURGE TIME (Min)	VACUUM (IN Hg)	VACUUM RELEASE (Min)	VOLUME INJECTED (µl)	COMMENTS
V11/B	1431	4.5	2	21	0.25	50	
V11/B	1442	—	—	—	—	—	Repressurize on Int. Atten=10. Sampled at 15" Vac
V6/B	1445	3	10	23	135	50	
V10/B	1458	4.5	4	22	1	↓	
V8/B	1512	4.5	2	21	0.5	↓	
V13/A	1524	3	0.5	5	0	↓	Sucked water.
~~Std #4~~	1539	—	—	—	—	50	
Blank	1548	—	—	—	—	↓	
V12/B	1601	4.5	20	21	7	↓	
V14	1612	2.5	2	17	0	10	
V15	1630	2.5	4	19	1	50	Diff. Gauge (Manual vac)
V16	1645	2.25	3	17	1	50	Tight soil at 2.5'.
V13/B	1654	4.5	3	2-7	2	50	Sucked water into Syringe by Syringe
~~V5/B~~	1704	3	2	5	2	50	Sucked water.
Std #4	1719	—	—	—	—	50	
CAV Unit	1732	—	—	—	—	2ml	Headspace above liq.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63

Station Number: 9-1153

Sample: Startup

Vol. Inj: —

Date: 5/17/89

Analysts: MAE / PP

Std. Vol. Inj: 50 ul

Comments: —

221-25412

10 6

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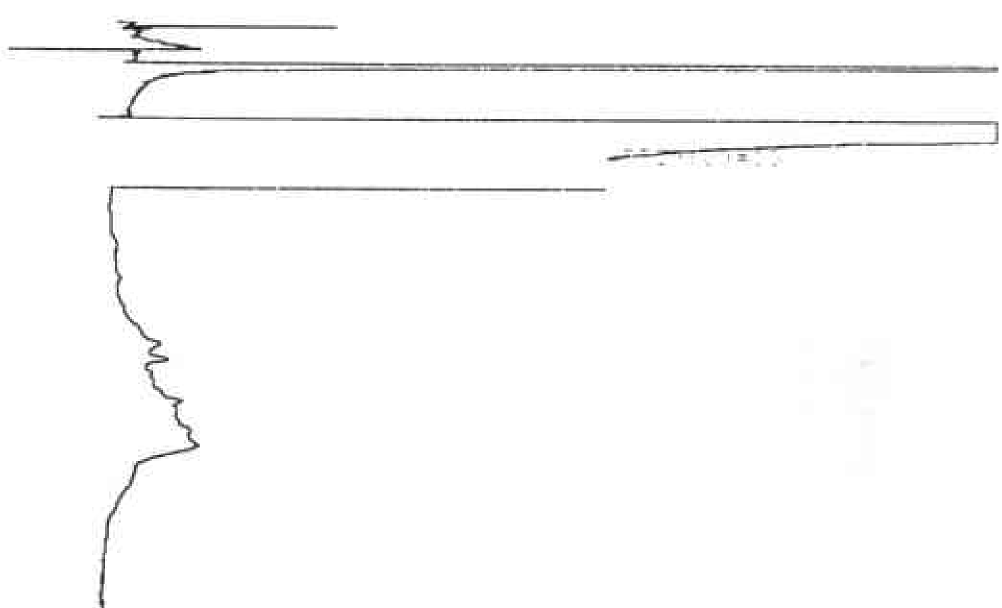

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EPLOT
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EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Burkeout
Vol. Inj:

Date: 5/[illegible]/89
Analysts: MAE / PP
Std. Vol. Inj: Air

GRAPHTOPAC G-RGA V1.1;VARIABLES (AND FOLLOWING) NOT BACKED UP
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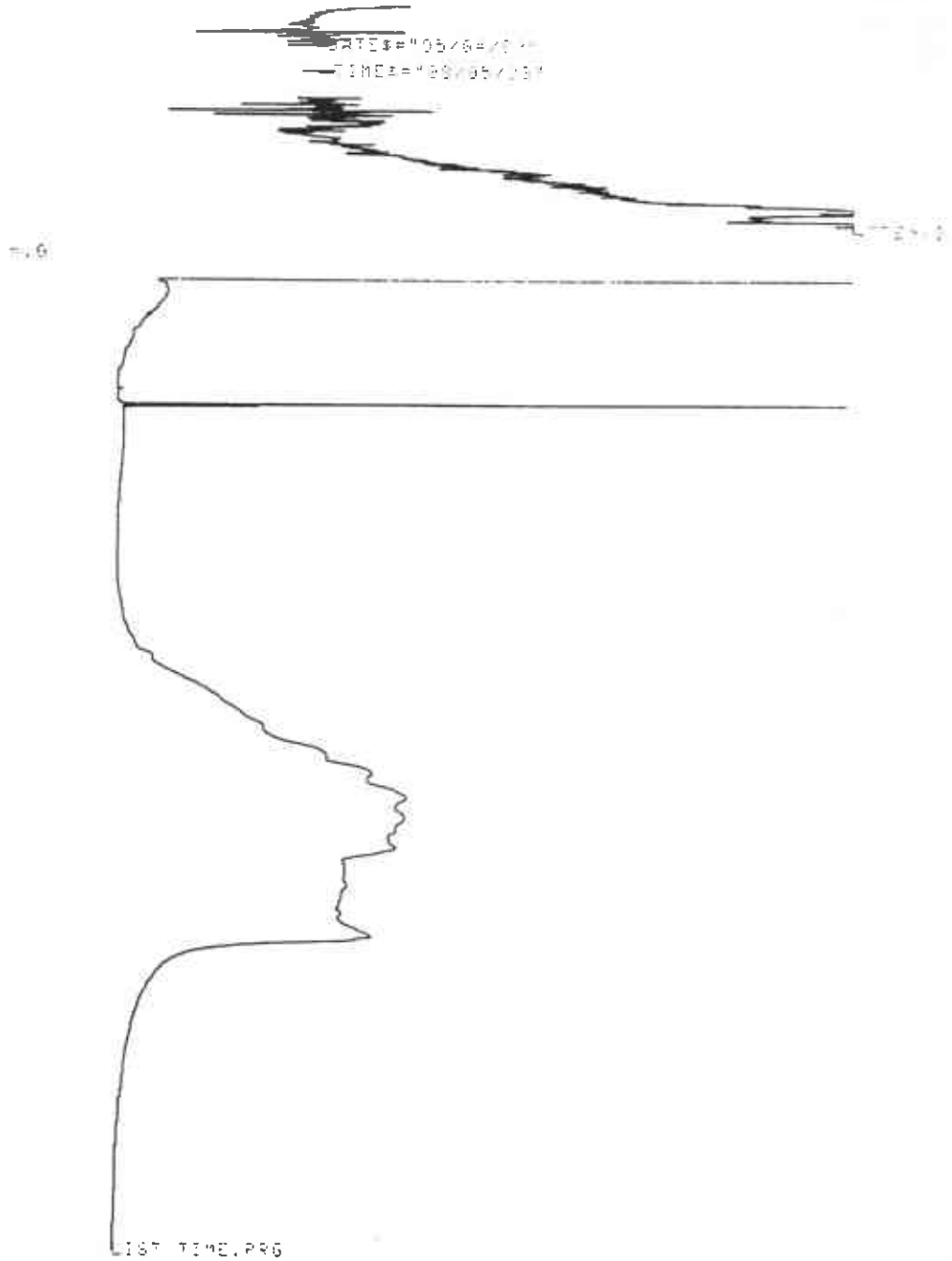

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T.DBL	60	STOP.**	.
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SPL.WT	100	15.**	.

⊕ Simadzu 221-25412

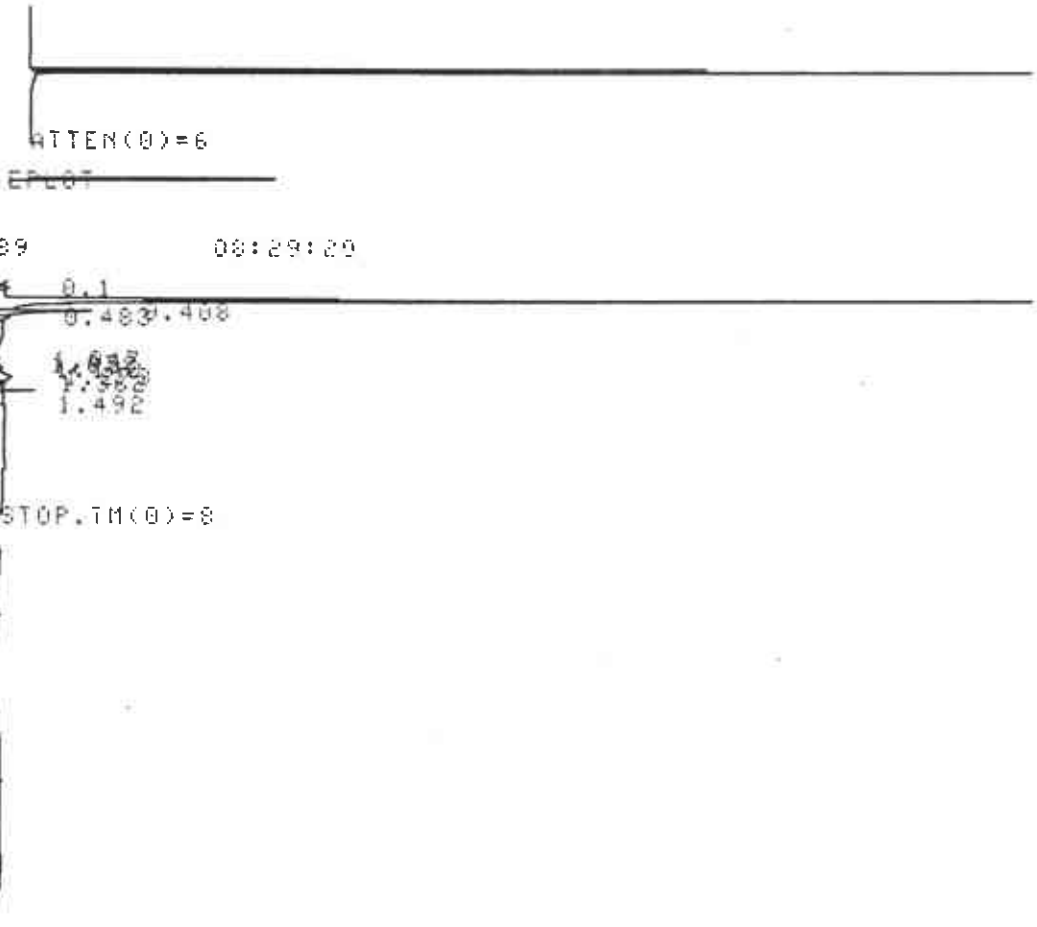
13 5

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Blank
Vol. Inj: 100 ml

Date: 5/4/89
Analysts: MAE / PP
Std. Vol. Inj: 5 ml
Comments: High Initial peak



CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3326

PKNO	TIME	AREA	MK	ISNO	CONC	NAME
1	0.1	9642				
2	0.263	986368	SVE			
3	0.408	6695				
4	1.047	1585				
5	1.142	1172				
6	1.270	4129	TV			
7	1.492	2981	TV			
	TOTAL	1008603				

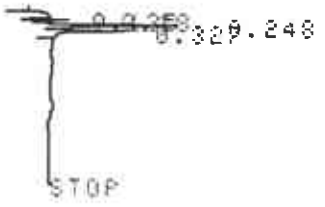
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Blank
Vol. Injected: 100 µL

Date: 5/4/89
Analysts: MAE / PP
Std. Vol. Inj: 5 µL
Comments: Reg Peak

START
05/04/89 08:44:20



CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3327

FILE 0
METHOD 24
SAMPLE # 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.135	7756				
2	0.18	2385	V			
3	0.248	14297	V			
4	0.327	6894	V			
	TOTAL	31332			0	

⊕ Shinadzu 221-25412

137

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Blank
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MAE / PP
Std. Vol. Inj: 5 ul
Comments:

14 8

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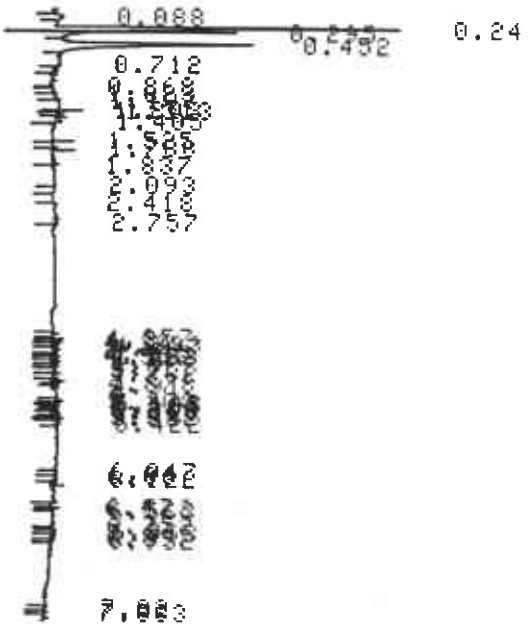

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3340

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.24	40378	V			
2	0.295	9744				
3	0.452	34926	V	6	2.6341	PEN
4	0.712	3152	V			
5	1.525	3869				
6	2.757	4815	V			
	TOTAL	96884			2.6341	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
4.02589	0	0	0
0	0	0.600733	0
4.62662			

ERROR 16:UNREAD STATEMENT IN ...

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63 Date: 5/4/89

Station Number: 9-1153 Analysts: M&E / PP

Sample: Blank Std. Vol. Inj: 50 ul

Vol. Inj: 50 ul

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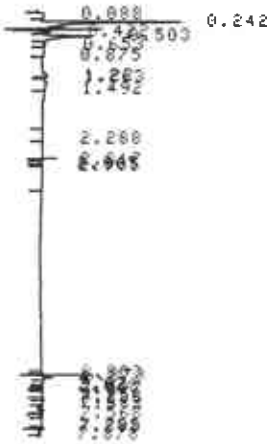
05/04/89 11:00:10



CHROMATOPAC C-R3A FILE 0
SAMPLE NO 0 METHOD 24
REPORT NO 3344 SAMPLE WT 100

PKNO	TIME	AREA	MK	AMT	CONC	NAME
1	0.088	5044				
2	0.242	42174	V			
3	0.423	6939				
4	0.503	22747	V			
5	0.653	3699	V			
6	0.875	10305	V			
7	1.32	19526	V			
8	1.492	5283	V			
9	2.873	1099				
TOTAL		119818				

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB BEN TOL O-XYL
M,P-XYL ET BEN PNO1 PAO
TT
4.55918 0 0 0
0 0 1.43982 0.213645
6.21265
ERROR 16:UNDEF'D STATEMENT IN 390

EDIT
LINE PROGRAM
20 PB=90000
END
RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB BEN TOL O-XYL
M,P-XYL ET BEN PNO1 PAO
TT
3.52157 0 0 0
0 0 1.43982 0.213645
5.17504
ERROR 16:UNDEF'D STATEMENT IN 390

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Adjust PB
Vol. Inj: —

Date: 5/4/89
Analysts: MHE / PP
Std. Vol. Inj: 50 µl
Comments:

```
LIST
BASIC PROGRAM

10      B=1.03
15      OX=5.5
20      PB=90000
30      EB=0
40      X2=0
50      X1=0
60      N1=0
70      T=0
80      T1=0
90      BB=0
100     BN=0
110     TL=0
117     TC=0
IFSIDPKRN>02 THEN TL=CONCPK(X)
↳

EDIT
LINE    PROGRAM
20      PB=1000000
END
RUN
VOLUME INJECTED (UL)
?  50
DILUTION
?  1

PBB                 BEN                 TOL                 O-XYL
M,P-XYL             ET BEN              PNOI                PNO
TT
-26.7246             0                   0                   0
 0                   0                   1.78239             5
-24.9422
*ERROR* 16:UNDEF'D STATEMENT IN   390
EDIT
LINE    PROGRAM
20      PB=111000
END
RUN
VOLUME INJECTED (UL)
?  50
DILUTION
?  1

PBB                 BEN                 TOL                 O-XYL
M,P-XYL             ET BEN              PNOI                PNO
--
 4.02336             0                   0                   0
 5                   0                   1.78239             5
 5.80574
*ERROR* 16:UNDEF'D STATEMENT IN   390
EDIT
LINE    PROGRAM
20      PB=200000
END
RUN
VOLUME INJECTED (UL)
?  50
DILUTION
?  1

PBB                 BEN                 TOL                 O-XYL
M,P-XYL             ET BEN              PNOI                PNO
TT
 0.945109            0                   0                   0
 0                   0                   1.78239             5
 2.72749
*ERROR* 16:UNDEF'D STATEMENT IN   390
```

⊕ Standex 221-25412 15 4

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

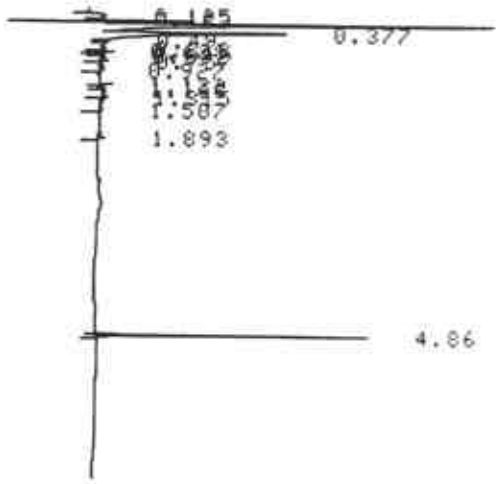
Project Number: 10705.63
Station Number: 9-1153
Sample: Blank
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 50 ul
Comments:

221-25412

16 5

STAR1
05/04/89 13:55:44



CHROMATOGRAM 13 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3358

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.125	13838				
2	0.183	11534	V			
3	0.252	100478	E			
4	0.377	70318	V			
5	0.49	12179	V	6	0.9186 PEN	
6	0.618	30939	V			
7	0.638	10716	V			
8	0.682	12073	V			
9	0.757	23616	V	7	1.5306 HEX	
10	0.927	37570	V			
11	1.132	45187	V	1	~~3.1258 BEN~~	
12	1.168	14295	V	1	~~0.9888 BEN~~	
13	1.315	~~29979~~	V			
14	1.507	~~44902~~	V	8	2.1863 I-OCT	
15	1.893	~~79614~~	V			
16	~~4.86~~	~~255001~~	V	3	~~15.6266 ETBEN~~	
	TOTAL	793029			24.5767	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
15.4438	~~0.98885~~ LOW	0	0
0	~~15.0266~~	~~15.6905~~ LOS	0
47.9397			

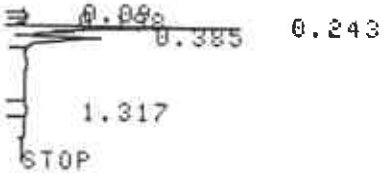
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Short Blank
Vol. Inj: 50 µl

Date: 5/4/89
Analysts: MHE / pp
Std. Vol. Inj: 50 µl
Comments:

START
05/04/89 14:15:35



CHROMATOGRAM 15 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3360

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.243	28122				
2	0.385	13942	V			
	TOTAL	42064			0	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PN01	PA0
TT			
-4.00768	0	0	0
0	0	9.53674E-7	0
-4.00768			

ERROR 16:UNDEF'D STATEMENT IN ...

⊕ Shinadzu 221-25412 16 7

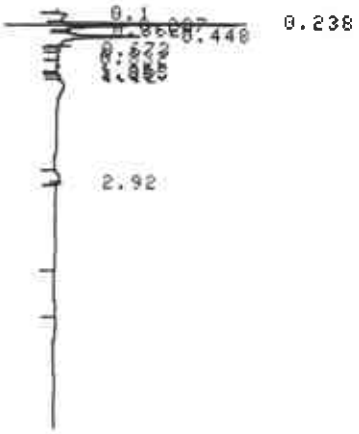
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Blank
Vol. Inj: 50 ml

Date: 5/4/89
Analysts: M+E / pp
Std. Vol. Inj: 50 ml
Comments:

START
05/04/89 15:48:44



CHROMATOGRAM 23 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3371

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.1	5765				
2	0.238	24329	V			
3	0.287	9072	V			
4	0.448	20182	V	6	1.0693	BEN
5	2.92	3258				
	TOTAL	62607			1.0693	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PNO
TT			
-2.58652	0	0	0
0	0	0.207303	0
-2.37922			

ERROR 16:UNDEF'D STATEMENT IN 390
EDIT
LINE PROGRAM
20 PB=120000
END
RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PNO
TT			
-0.0414318	0	0	0
0	0	0.207307	0
0.165875			

ERROR 16:UNDEF'D STATEMENT IN 390

0006

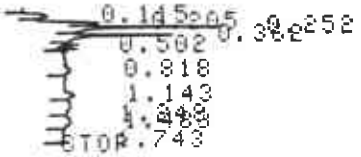
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Std #4
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MAE / PP
Std. Vol. Inj: 50 ul
Comments:

START
05/04/89 08:47:31



CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3328

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.115	5812				
2	0.205	15818	V			
3	0.252	30553	V			
4	0.362	26134	V			
5	0.502	13869	V			
6	0.818	37065	V			
7	1.143	27371	V	1	1.9767	BEN
8	1.248	14344	V			
9	1.483	9880	V	8	0.4994	I-OCT
10	1.743	4196	V			
	TOTAL	185043			2.4761	

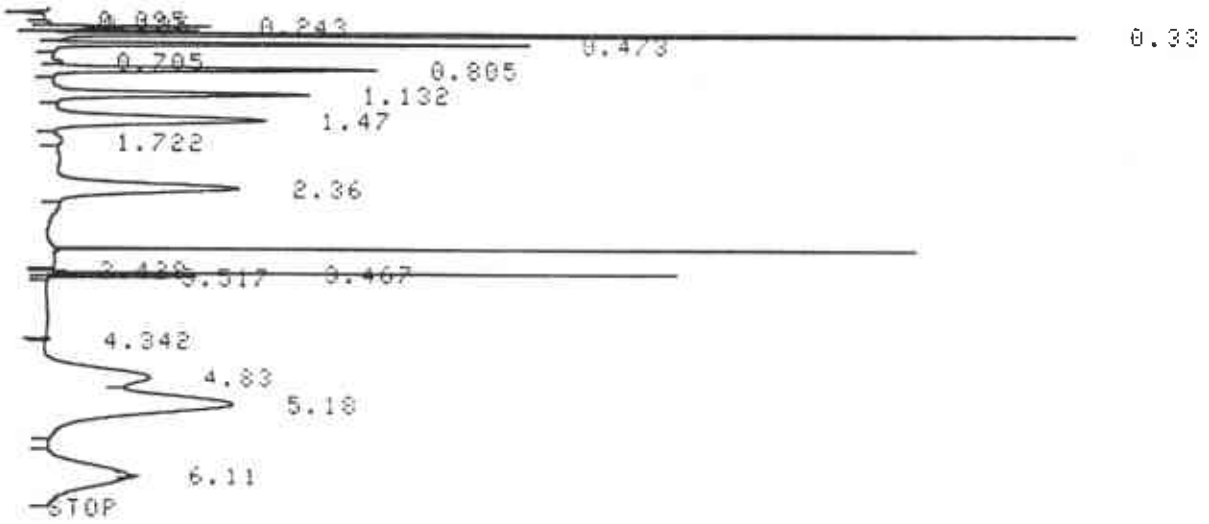
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: SB #4
Vol. Inj: 50 ml

Date: 5/4/89
Analysts: MAE / PP
Std. Vol. Inj: 5 ml
Comments:

HITEN(0)=6
START
05/04/89 08:50:23



CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3329

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.095	7516				
2	0.195	5699	V			
3	0.243	24451	V			
4	0.33	1301163				
5	0.473	74467	V			
6	0.705	14470	V			
7	0.805	78087	V	7	5.1233	MEK
8	1.132	85616	V	1	6.1831	BEN
9	1.47	108942	V	6	5.5066	I-OCT
10	1.722	8539	V			
11	2.36	106726	V	2	6.2039	TOL
12	3.428	1114				
13	3.467	17196	V			
14	3.517	3845	V			
15	4.83	108062	V	3	5.7686	ETBEN
16	5.18	213520	V	4	10.7597	M,P XY
17	6.11	100410		5	5.0467	O XYL
	TOTAL	2260416			44.5911	

⊕ Shinadzu 221-25412 13 8

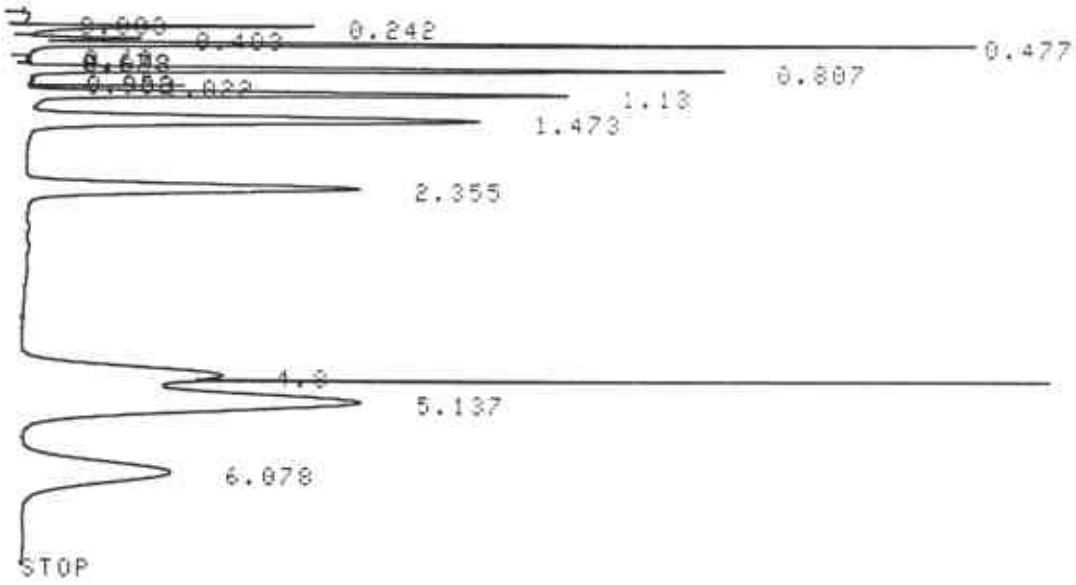
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Std by
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 50 ul
Comments:

START
05/04/89 08:58:08



CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3330

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.083	2603				
2	0.242	39786	V			
3	0.403	16969	V	6	1.333	PEN
4	0.477	118617	V			
5	0.807	153400	S	7	10.0846	HEX
6	1.022	4275	V			
7	1.13	141782	V	1	10.3394	BEN
8	1.473	197865	V	8	10.0018	I-OCT
9	2.355	163878		2	9.5246	TOL
10	4.8	236378		3	12.5488	ETBEN
11	5.137	363086	V	4	18.3985	M,P XY
12	6.078	179878		5	9.9407	O XYL
	TOTAL	1618517			91.0494	

EDIT ID

IDNO	NAME	TIME	FACTOR	CONC
6	PEN	.477	7.85537E-5	9.2

END

Shinadex 221-2541

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: SB#4
Vol. Inj: Printout

Date: 5/~~6~~/89
Analysts: MAE / pp
Std. Vol. Inj: 5 µl
Comments: Calib

CALIB 1
REPEAT

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3331
STANDARD 1

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.083	2603				
2	0.242	39786	V			
3	0.403	16969	V			
4	0.477	118617	V	6		PEN
5	0.807	153400	S	7		HEX
6	1.022	4275	V			
7	1.13	141782	V	1		BEN
8	1.473	197865	V	8		I-OCT
9	2.355	163878		2		TOL
10	4.8	236378		3		ETBEN
11	5.137	363086	V	4		M,P XY
12	6.078	179878		5		O XYL
	TOTAL	1618517				

CALIBRATION MADE IN IDENTIFICATION FILE 0
MODE$ 1 WINDO 5

IDNO	NAME	TIME	FACTOR	CONC
1	BEN	1.11	6.77095E-5	9.6
2	TOL	2.35	5.67494E-5	9.3
3	ETBEN	4.85	4.01899E-5	9.5
4	M,P XY	5.19	4.87488E-5	17.7
5	O XYL	6.15	5.28577E-5	9.4
6	PEN	0.47	7.75605E-5	9.2
7	HEX	0.78	6.19296E-5	9.5
8	I-OCT	1.45	4.75072E-5	9.4

$\frac{Pen}{Benz} = \frac{7.76}{6.77} = 1.15$

$\frac{Benz}{Iso\text{-}oct} = \frac{4.75}{6.77} = .70$

136

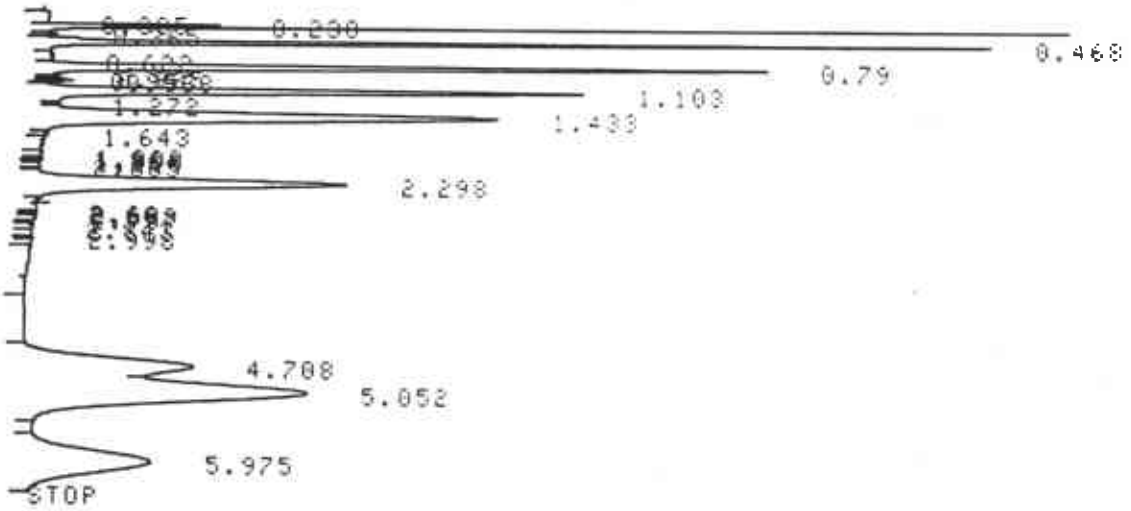
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: 3+4#4
Vol. Inj: 50 µl

Date: 5/4/89
Analysts: MHE / PP
Std. Vol. Inj: 50 µl
Comments:

ATTEN(0)=6
START
05/04/89 09:34:37



CHROMATOGRAM 3 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3334

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.085	3865				
2	0.238	65970	SV			
3	0.468	121984		6	9.4611	PEN
4	0.622	4171	V			
5	0.79	146574	SV	7	9.0773	HEX
6	1.103	138780	S	1	9.3967	BEN
7	1.433	193056	V	6	9.1716	I-OCT
8	2.298	148881		2	8.4489	TOL
9	4.708	153546		3	6.171	ETBEN
10	5.052	303509	V	4	14.7957	M,P XY
11	5.975	148150		5	7.748	O XYL
	TOTAL	1428486			74.2643	

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Std #4
Vol. Inj: Printout

Date: 5/14/89
Analysts: MAE / PP
Std. Vol. Inj: 5 ul
Comments: Recalib.

EDIT ID

IDNO	NAME	TIME	FACTOR	CONC
1	BEN	1.1	6.77095E-5	9.6
2	TOL	2.29	5.67494E-5	9.3
3	ETBEN	4.7	4.01899E-5	9.5
4	M,P XY	5.05	4.87488E-5	17.7
5	O XYL	6	5.22577E-5	9.4
6	PEN	.468	7.75605E-5	9.2
7	HEX	.79	6.19296E-5	9.5
8	I-OCT	1.43	4.75072E-5	9.4

END
CALIB 1
REPEAT

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3335
STANDARD 1

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.085	3865				
2	0.238	65970	SV			
3	0.468	121984		6		PEN
4	0.622	4171	V			
5	0.79	146574	SV	7		HEX
6	1.103	138780	S	1		BEN
7	1.433	193056	V	8		I-OCT
8	2.298	148881		2		TOL
9	4.708	153546		3		ETBEN
10	5.052	303509	V	4		M,P XY
11	5.975	148150		5		O XYL
	TOTAL	1428486				

CALIBRATION MADE IN IDENTIFICATION FILE 0
MODE$ 1 WINDOW 5

IDNO	NAME	TIME	FACTOR	CONC
1	BEN	1.1	6.91742E-5	9.6
2	TOL	2.29	6.24658E-5	9.3
3	ETBEN	4.7	6.18706E-5	9.5
4	M,P XY	5.05	5.83178E-5	17.7
5	O XYL	5.98	6.34491E-5	9.4
6	PEN	0.46	7.54199E-5	9.2
7	HEX	0.79	6.49136E-5	9.5
8	I-OCT	1.43	4.86905E-5	9.4

⊕ Shinadzu 221:25412 14 3

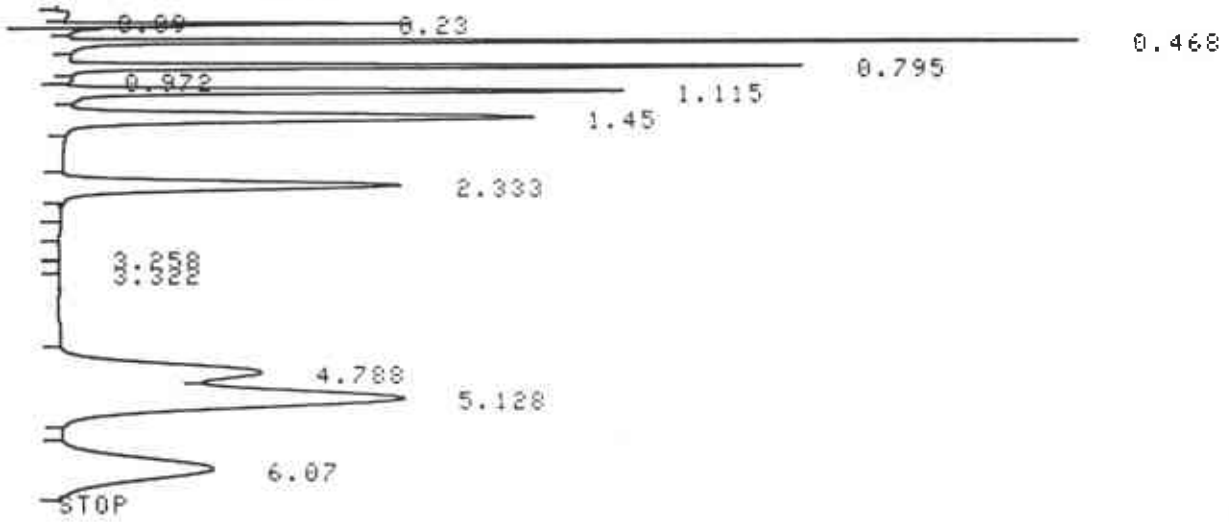
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Std #4
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MAE / PP
Std. Vol. Inj: 5 ul
Comments:

START
05/04/89 11:28:06



CHROMATOGRAM 2 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3346
FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.09	4720				
2	0.23	51749	V			
3	0.468	159594	V	6	12.0366	PEN
4	0.795	153721	V	7	9.9632	HEX
5	1.115	140425		1	9.7138	BEN
6	1.45	203145	V	8	9.8912	I-OCT
7	2.333	167264		2	10.4483	TOL
8	4.788	192798		3	11.9285	ETBEN
9	5.128	361994	V	4	21.1107	M,P XY
10	6.07	188002		5	11.9286	O XYL
	TOTAL	1623410			97.0208	

⊕ Stimsonite 221-25412 15 5

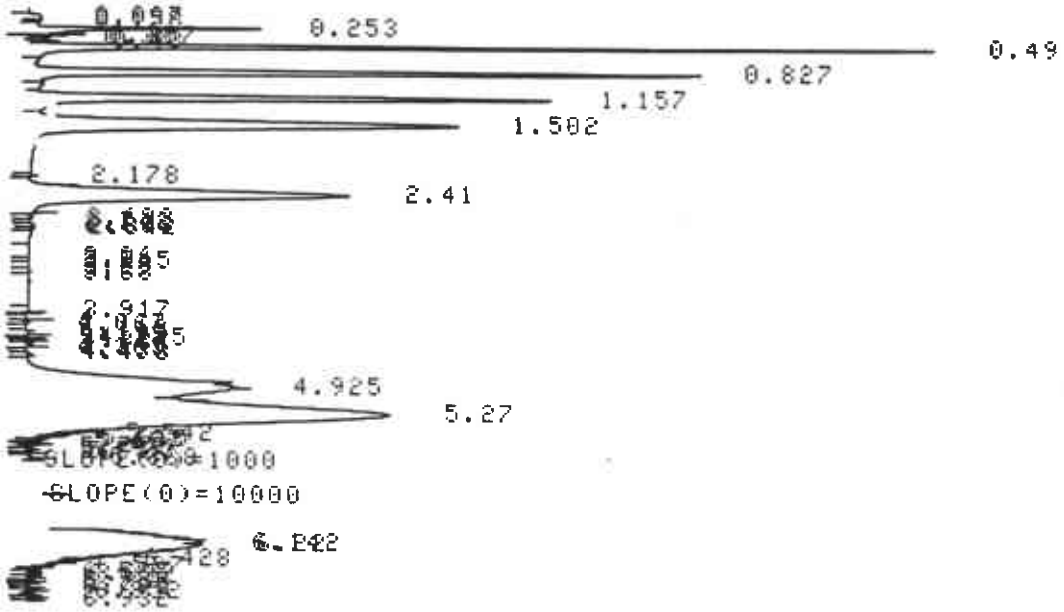
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: SB #4
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 50 ul
Comments:

ERROR IF UNDEFD STATEMENT IN 350
START
05/04/89 13:44:58



CHROMATOGRAM 12 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3356

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.097	3265				
2	0.253	33371	V			
3	0.49	128148	V	6	9.6649	PEN
4	0.827	136347	V	7	8.8371	HEX
5	1.157	131794		1	9.1168	BEN
6	1.502	183193	V	8	8.9198	I-OCT
7	2.41	168619		2	10.5329	TOL
8	4.925	204807	V	4	11.9439	M,P XY
9	5.27	391021	V	4	22.8035	M,P XY
10	5.542	4008	V			
11	6.142	97866	V	5	6.2095	O XYL
12	6.22	97532	V	5	6.1883	O XYL
13	6.428	11785	V			
	TOTAL	1591756			94.2166	

$\frac{2048}{1928} \times 11.94 = 12.68$

⊕ Shinadzu

221-25412

16 4

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Std #4
Vol. Inj: Printout

Date: 5/4/89
Analysts: MAE / PP
Std. Vol. Inj: 5 ul
Comments:

EDIT ID

IDNO	NAME	TIME	FACTOR	CONC
4	M,P XY	5.05	5.83178E-5	17.7
3	ETBEN	4.9	6.18706E-5	9.5
4	M,P XY	5.3	5.83178E-5	17.7
5	O XYL	5.98	6.34491E-5	9.4
5	O XYL	6.2	6.34491E-5	9.4

END
REPEAT

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3357

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.097	3265				
2	0.253	33371	V			
3	0.49	128148	V	6	9.6649	PEN
4	0.827	136347	V	7	8.8371	HEX
5	1.157	131794		1	9.1168	BEN
6	1.502	183193	V	8	8.9198	1-OCT
7	2.41	168619		2	10.5329	TOL
8	4.925	204807	V	3	12.6716	ETBEN
9	5.27	391021	V	4	22.8035	M,P XY
10	5.542	4008	V	4	0.2338	M,P XY
11	6.142	97866	V	5	6.2095	O XYL
12	6.22	97532	V	5	6.1883	O XYL
13	6.428	11785	V	5	0.7477	O XYL
	TOTAL	1591756			95.9257	

12.4

Skimadu

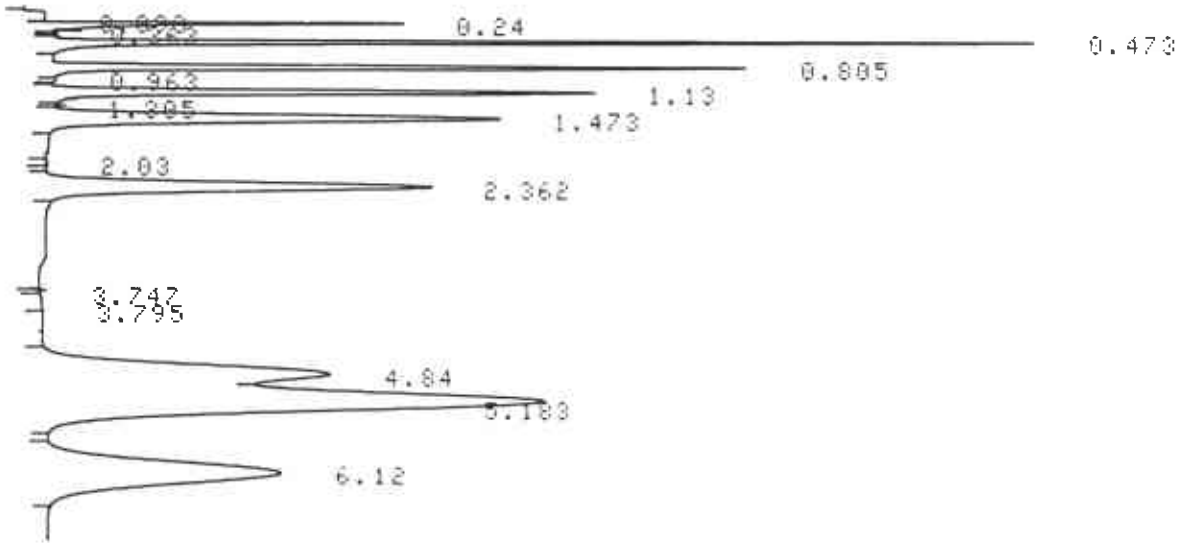
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Std #3
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 50 ul
Comments:

ERROR 16:UNDEFD STATEMENT IN 390
START
05/04/89 15:39:20



CHROMATOGRAM 22 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3369

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.093	9915				
2	0.24	64657	SV			
3	0.473	173838	V	6	13.1109	PEN
4	0.805	169043	SV	7	10.9563	HEX
5	1.13	150879	SV	1	10.4369	BEN
6	1.473	199076	V	8	9.6931	I-OCT
7	2.362	191583		2	11.9874	TOL
8	4.84	268300		3	16.5999	ETBEN
9	5.183	553763	V	4	32.2942	M,P XY
10	6.12	289180		5	18.3482	O XYL
	TOTAL	2070232			123.4068	

Skinner 721 25412

00 5

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63

Station Number: 9-1153

Sample: St1 #4 - Printout

Vol. Inj.: - -

Date: 5/4/89

Analysts: MAE / pp

Std. Vol. Inj: 50 µl

Comments: Calibrate

CALIB 1
REPEAT

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3370
STANDARD 1

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.093	9915				
2	0.24	64657	SV			
3	0.473	173838	V	6		PEN
4	0.805	169043	SV	7		HEX
5	1.13	150879	SV	1		BEN
6	1.473	199076	V	8		I-OCT
7	2.362	191583		2		TOL
8	4.84	268300		3		ETBEN
9	5.183	553763	V	4		M,P XY
10	6.12	289180		5		O XYL
	TOTAL	2070232				

CALIBRATION MADE IN IDENTIFICATION FILE 0
MODE# 1 WINDOW 5

IDNO	NAME	TIME	FACTOR	CONC
1	BEN	1.11	6.36273E-5	9.6
2	TOL	2.32	0.000048543	9.3
3	ETBEN	4.87	3.54082E-5	9.5
4	M,P XY	5.24	3.19632E-5	17.7
5	O XYL	6.16	3.25058E-5	9.4
6	PEN	0.46	5.29227E-5	9.2
7	HEX	0.79	5.61987E-5	9.5
8	I-OCT	1.45	4.72181E-5	9.4

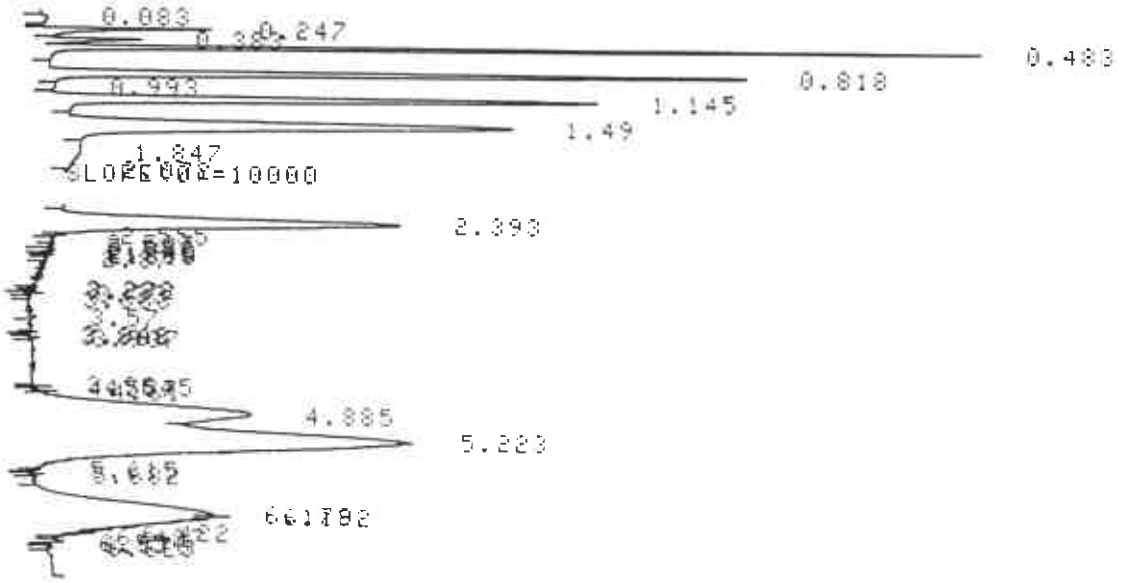
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: STD #4
Vol. Inj: 50 µl

Date: 5/4/89
Analysts: M&E / pp
Std. Vol. Inj: 50 µl
Comments:

ERROR 16:UNDEF'D STATEMENT IN 390
ATTEN(0)=6
START
05/04/89 17:19:11



CHROMATOGRAM 30 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3378

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.247	24253				
2	0.383	15543	V			
3	0.483	117383	V	6	6.2122	PEN
4	0.818	143828	V	7	8.0829	HEX
5	1.145	142238		1	9.0502	BEN
6	1.49	212430	V	8	10.0306	I-OCT
7	1.847	22175	V			
8	2.393	164272		2	7.9742	TOL
9	3.96	9296	V			
10	4.885	201914	V	3	7.1494	ETBEN
11	5.223	417400	V	4	13.3414	M,P XY
12	6.172	104469		5	3.3958	O XYL
13	6.192	101680	V	5	3.3052	O XYL
14	6.422	6816	V	5	0.2216	O XYL
	TOTAL	1683695			68.7635	

> 67.0

221 25412

012

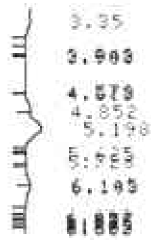
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number:	10705.63	Date:	5/4/89
Station Number:	9-1153	Analysts:	MAE / PP
Sample:	CHV Unl	Std. Vol. Inj:	50 ul
Vol. Inj:	2 ul	Comments:	Not as high as normal.

```
ATTEN(0)=10
START
05/04/89        17:32:04
```


```
*WARNING* CHROMATOGRAM MEMORY OVER
METHOD$(0)="FORMAT$(0)METHOD$(0)"
*ERROR*  3:OVER FLOW
```




```
CHROMATOGRAM  31  MEMORIZED

CHROMATOPAC   C-R3A                 FILE         0
SAMPLE NO    0                      METHOD       34
REPORT NO    3379                   SAMPLE WT    100
```

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.238	27501				
2	0.335	3886701	VE			
3	0.43	3325754	VE	9	311.443	PEN
4	0.478	4818002	VE	6	354.9816	PEN
5	0.673	2125271	V			
6	0.737	843641	V			
7	0.815	1414800	V	7	[illegible].5099	HE
8	0.977	854020	V			
9	1.137	1232226	V	[illegible]	[illegible].4032	BE
10	1.258	1161371	V			
11	1.452	434522	V	[illegible]	[illegible]	[illegible]
12	1.593	561372	V			
13	1.867	290712	V			
14	2.023	179275	V			
15	2.378	2146457	[illegible]	[illegible]	[illegible]	[illegible]
16	2.747	19444	T			
17	3.072	21124	T			
18	3.35	82206	TV			
19	4.578	[illegible]				
20	4.852	89743	V	1	1.1776	ETHEN
21	5.198	[illegible]		[illegible]	1.1662	[illegible]
22	6.145	87324		5	1.8389	O [illegible]
23	6.188	66325	V	6	2.1559	O [illegible]
	TOTAL	24585664			[illegible]1.1055	

17,845,000 × 2.54 × 10⁻⁵ = 1350 × 25 = 34000

× 25 = 1960

× 25 = 2800

× 25 = 79

× 25 = 330

— × 25 = 71

```
RUN
VOLUME INJECTED (UL)
? 10
*BREAK* IN   130
RUN 2
*ERROR* 16:UNDEF'D STATEMENT
*ERROR*  1:INVALID SYNTAX
```

2.74×10⁶ × 4.87×10⁻⁵ = 132 × 25

3300

Shimadzu 221-25412

013

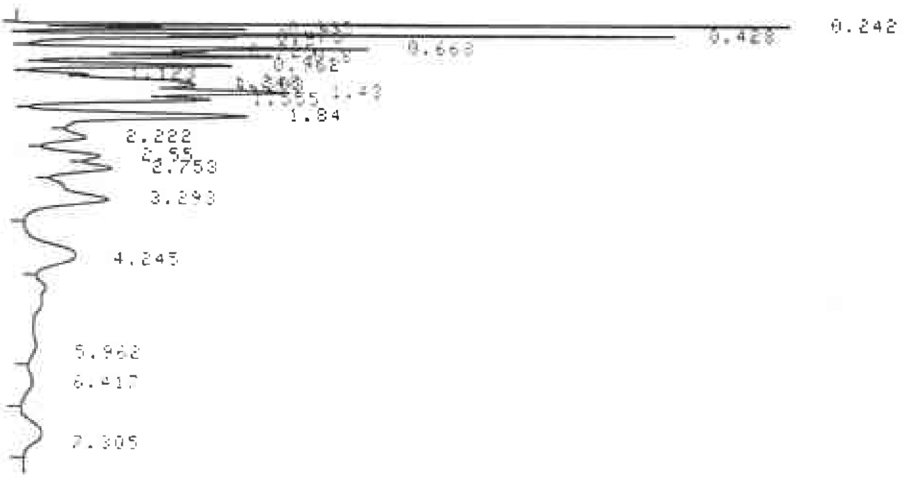
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V1/A
Vol. Inj: 50ul

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 50ul
Comments:

A.SAVE 1/50
ATTEN(0)=10
START
05/04/89 09:09:31



CHROMATOGRAM 1 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3332

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.242	2163435	E			
2	0.335	666597	V			
3	0.428	1688033	V			
4	0.473	772671	V	[illegible]	[illegible]	[illegible]
5	0.668	1468686	V			
6	0.725	690960	V			
7	0.8	1239681	V	[illegible]	[illegible]	[illegible]
8	0.962	1239127	V			
9	1.123	370613	V	[illegible]	[illegible]	[illegible]
10	1.248	1276708	V			
11	1.303	1147956	V			
12	1.43	2506504	V	[illegible]	[illegible]	[illegible]
13	1.555	1530011	V			
14	1.84	2846226	V			
15	2.222	1290757	V			
16	2.55	1202073	V			
17	2.753	1543134	V			
18	3.293	2568627	V			
19	4.245	2156744	V			
20	5.962	2102068	V	[illegible]	[illegible]	[illegible]
21	6.417	430865	V	[illegible]	[illegible]	[illegible]
22	7.305	670928				
	TOTAL	31581504			[illegible]	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	[illegible]	[illegible]
M,P-XYL	ET BEN	[illegible]	[illegible]
--			
670.205 770	25.094	[illegible]	22.5[illegible]
0	0	[illegible] 940	[illegible]
2135.66			

ERROR [illegible] STATEMENT IN [illegible]

Shimadzu 221-25412 14 0

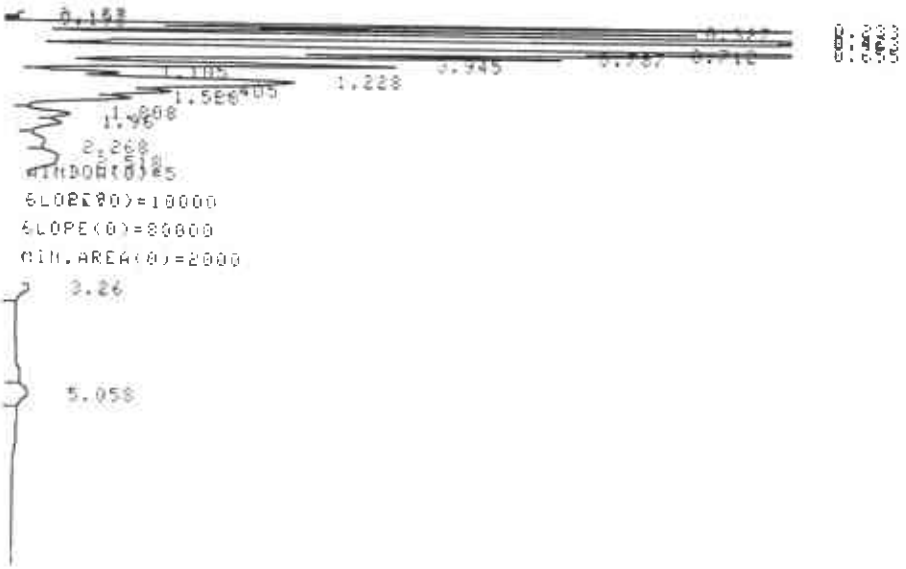
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V2/a
Vol. Inj: 25 ml

Date: 5/5/89
Analysts: MAE / pp
Std. Vol. Inj: 50 ml
Comments:

START
05/04/89 09:46:11
ATTEN(0)=10



CHROMATOGRAM 4 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3336

PK NO	TIME	AREA	DV	BC	CONC	NAME
1	0.233	3083135	VE			
2	0.327	1938318	V			
3	0.42	4460124	VB			
4	0.463	3899077	VE	B	394.068	PCM
5	0.655	5209129	VB			
6	0.712	3358307	V			
7	0.787	26350e4	V	B	170.788	MC
8	0.945	2222562	V			
9	1.105	580844	V	B	41.1796	IC
10	1.228	3498340	V			
11	1.405	1248123	V	B	88.7717	C-DCT
12	1.528	969359	V			
13	1.808	576961	V			
14	1.96	549102	V			
15	2.268	554356	V	B	34.6284	TCE
16	2.518	1101507	V			
17	2.9	136371	V			
18	3.26	244749	V			
19	5.058	147759		B	8.617	M+P XY
	TOTAL	35433164			839.0524	

RUN
VOLUME INJECTED (UL)
? 25
DILUTION
? 1

PCB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PHOI	PHO
TC			
3570.18 4100	80.3588	69.2568	0
17.234	0	1168.33 810	0
4899.35			

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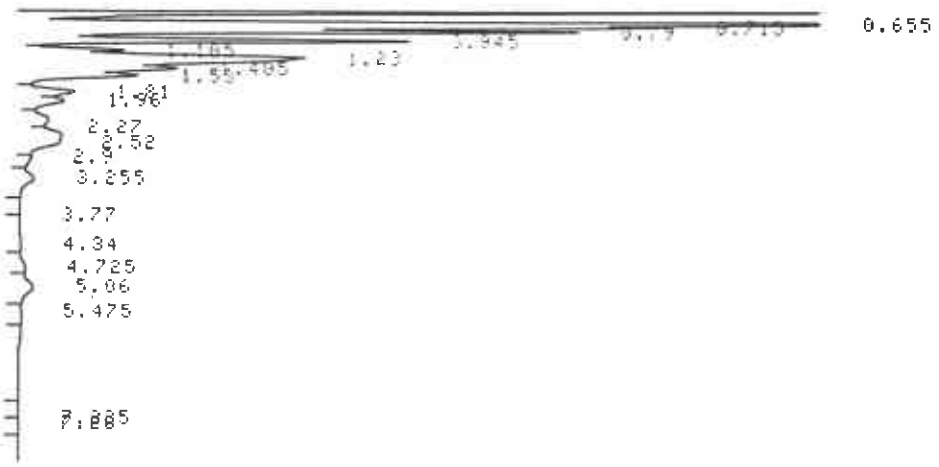
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: VSA
Vol. Inj: —

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 5 ul
Comments: R-process on Int

ERROR* 16:UNDEF'D STATEMENT IN 350
SLOPE(0)=4000
ANAL 4
05/04/89 09:58:42



CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3337

FILE 2
METHOD 24
SAMPLE AMT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.235	3083203	VE			
2	0.33	1938521	V			
3	0.42	4480388	VE			
4	0.465	3899806	VE	6	284.133	BEN
5	0.655	5209875	VE			
6	0.715	2358810	V			
7	0.79	2636239	V	7	[illegible]	[illegible]
8	0.945	2224476	V			
9	1.105	562316	V	1	[illegible]	BEN
10	1.23	3501979	V			
11	1.405	1250425	V	3	[illegible]	T-DCE
12	1.53	973809	V			
13	1.81	582064	V			
14	1.96	555454	V			
15	2.27	540301	V	5	[illegible]	TCE
16	2.52	1139626	V			
17	2.9	145697	V			
18	3.255	266501	V			
19	3.77	9557				
20	4.34	73636	V			
21	4.725	105168	V	2	[illegible]	[illegible]
22	5.06	285499	V	4	[illegible]	[illegible]
23	5.475	18908	V			
24	7.235	11191				
25	7.88	12567	V			
	TOTAL	35888992			623.2468	

RUN
VOLUME INJECTED (UL)
? 25
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
3570.95 4000	80.5625	67.8755	0
33.2993	13.0136	1193.43 840	3.28613

Stimpson 221-25412 14 S

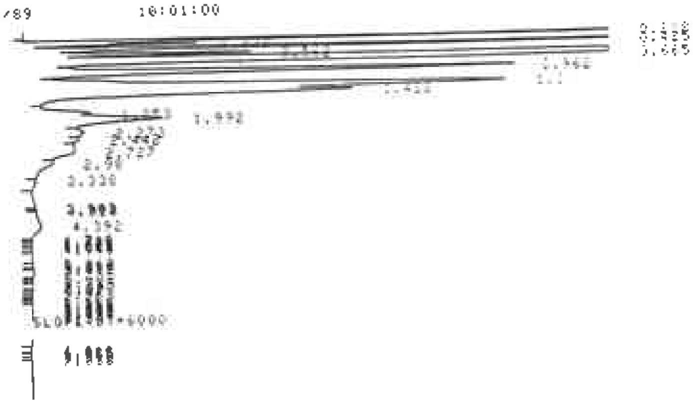
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V3/1A
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MKE / PP
Std. Vol. Inj: 5 ul
Comments:

START
05/04/89 10:01:00



CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3338

PKNO	TIME	AREA	MK
1	0.238	3529921	S
2	0.332	457392	V
3	0.425	4204[illegible]	VE
4	0.562	1345166	V
5	0.665	11641680	VE
6	0.962	4513105	V
7	1.3	7301127	V
8	1.422	3966794	V
9	1.853	827721	V
10	1.992	2756955	V
11	2.273	1120743	V
12	2.442	751191	V
13	2.727	1593[illegible]	V
14	2.98	646503	V
15	3.338	118663	V
16	3.960	165091	V
17	3.993	9911	V
18	4.028	40903	V
19	4.392	479137	V
20	4.773	3913	V
21	4.822	4416	V
22	4.886	2450	V
23	5.262	24857	
24	5.318	13529	V
25	5.381	6624	V
26	5.412	16292	V
27	5.803	2925	V
	TOTAL	45956224	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

FEB SEN
M/P-XYL ET SEN
TT
~~[illegible]~~ 2000 0
1.08058 0.273217 ~~[illegible]~~ 911
3134.71
ERROR (UNDEFINED STATEMENT IN [illegible])
EDIT
LINE PROGRAM
10 S=1.0[illegible]
20 F1=60000
25 [illegible]=ID
35 [illegible]=5.5
END
RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

FBB SEN
M/P-XYL ET SEN
TT
1761.39 2000 0 911
1.08058 0.273217
3135.4
ERROR (UNDEFINED STATEMENT IN 360

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63 Date: 5/4/89
Station Number: 9-1153 Analysts: MAE / PP
Sample: V1/B Std. Vol. Inj: 50 ul
Vol. Inj: — Comments: Kayrccass [illegible]

MIN.AREA(0)=3000
ANAL 2
05/04/89 10:13:31

221-25412

14 7

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3339

FILE 0
METHOD 2[illegible]
SAMPLE WT [illegible]

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.125	4512				
2	0.24	2284612	VE			
3	0.33	672737	V			
4	0.425	1233803	V			
5	0.66	442060	V			
6	0.72	202286	V			
7	0.795	90612	V	7	0.2716	PE
8	0.955	221312	V			
9	1.295	343471	V			
10	1.425	274528	V	3	[illegible]	[illegible]
11	1.535	119967	V			
12	1.83	277656	V			
13	1.985	23477	V			
14	2.215	253214	V	2	15.3172	TOL
15	2.51	[illegible]	V			
16	2.74	142546	V			
17	3.075	54204	V			
18	3.265	94174	V			
19	4.23	66117	V			
20	4.495	[illegible]	V	[illegible]	[illegible]	[illegible]
21	4.695	3522	V	[illegible]	[illegible]	[illegible]
22	4.79	3023	V	[illegible]	[illegible]	[illegible]
23	4.8	4276	V	[illegible]	[illegible]	[illegible]
24	5.01	4229	V	4	[illegible]	[illegible]
25	5.125	6721	V	[illegible]	[illegible]	[illegible]
26	5.88	4252	V	5	[illegible]	[illegible]
27	7.07	4241	V			
28	7.115	3433	V			
29	7.14	4511	V			
30	7.235	25132	V			
31	7.28	20612	V			
32	7.46	12752	V			
	TOTAL	7078596			[illegible]	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB BEN TOL O-XYL
M,P-XYL ET BEN PHOT PAO
TT
354.653 410 0 15.3172 0.271679
0.403681 0.264584 111.574 78 4.5835
487.567
ERROR 16:UNDEF'D STATEMENT IN 390

Shimadzu

221-25412

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V4/4
Vol. Inj: 50 µl

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 5 ml
Comments:

ATTEN(0)=10
A.SAVE 0,50
START
05/04/89 10:31:03

ATTEN(0)=6

MIN.AREA(0)=1000

CHROMATOGRAM 5 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3341

FILE 0
SAMPLE WT 100

PKNO	TIME	AREA					NAME
1	0.226	21700					
2	0.302	9170	V				
3	0.463	9432	V				
4	0.663	3542	V				
5	1.222	8438					
	TOTAL	52300					

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN		
TT			
0.959901	0	0	0
0	0	0.533263	0
1.54316			

ERROR 16:UNDEF'D STATEMENT IN 390

Skinner 221-25412 14 9

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 16705.63
Station Number: 9-1153
Sample: V4/6
Vol. Inj: —

Date: 5/4/89
Analysts: MAE / PP
Std. Vol. Inj: 5 µl
Comments: Regression on Int

MIN.AREA(0)=3000
PRINT SLOPE(0)
 6000
SLOPE(0)=4000
ANAL 6
05/04/89 10:52:47

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3343

PKNO	TIME	AREA	MK	WIDTH	CONC	NAME
1	0.24	20677				
2	0.305	11734	V			
3	0.37	6252				
4	0.45	29295	V			BEN
5	0.61	3071	V			
6	0.66	7058	V			
7	0.71	6504	V			
8	0.805	4467	V			HEX
9	0.965	4461	V			
10	1.07	3734	V			HEX
11	1.235	4560	V			
12	1.33	6169	V			
13	1.95	7499	V			
14	2.71	3838	V			
15	4.105	3068				
	TOTAL	121711				

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PEAK	BEN	TOL	O-XYL
M+P-XYL	ET BEN	PHOT	P-C
4.39149	0.258325	1	0
0	0	1.69418	0
6.3442			

ERROR 16:UNDEF'D STATEMENT IN 390

221-25412

15 1

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63

Station Number: 9-1153

Sample: V3/B

Vol. Inj: 50ul

Date: 5/4/89

Analysts: MHE / PP

Std. Vol. Inj: 50 ul

Comments:

ERROR 16:UNDEF'D STATEMENT IN 390
ATTEN(0)=10
A.SAVE 1,50
START
05/04/89 11:12:02

CHROMATOGRAM 1 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3345

PKNO	TIME	AREA	MK	WIDTH	HEIGHT	NAME
1	0.242	46776	V			
2	0.307	11384	V			
3	0.428	20556				
4	0.675	15573	V			
5	0.737	12292	V			
6	0.97	7082				
7	1.31	15795	V			
8	1.428	9472	V			
	TOTAL	139429				

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

FBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PRO?	PRO
TT			
4.74969	0	0	0
0	0	1.78238	0
6.53207			

ERROR 16:UNDEF'D STATEMENT IN 390

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63

Station Number: 9-1153

Sample: V2/B

Vol. Inj: 50 ml

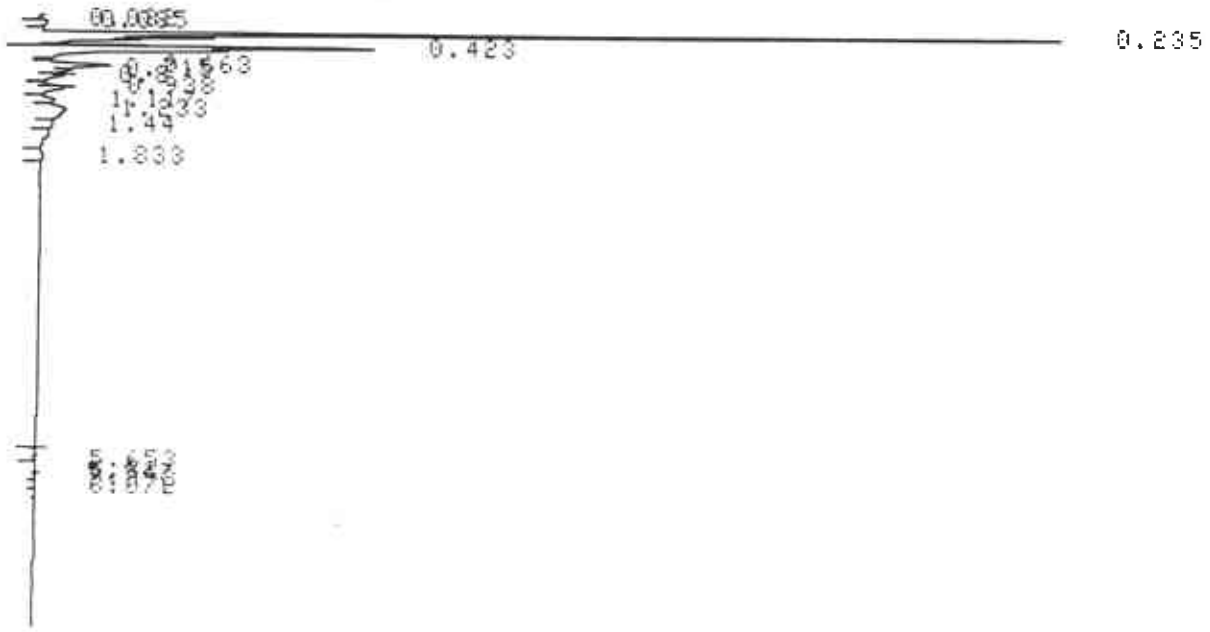
Date: 5/5/89

Analysts: MAE / PP

Std. Vol. Inj: 50 ml

Comments:

START
05/04/89 11:36:50



CHROMATOGRAM 3 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3347

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.085	3603				
2	0.235	308705	SV			
3	0.423	66911	T			
4	0.663	12266	T			
5	0.715	4414	TV			
6	0.8	3975	TV	7	0.2577	HEX
7	0.938	5644				
8	1.117	3032		1	0.2097	BEN
9	1.233	11727	V			
	TOTAL	420276			0.4674	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
21.134 24	0.209705	0	0
0	0	0.811102 #1	0
28.1548			

Shimadzu

221-25412

15 6

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63 Date: 5/4/89

Station Number: 9-1153 Analysts: MAE / PP

Sample: V5 Std. Vol. Inj: 5 µl

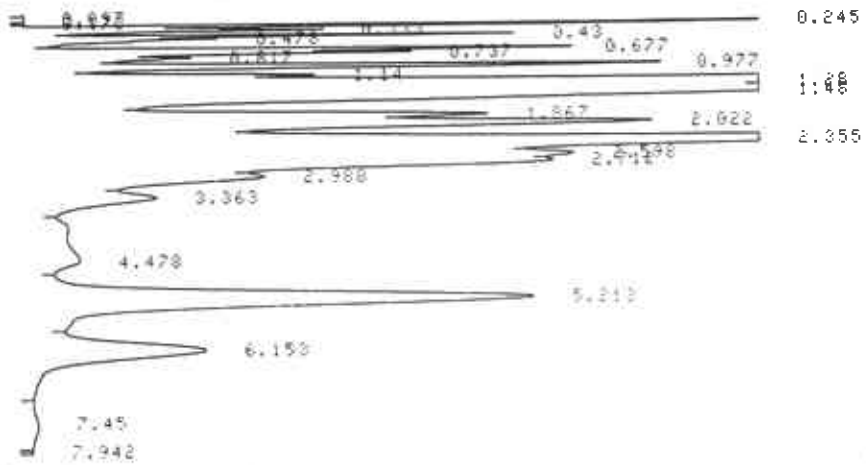
Vol. Inj: 25 Comments:

ERROR [illegible]

ATTEN(0)=10

START

05/04/89 11:51:52



CHROMATOGRAM 4 MEMORIZED

CHROMATOPAC C-R3A FILE 2

SAMPLE NO 0 METHOD 24

REPORT NO 3348 SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.097	4603				
2	0.245	2953440	VE			
3	0.333	1382151	V			
4	0.43	1436830	V	6	108.3656	BEN
5	0.478	1069652	V	6	80.6731	BEN
6	0.677	2594559	V			
7	0.737	1685700	V			
8	0.817	1065560	V	7	69.0628	MEK
9	0.977	4323484	V			
10	1.14	1783654	V	1	123.3826	BEN
11	1.28	14802672	VE			
12	1.48	16705795	VE	8	813.4129	1-OCT
13	1.867	5024861	V			
14	2.022	8721746	V			
15	2.355	19088384	VE	2	1192.4711	TOL
16	2.598	6646923	V			
17	2.712	8244072	V			
18	2.988	4464932	V			
19	3.363	3195957	V			
20	4.478	3607149	V	3	223.1766	ETBEN
21	5.213	14151150	V	4	825.2645	M,P XY
22	6.153	5775073	V	5	366.4238	O XYL
23	7.45	267070	V			
	TOTAL	128995386			3802.1181	

RUN

VOLUME INJECTED (UL)

? 25

DILUTION

? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PROI	PHO
TT			
2278.04 2000	246.766	2384.74	712.846
1650.58	446.353	9264.19 6500	835.918
17839.4			

ERROR [illegible] STATEMENT IN 440

⊕ Simadzu 221 2541 2

15

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

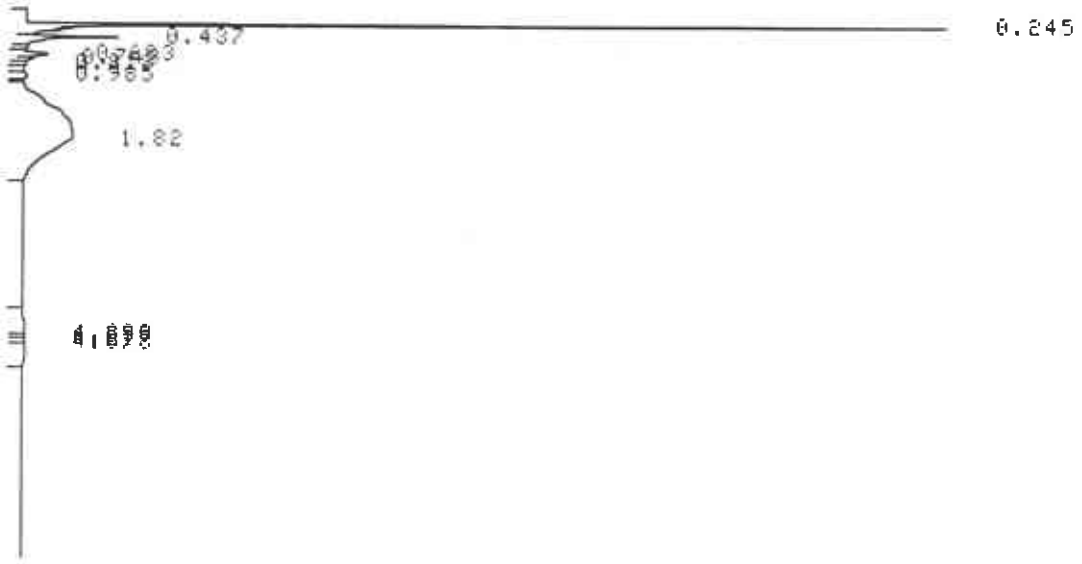
HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V6/A
Vol. Inj: 50 ml

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 5 ml
Comments:

ERROR# 16:UNDEF'D STATEMENT

START
05/04/89 12:16:43



CHROMATOGRAM 6 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3350

FILE 1
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.245	2109682	B E			
2	0.437	220064	T	6	13.5972	PEN
3	0.683	92125				
4	0.743	30868	V			
5	0.818	9001	V	7	1.5614	-E
6	0.985	24565	E			
7	~~1.82~~	~~2563336~~	~~E~~			
8	4.698	78063	E	3	4.8298	ETBEN
9	4.758	19036	V	3	1.1777	ETBEN
10	4.817	29176	V	3	1.8051	ETBEN
11	4.873	61103	V	3	3.7809	ETBEN
	TOTAL	5237616			28.7737	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNDI	PAO
TT			
165.071 190	0	0	0
0	3.78048	186.539 ~~190~~ = 5	0
355.39			

ERROR ??

⊕ Shinadoa

2212

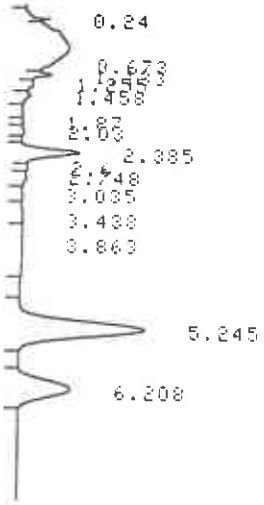
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: VS-H3 (Cord H2O)
Vol. Inj: ~~5 ml~~ 25 ml

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 5 ml
Comments:

START
05/04/89 12:04:48



CHROMATOGRAM 5 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3349

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.24	132172				
2	~~0.673~~	~~2027758~~	~~V~~			
3	1.133	205933	V	1	[illegible]	
4	1.255	118689	V			
5	1.458	75032	V	3	[illegible]	
6	1.87	11363	E			
7	2.09	24743	V			
8	2.385	650695	E	2	[illegible]	
9	2.6	56271	V			
10	2.748	83491	V			
11	3.035	23606	V			
12	3.438	84575	V			
13	3.863	161911	V			
14	5.245	2715616	E	4	[illegible]	
15	6.208	1261013	E	5	[illegible]	
	TOTAL	7632864			296.9238	

RUN
VOLUME INJECTED (UL)
? 25
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNO:	PNO
TT			
291.905 ~80	28.4905	81.3924	160.02
316.738	0	-3.8282	174.459
1049.08			

ERROR [illegible] STATEMENT IN 390

⊕ Stimsonite 221 25412 15 8

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

NNU 421 Gas Chromatogram report sheet

Project Number: 10705.63 Date: 5/4/89

Station Number: 9-1153 Analysts: MHE / PP

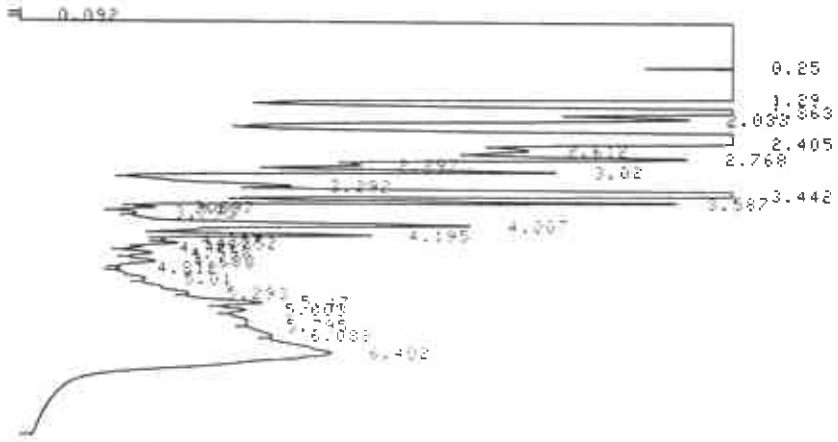
Sample: V7 50 µL Std. Vol. Inj: 50 µL

Vol. Inj.: UNDEF'D STATEMENT IN 390

ATTEN(0)=10

START

05/04/89 12:35:46



CHROMATOGRAM 7 MEMORIZED

CHROMATOPAC C-R3A FILE

SAMPLE NO 0 MET-03

REPORT NO 3351 SAMPLE AT 100

PKNO	TIME	AREA	BC	IDNO	CONC	NAME
1	0.25	70701600	VE			
2	1.29	52298804	VE			
3	1.863	12775025	VE			
4	2.033	8725660	V			
5	2.405	22917573	VE	2	[illegible]	TOL
6	2.612	5626129	V			
7	2.768	7385517	V			
8	2.897	2520978	V			
9	3.02	4441979	V			
10	3.292	3271359	V			
11	3.442	11313871	VE			
12	3.587	19217[illegible]	V			
13	3.697	876947	V			
14	3.791	776112	V			
15	4.007	5652126	V			
16	4.195	2241241	V			
17	4.287	647445	V			
18	4.353	106205	V			
19	4.422	65[illegible]79	V			
20	4.513	.261107	V		[illegible]	
21	4.638	177[illegible]88	V		[illegible]	
22	4.812	509769	V		[illegible]	
23	5.01	2060844	V	4	120.1[illegible]	
24	5.293	3100712	V	4	180.[illegible]	
25	5.47	3506855	V			
26	5.603	2504094	V			
27	5.795	4246440	V	5	269.4328	TOL
28	6.088	4428941	V	5	281.0163	TOL
29	6.402	15507147	V			
	TOTAL	256728320			2502.5729	

RUN

VOLUME INJECTED (UL)

? 50

DILUTION

? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PRO	PHO
TT			
4883.81	0	1431.56	281.012
189.8.8	31.5397	9097.29	1846.02
17752.1			

ERROR [illegible] STATEMENT IN 390

5412 15 9 16

⊕ Standard 221 25412

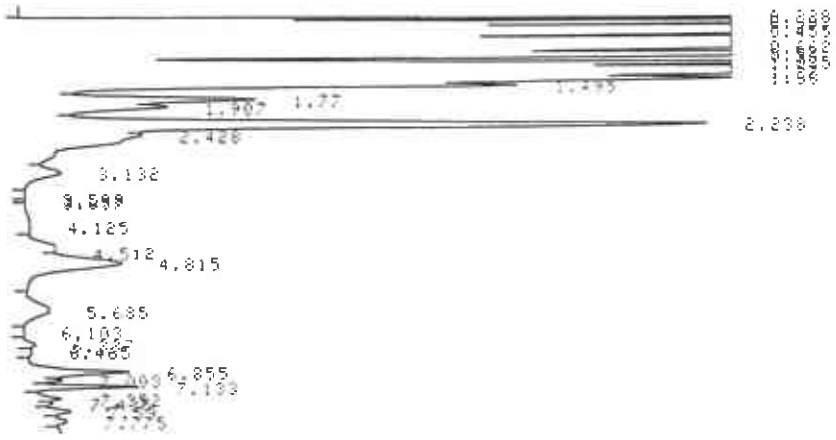
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V7
Vol. Inj: 10 ml

Date: 5/4/89
Analysts: M+E / PP
Std. Vol. Inj: 50 µl
Comments:

START
05/04/89 12:51:22



CHROMATOGRAM 8 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 8352

FILE
METHOD
SAMPLE WT

PKNO	TIME	AREA	MK	IDNO	CONC	UNITS
1	0.238	3553292	E			
2	0.303	7222640	VE			
3	0.455	16192595	VE	6	[illegible]	PPM
4	0.662	21966790	VE			
5	0.94	9675312	VE			
6	1.085	6336469	VE	1	438.2811	PPM
7	1.27	15034691	VE			
8	1.38	5304948	VE	3	306.9713	PPM
9	1.495	4344488	V	2	251.6151	PPM
10	1.77	2638863	V			
11	1.907	1789564	V			
12	2.238	8595777	V	4	[illegible]	PPM
13	2.428	3238+79	V			
14	3.132	822502	V			
15	3.598	50539	V			
16	3.657	23032	V			
17	4.125	356252	V			
18	4.512	69060.	V	5	48.7[illegible]	PPM
19	4.815	2428472	V	7	155.[illegible]	PPM
20	5.685	757904	V	8	48.[illegible]	PPM
21	6.103	11352		9	[illegible]	PPM
22	6.337	93389				
23	6.465	45126	V			
24	6.855	1000668	V			
25	7.003	184150	V			
26	7.133	618545	V			
27	7.352	156480				
28	7.485	52912	V			
29	7.59	148109	V			
30	7.779	132339	V			
	TOTAL	114516484			2956.8191	

RUN
VOLUME INJECTED (UL)
? 10
DILUTION
? 1

PXB	BEN	TOL	O-XYL
M/P-XYL	ET BEN	PN01	PN02
??			
20264.8	2191.6	2684.71	3.6015
0	751.255	12580.7	1124.39
39601			

23000 9800

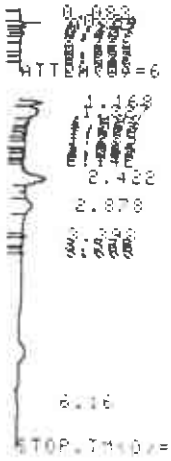
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V8/4
Vol. Inj: 50ul

Date: 5/4/89
Analysts: M+E / pp
Std. Vol. Inj: 5ul
Comments:

ERROR 16:UNDEFD STATEMENT IN 994
START
05/04/89 13:08:28



CHROMATOGRAM 0 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3153

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.083	7434				
2	0.24	38011				
3	0.307	16689	V			
4	0.383	17028	V			
5	0.43	16711	V	6	1.2694	PEN
6	0.467	11021	V	6	0.8372	PEN
7	0.688	14983	V			
8	0.753	5870	V	7	0.3969	HEX
9	0.832	7217	V	7	0.4879	HEX
10	0.982	8965	V			
11	1.168	11145	V	8	0.7704	BEN
12	1.327	15917	V			
13	1.493	4114	V	9	0.2843	T-OCT
14	2.422	12740				
15	2.878	4677				
	TOTAL	192627			3.8175	

RUN
VOLUME INJECTED (UL)
? 500
DILUTION
?
5
BREAK IN 150
RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	4-OC	PHO
TT			
3.04599 3	0.770926	2	0
0	0	2.87744 2	0

⊕ Stranded

16 2

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

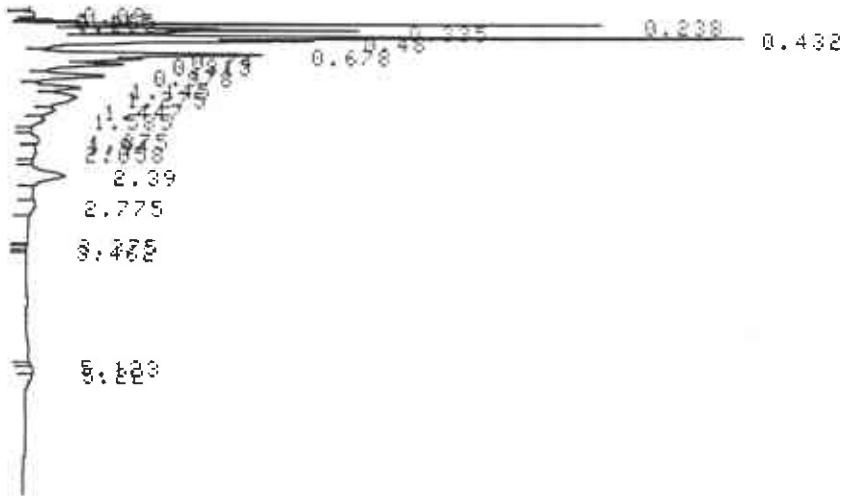
HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V10/4
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 50 ul
Comments:

221.25412

START
05/04/89 13:25:43



CHROMATOGRAM 11 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3355

PKNO	TIME	AREA				
1	0.09	3856				
2	0.238	46763				
3	0.335	69060				
4	0.432	101484				
5	0.48	62799				
6	0.678	57881				
7	0.74	23356				
8	0.813	28830				
9	0.978	26011				
10	1.145	16987				
11	1.275	32086				
12	1.447	10873				
13	1.585	6202				
14	1.875	3884				
15	2.39	18047				
	TOTAL	508119				

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PRO	PAO
TT			
22.1384 25	1.17507	1.12793	0
0	0	3.79049 3	0
28.2313			

16 3

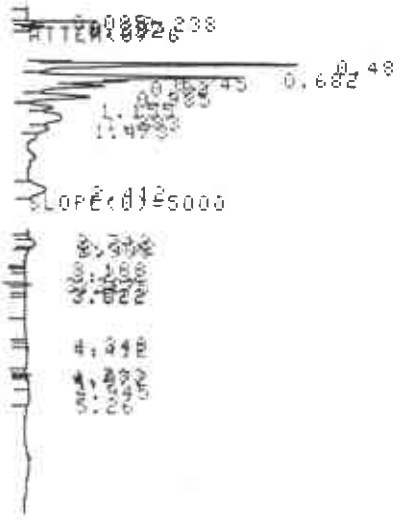
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V11
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 50 ul
Comments:

ERROR 16:UNDEF'D STATEMENT IN 390
ATTEN(0)=10
START
05/04/89 14:05:34



CHROMATOGRAM 14 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3359

FILE 0
MET-02 24
SAMPLE WT 100

PKNO	TIME	AREA	M	ISTD	CONC	NAME
1	0.085	5513				
2	0.238	74691	V			
3	0.307	26409	V			
4	0.337	32157	V			
5	0.433	114696	V	6	3.6504	PEN
6	0.48	58757	V	6	4.4315	PEN
7	0.682	54088	V			
8	0.745	20994	V			
9	0.82	23491	V	7	1.5825	HE
10	0.985	19893	V			
11	1.155	6947		7	1.4105	BZ
12	1.283	20411	V			
13	1.473	5574	V	2	1.2714	1-OC
14	2.412	9197		2	1.5745	TOL
15	2.632	3496	V			
	TOTAL	476314			15.9309	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PSB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
22.8752	0.480543	0.574489	0
0	0	2.10102	0
26.0312			

ERROR 16:UNDEF'D STATEMENT IN 390

26

16 6

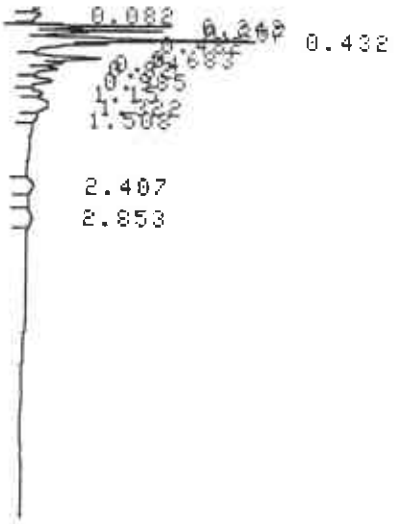
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V12/A
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 50 ul
Comments:

START
05/04/89 14:18:24



CHROMATOGRAM 16 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3361

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.242	16293				
2	0.307	16806	V			
3	0.432	37670	V	6	2.8411	PEN
4	0.482	15400	V	6	1.1615	PEN
5	0.683	15516	V			
6	0.74	5838	V			
7	0.82	5676	V	7	0.3675	HEX
8	0.985	5195				
9	1.15	3451		1	0.2387	BEN
10	1.322	10687	V			
11	2.407	3833		2	0.2394	TOL
12	2.853	3483				
	TOTAL	139841			4.8481	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
1.272	0.238695	0.239413	0
0	0	1.00588	0
2.75599			

Stimsonite

221-25412

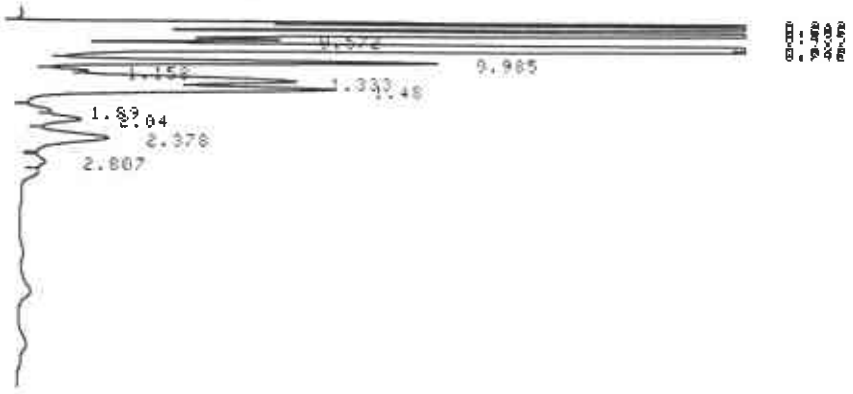
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: VII/13
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 50 ul
Comments:

ERROR 16:UNDEF'D STATEMENT IN 390
START
05/04/89 14:31:09



CHROMATOGRAM 17 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3362

FILE 3
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.242	704044				
2	0.308	671070	V			
3	0.435	2014200	SV	6	151.9108	BEN
4	0.572	21572	T			
5	0.682	613328	V			
6	0.742	358877	V			
7	0.985	180913	V			
8	1.158	26725	V	1	1.8487	BEN
9	1.333	213467	V			
10	1.48	205161	V	8	9.9894	T-BUT
11	1.89	12729				
12	2.04	41409	V			
13	2.378	79878	V	2	4.9501	TOL
14	2.807	5745				
	TOTAL	5148516			169.4790	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PROI	PHO
TT			
308.794	0	0	0
0	0	40.4333	0
349.227			

ERROR 16:UNDEF'D STATEMENT IN 390

CHROMATOPAC C-R3A
SAMPLE NO 0 151.9108 BEN

FILE 3

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PROI	PHO
TT			
308.794	0	0	0
0	0	40.4333	0
349.227			

ERROR 16:UNDEF'D STATEMENT IN 390

350 2 5 28

16 8

221-25412

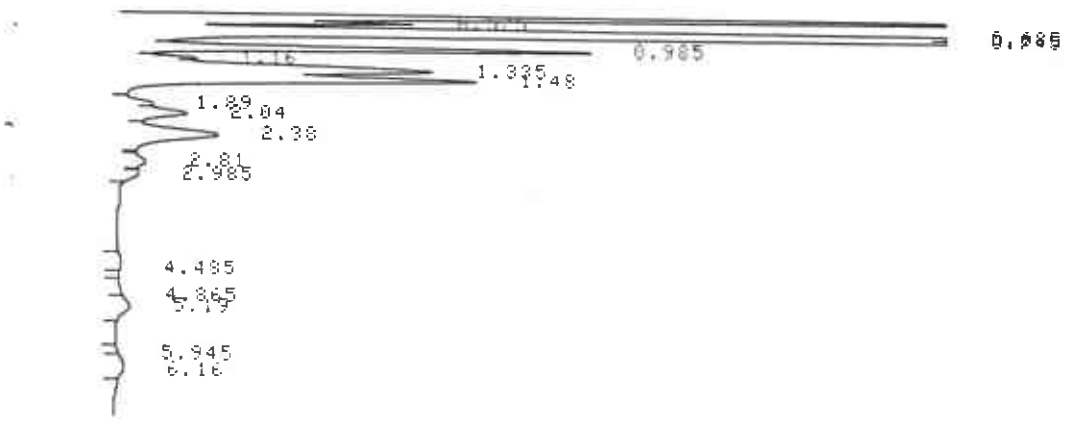
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Vill B
Vol. Inj: —

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 50 ul
Comments: Reprocess on fact.

SLOPE(0)=4000
SLOPE(0)=3000
ANAL 17
05/04/89 14:42:50



CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3364

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.245	704044				
2	0.31	671070	V			
3	0.435	2014200	SV	6	151.9108	PEN
4	0.575	21572	T			
5	0.685	613326	V			
6	0.745	358877	V			
7	0.985	180913	V			
8	1.16	26725	V	1	1.8467	BEN
9	1.335	213467	V			
10	1.48	205161	V	8	3.9894	1-OCT
11	1.89	12723				
12	2.04	41409	V			
13	2.38	79279	V	2	4.9522	TOL
14	2.81	5745				
15	2.985	3107				
16	4.865	5517		3	0.3413	ETBEN
17	5.19	17436	V	4	1.0168	M/P XY
18	6.16	9194	V	5	0.5834	O XYL
	TOTAL	5183720			170.6425	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PEB	BEN	TOL	O-XYL
M/P-XYL	ET BEN	PNOI	PAO
TT			
308.794 360	1.84867	4.95223	0.583373
1.01684	0.341315	33.4935 23	0.635986
351.666			

ERROR 16:UNDEF'D STATEMENT IN 390

221 25412

17 0

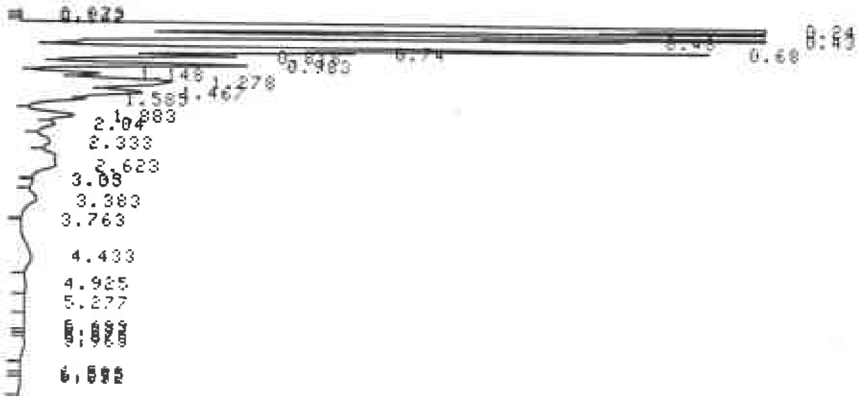
⊕ 5

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63 | Date: 5/4/89
Station Number: 9-1153 | Analysts: MAE / pp
Sample: V6/B | Std. Vol. Inj: 50 ul
Vol. Inj: 50 ul | Comments:

```
ATTEN(0)=10
A.SAVE 0,50
START
05/04/89            14:45:49
```




```
CHROMATOGRAM  18  MEMORIZED

CHROMATOPAC   C-R3A                 FILE        3
SAMPLE NO     0                     METHOD        24
REPORT NO     3365                  SAMPLE WT   100
```

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.24	9249588	VE			
2	0.43	4151578	VE	4	313.1117	PEN
3	0.48	2326986	V	6	175.5011	PEN
4	0.68	3110635	V			
5	0.74	1358576	V			
6	0.818	1184516	V	7	76.7729	HEX
7	0.983	1410048	V			
8	1.148	496803	V	1	34.3659	BEN
9	1.278	2059720	V			
10	1.467	1221353	V	8	59.4682	I-OCT
11	1.585	513236	V			
12	1.883	641939	V			
13	2.04	471864	V			
14	2.333	618150	V	2	38.6132	TOL
15	2.623	1228740	V			
16	3.03	30268	V			
17	3.05	146567	V			
18	3.383	422366	V			
19	4.433	511840	V			
20	4.925	159282	V	3	9.8549	ETBEN
21	5.277	124464	V	4	7.2584	M,P XY
22	5.683	89639	V			
23	5.777	16514	V			
24	5.875	19224	V			
25	5.965	80115	V	5	5.0832	O XYL
26	6.533	8408				
27	6.595	8951	V			
28	6.632	20491	V			
TOTAL		31680824			720.0292	

```
RUN
VOLUME INJECTED (UL)
?  50
DILUTION
?  1
```

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
1569.63 1500	34.3659	38.6132	5.0832
7.25845	9.85486	502.944 350	16.8323
2184.58			

ERROR [illegible]

Shimadzu 221-25412 00 1

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

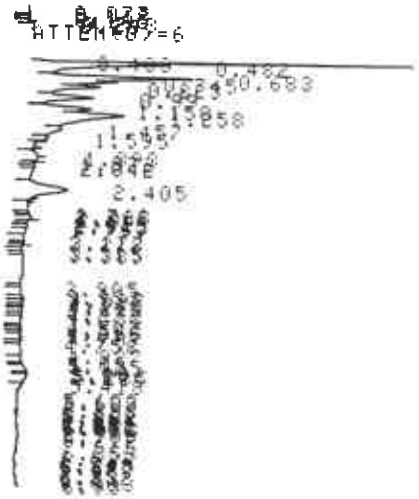
HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V10/B
Vol. Inj: 50 µl

Date: 5/4/89
Analysts: MHE / pp
Std. Vol. Inj: 50 µl

STATEMENT IN 390

START
05/04/89 14:58:03



CHROMATOGRAM 19 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3366

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	IDNO	NAME
1	0.243	11054	V			
2	0.28	35022	V			
3	0.433	68533	V	6	5.1687	PEN
4	0.482	30566	V	6	2.3053	PEN
5	0.683	39162	V			
6	0.745	17210	V			
7	0.823	17828	V	7	1.1555	[illegible]
8	0.99	16725	V			
9	1.158	14974		1	1.0358	BEN
10	1.258	43630	V			
11	1.457	6072	V	8	0.3857	1-OCT
12	1.893	3500				
13	2.405	23824		2	1.4882	TOL
	TOTAL	328100			13.4493	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBP M,P-XYL TT	BEN ET BEN	TOL PNO:	O-XYL PRO
9.41455	1.03584	1.4882	0
0	0	3.84005 3	0
15.7786			

00 2

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

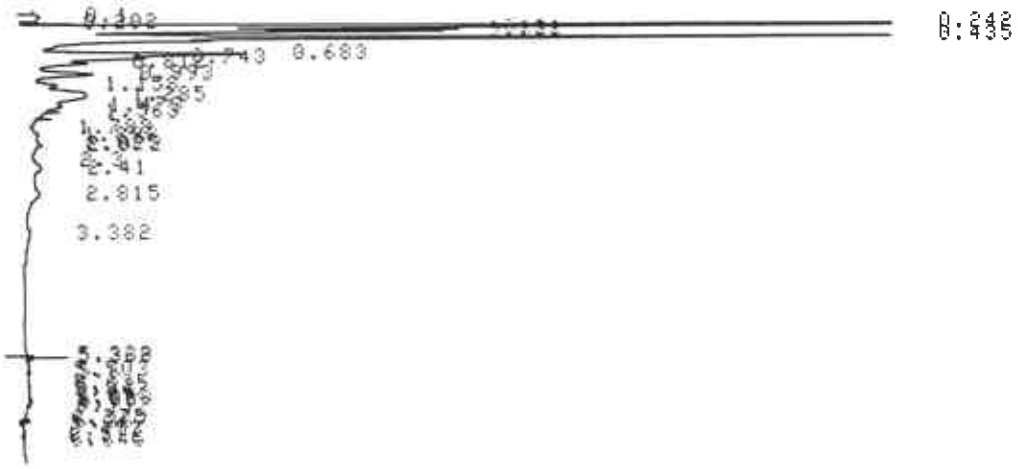
HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V8/B
Vol. Inj: 50 ml

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 50 ml
Comments:

Skinner 221 25412 003

```
PRINT SLOPE(0)
 3000
SLOPE(0)=5000
START
05/04/89          15:12:35
```




```
CHROMATOGRAM  20  MEMORIZED

CHROMATOPAC    C-R3A                    FILE          0
SAMPLE NO      0                        METHOD          24
REPORT NO      3367                     SAMPLE WT     100
```

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.242	1026742	V B			
2	0.31	18052	T			
3	0.338	23401	TV			
4	0.435	149245	T	9	11.256	BEN
5	0.683	48378	T			
6	0.743	22258	TV			
7	0.812	11095	TV	7	1.7191	mE
8	0.993	16122				
9	1.158	5302		1	0.3666	EB
10	1.285	35019	V			
11	1.473	8746	V	8	0.4858	I-OCT
12	2.41	4173		2	0.3607	TOL
13	5.362	5256		4	0.3065	M,P XY
14	5.503	8457	V	4	0.4932	M,P XY
15	5.635	6768	V			
16	5.89	3176	V	5	0.2015	O XYL
	TOTAL	1392179			14.0297	

```
RUN
VOLUME INJECTED (UL)
?  50
DILUTION
?  1
```

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PHOI	PAO
TT			
84.0668	0.36679	0.260651	0.201525
0.493194	0	2.72362	1.27285
89.3854			

MK 97

2

--- COMMENT IN ---

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

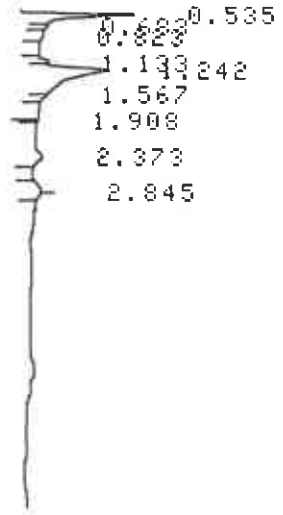
HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V13/B
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MAE / PP
Std. Vol. Inj: 50 ul
Comments:

ERROR 16:UNDEF'D STATEMENT ...
ATTEN(0)=10
START
05/04/89 15:24:59

ATTEN(0)=6



CHROMATOGRAM 21 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3368

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.238	17719	V			
2	0.277	32547	V			
3	0.417	12188	V			
4	0.535	23631	V			
5	1.242	44035	V			
6	2.373	14062	V	2	0.8971	TOL
7	2.845	4239				
TOTAL		148720			0.8971	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
-0.962623 L1	0	0.897131	0
0	0	3.43568 7,	0

Standards 221 25412 004

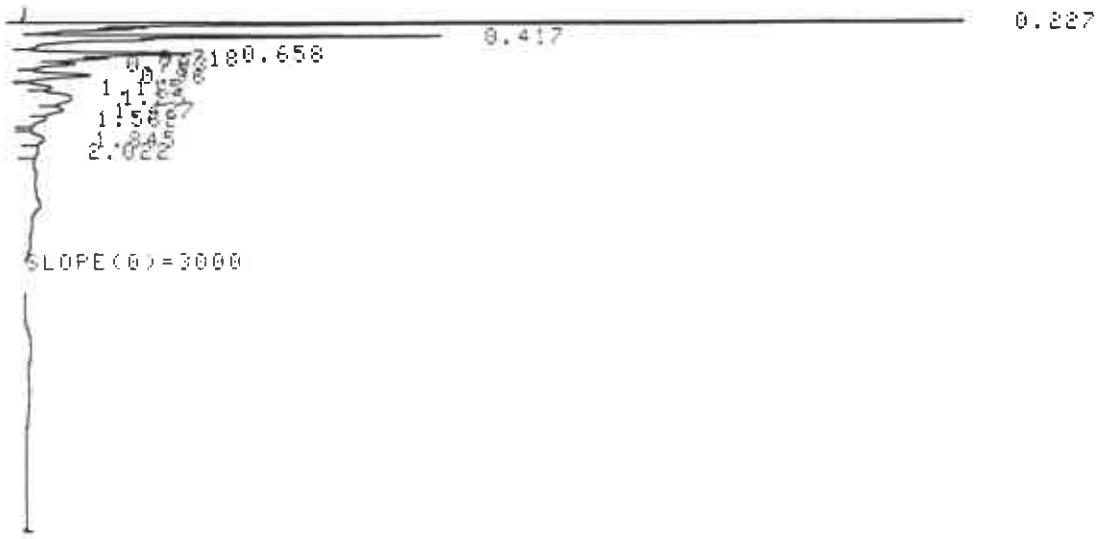
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V12/B
Vol. Inj: 50ul

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 50ul
Comments:

ERROR 16:UNDEFINED STATEMENT IN 370
START
05/04/89 16:01:38



CHROMATOGRAM 24 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3372

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.227	411482	S			
2	0.417	72926	T			
3	0.658	35032	T			
4	0.718	15168	TV			
5	0.793	10827	TV	7	0.6085	HEX
6	0.96	17690	TV			
7	1.115	5837		1	0.3714	BEN
8	1.25	29223	V			
9	1.427	15342	V	8	0.7244	I-OCT
10	1.562	5221	V			
11	1.845	6580				
	TOTAL	625329			1.7043	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
32.0125 37	0.371409	0	0
0	0	3.58643 3	0
35.9704			

ERROR [illegible]

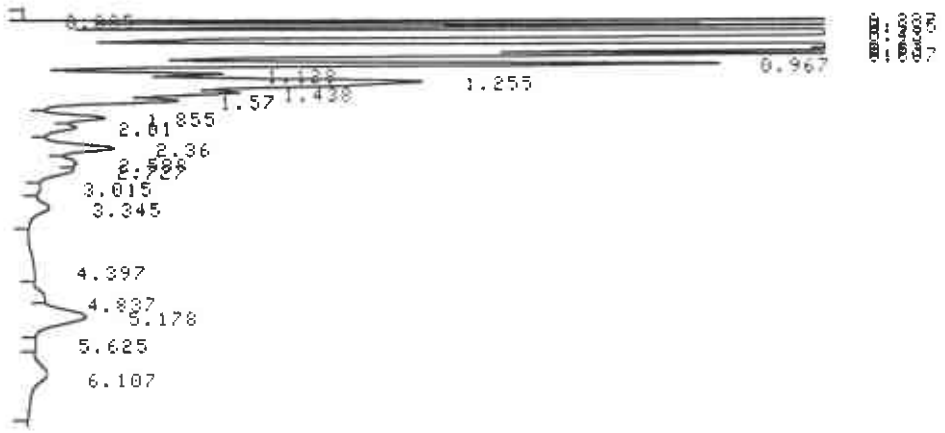
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V14
Vol. Inj: 10 µl

Date: 5/4/89
Analysts: MAE / pp
Std. Vol. Inj: 50 µl
Comments:

ATTEN(0)=10
START
05/04/89 16:12:13



CHROMATOGRAM 25 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3373

FILE 0
METHOD 24
SAMPLE AT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.085	4562				
2	0.237	2165417	VE			
3	0.335	3321631	VE			
4	0.43	10830919	VE	6	571.6014	BEN
5	0.67	6677406	VE			
6	0.73	4166972	VE			
7	0.807	4331632	VE	7	341.4819	TOL
8	0.967	4027304	V			
9	1.128	1140658	V	1	78.7679	EBN
10	1.255	5002348	V			
11	1.438	1716517	V	8	81.0904	M-XY
12	1.57	1326850	V			
13	1.855	866672	V			
14	2.01	653463	V			
15	2.36	1263473	V	2	44.1333	PXL
16	2.588	704338	V			
17	2.727	635969	V			
18	3.015	214269	V			
19	3.345	522045	V			
20	4.397	415769	V			
21	4.837	390187	V	3	11.8151	ETBN
22	5.178	1420600	V	4	45.4068	M,P-XY
23	5.625	144759	V			
24	6.107	702229	V	5	22.8265	O-XYL
	TOTAL	52648956			1113.8334	

RUN
VOLUME INJECTED (UL)
? 10
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
11298.3 3000	363.839	306.664	114.132
227.034	69.079	4097.28 2900	269.457
16745.7			

8.00

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63

Station Number: 9-1153

Sample: V15

Volume Inj.: 50 ul

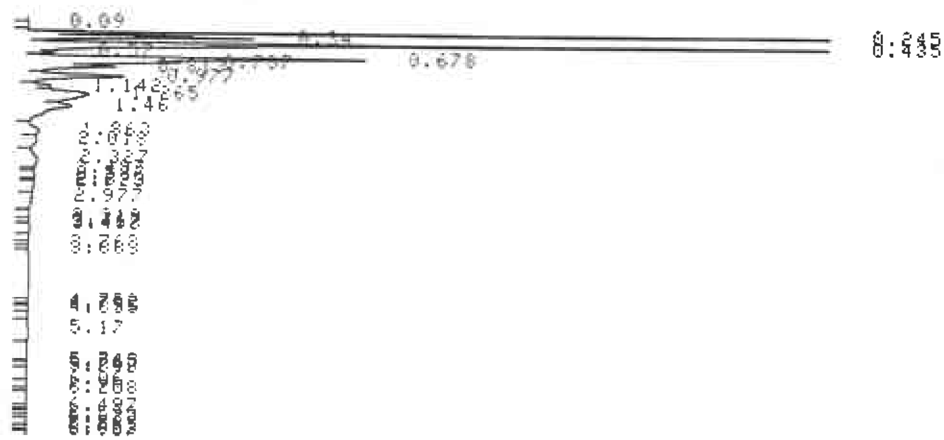
Date: 5/4/89

Analysts: MAE / pp

Std. Vol. Inj: 50 ul

Comments:

START
05/04/89 16:30:23



CHROMATOGRAM 26 MEMORIZED

CHROMATOPAC C-R3A

SAMPLE NO 0

REPORT NO 3374

FILE 0

MET-ID 24

SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.245	1958529	VE			
2	0.34	730474	V			
3	0.435	2821451	SVE	6	143.3188	PEN
4	0.57	13127	T			
5	0.678	1398638	V			
6	0.737	562344	V			
7	0.813	423287	V	7	31.7881	HE
8	0.977	566832	V			
9	1.142	130990	V	1	8.3345	BEN
10	1.265	750294	V			
11	1.46	499287	V	3	21.5751	I-OCT
12	1.863	117848	V			
13	2.018	96253	V			
14	2.327	152028	V	2	7.3799	TOL
15	2.497	16120	V			
16	2.587	44832	V			
17	2.693	13464	V			
18	2.723	52857	V			
19	2.977	30294	V			
20	3.313	5989				
21	3.367	5971	V			
22	3.433	4597	V			
23	5.17	5903		4	0.1887	M,P XY
	TOTAL	10403399			212.5354	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PMOI	PAO
TT			
535.403 620	8.33455	7.37992	0
0.188663	0	106.816 74	0
658.123			

⊕ Shimadzu 221-25412

00 9

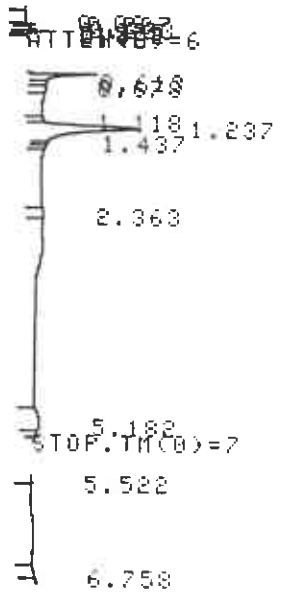
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V16
Vol. Inj: 50 ul

Date: 5/4/89
Analysts: MAE / PP
Std. Vol. Inj: 50 ul
Comments:

ERROR 16:UNDEF'D STATEMENT IN 390
START
05/04/89 16:45:30



CHROMATOGRAM 27 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3375

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.237	12774				
2	0.303	22208	V			
3	0.325	12496	V			
4	0.372	3003	V			
5	0.42	8592	V			
6	0.485	16754	V	6	0.8867	PEN
7	1.237	36999	SV			
	TOTAL	112827			0.8867	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
1.00708	0	0	0
0	0	2.35413 2	0
3.36121			

ERROR 16:UNDEF'D

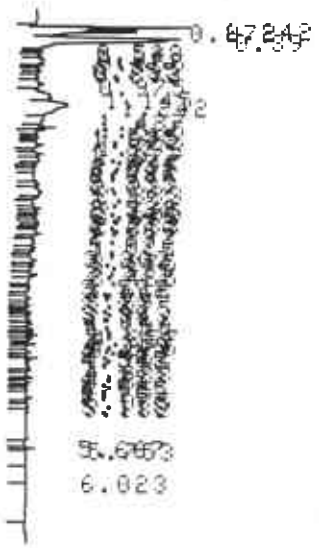
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V13/B
Vol. Inj: 50ul

Date: 5/5/89
Analysts: MAE / pp
Std. Vol. Inj: 50 ul
Comments:

```
*ERROR* 16:UNDEF'D STATEMENT IN    390
START
05/04/89              16:54:59
```




```
CHROMATOGRAM  28  MEMORIZED

CHROMATOPAC    C-R3A                    FILE          0
SAMPLE NO      0                        METHOD          24
REPORT NO      3376                     SAMPLE WT     100


PKNO       TIME       AREA   MK   IDNO      CONC        NAME

   1       0.242      12102
   2       0.272      19214   V
   3       0.39       34429  SV
   4       1.145       5703          1          0.3629 BEN
   5       1.242      13939   V
                  ----------              -------------
         TOTAL       85388                    0.3629
RUN
VOLUME INJECTED (UL)
?  50
DILUTION
?  1

PBB                    BEN                    TOL                    O-XYL
M/P-XYL                ET BEN                 PN01                   PA0
TT
 0.365571    C1         0.362868              0                      0
 0                      0                     0.886912    1          0
 1.61535
*ERROR*
```

⊕ Shinoda

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

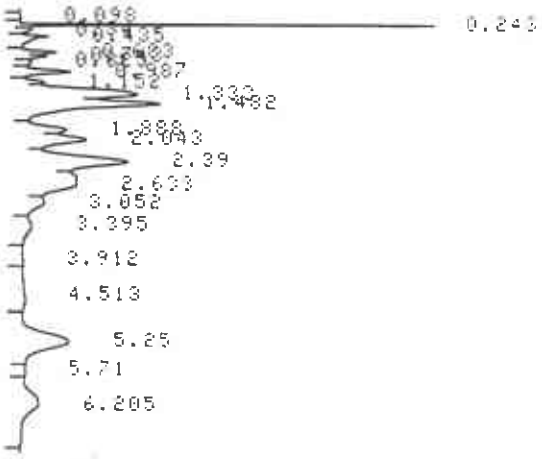
Project Number: 10705.63
Station Number: 9-1153
Sample: VS
Vol. Inj: 50 ul

Date: 5/5/89
Analysts: MAE / pp
Std. Vol. Inj: 50 ul
Comments:

221 2542

011

ERROR 16:UNDEF'D STATEMENT IN 390
ATTEN(0)=10
START
05/04/89 17:04:06



CHROMATOGRAM 29 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3377

FILE 0
ATT=10 24
SAMPLE WT 100

PKNO	TIME	AREA	BB	IDNO	AREA%	NAME
1	0.243	508944				
2	0.34	52168	V			
3	0.435	146393	V	6	5.7479	P&M
4	0.683	153845	V			
5	0.743	107267	V			
6	0.825	66834	V	7	3.756	+EM
7	0.987	307665	V			
8	1.152	132685	V	1	8.4424	BEN
9	1.333	1350512	V			
10	1.482	1532033	V	3	72.3296	I-OCT
11	1.888	442852	V			
12	2.043	791446	V			
13	2.39	1716512	V	2	83.3247	TOL
14	2.633	1352195	V			
15	3.052	389769	V			
16	3.395	219881	V			
17	3.912	48281	V			
18	4.513	127785	V			
19	5.25	1080950	S	4	34.5506	M,P XY
20	6.205	514765	V	5	16.7328	O XYL
	TOTAL	11045784			226.8936	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
81.6412 93	8.4424	83.3247	16.7328
34.5506	0	441.551 3/0	32.7531

APPENDIX D

SVCA Data Sheets and Chromatograms 10 May 1989

Project CHV 9-1153 Project No. 10705.63

Subject SVCM Data Sheet Sheet No. 1 of 2

Drawing No. _____

Computed by MAE Date 5/10/89 Checked by _____ Date _____

Sample	Time	(ft) Depth	Vac (in Hg)	Purge Time (min)	Vac Rel (min)	Vol Inj (ml)	Comments
Startup	810	—	—	—	—	—	
Backout	830	—	—	—	—	—	
Blank	848	—	—	—	—	100	OT = 57°C
Std #4	859	—	—	—	—	50	
V17	920	2.5	7	1	0	10	Strong Odor
Backout	935	—	—	—	—	—	
V18/A	953	2.5	0.5	1	0	50	24x3'
V18	1006	2.5	21	20	10	50	
Backout	1017	—	—	—	—	—	
V19/B	1022	4.5	20	2	0.25	50	Water in Screen after removal.
V20/A	1039	2.5	0.5	1	0	50	
V20/B	1054	4.0	3	1	6	50	
Std #4	1111	—	—	—	—	50	Recalibrate.
V22	1127	2.5	19	20	10	10	Water in Sampling App.
Blank	1144	—	—	—	—	50	Small peaks
V21/A	1159	2.5	0.5	1	0	50	
V21/B	1215	4.0	18	3	0.5	50	
Backout	1230	—	—	—	—	—	Clean FID Output
V23	1251	2.0	18	2	1	50	
V24/A	1305	2.5	0.5	1	0	50	
V24/B	1317	4	14	2	0.25	50	Probe Screen Replaced full of Mud. Gasoline Odor
Std #4	1330	—	—	—	—	50	
V24-HS	1342	4+4'	—	—	—	50	Shot. Headspace inside probe Screen
Blank	1355	—	—	—	—	50	
Backout	1400	—	—	—	—	—	
V25	1418	2.5	21	20	15	50	
V24/C	1435	3.5	18	3	0.5	50	
Blank	1448	—	—	—	—	50	Unusual Integration
Blank	1506	—	—	—	—	50	Short run.
V26	1511	2.0	7	1	0	50	
V23/A Bkd Sample	1528	Ground Level	0	1	0	50	Sample Backspace under house
Std #4	1544	—	—	—	—	50	
V18/A	1557	2.0	12	2	0.1	50	
V27/A	1612	2.0	21	15	5	50	Subtract out late peaks from prev. sample

Project CHV 9-1153 Project No. 10705.63

Subject SVCA Data Sheet Sheet No. 2 of 2

Drawing No. _____

Computed by MAE Date 5/10/89 Checked by _____ Date _____

Sample	Time	Depth ft	Vac (in Hg)	Purge Time (min)	Vac Rel (min)	Vol Inj (ml)	Comments
V28/B	1628	2.5	15→3	1	0.5	25	Sucked water
V27/B	1644	4.0	23	10	5	25	Water in probe after run
Blank	1658	—	—	—	—	50	
V29	1712	2.5	5	1	0	25	Attn=10, strong odor
V30	1732	2.0	20	10	5	50	Sucked water
Std#4	1747	—	—	—	—	50	High XE?
V31	1807	2.5	1	1	0	50	
V32	1821	2.5	3	1	0	50	
Std#4	1833	—	—	—	—	50	High XE?

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63

Station Number: 9-1153

Sample: Startup

Vol. Inj: —

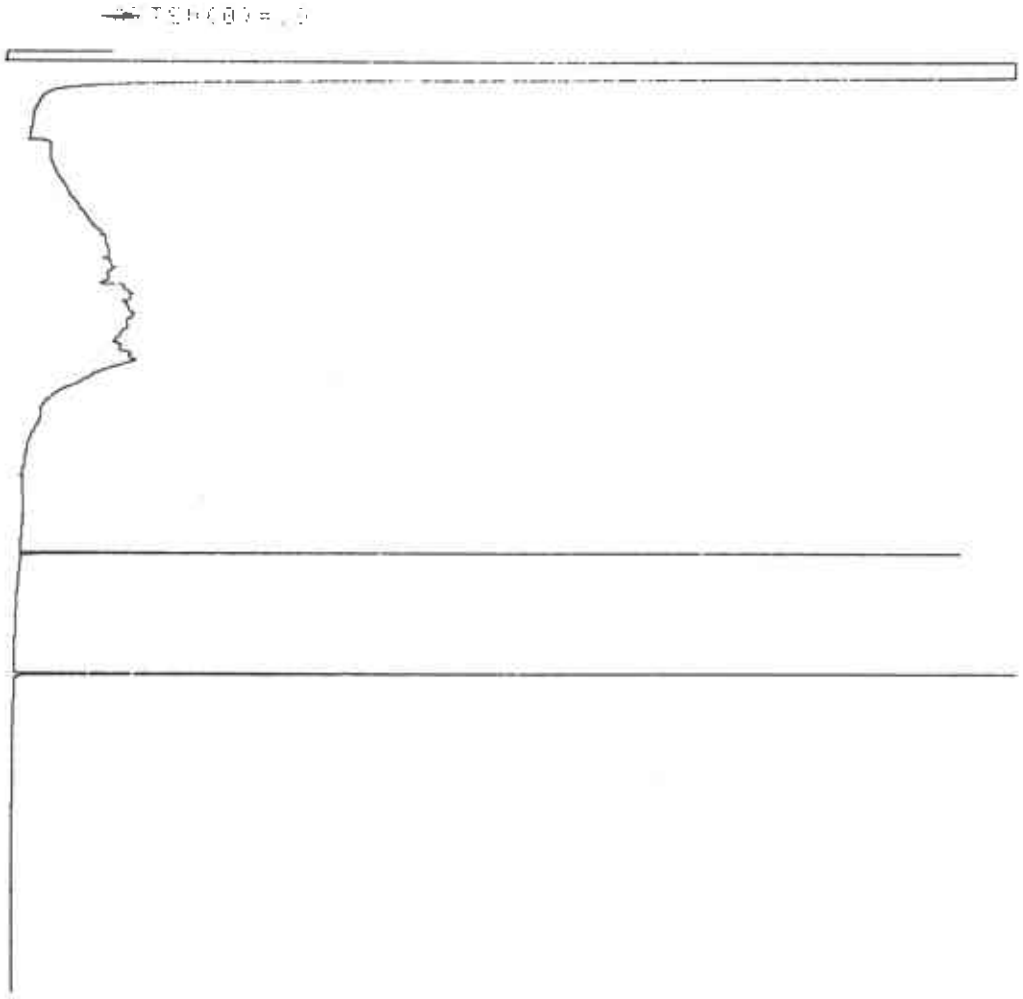
Date: 5/10/89

Analysts: MAE/JD

Std. Vol. Inj: 50 ml

Comments:

CHROMATOPAC C-R3A V1.1 VARIABLES (AS FOLLOWING) NOT BACKED UP
!PLOT



⊕ Shimadzu

221 25412

042

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Backcast
Vol. Inj: —

Date: 5/10/89
Analysts: MAE/JD
Std. Vol. Inj: 50 ul
Comments:

⊕ Shimadzu

221-25412

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Bulkout
Vol. Inj: ~

Date: 5/10/89
Analysts: MAE/JD
Std. Vol. Inj: 50 ul
Comments:

ERROR 10: UNDEF'D STATEMENT IN 390
BPLOT

1230

059

ATTEN(0)

=10

EPLOT
ATTEN(0)=6
BPLOT
EPLOT

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63

Station Number: 9-1153

Sample: Blank

Vol. Inj:

Date: 5/10/89

Analysts: MAE/JD

Std. Vol. Inj: 50 ul

Comments:

```
DATE$="05/09/"
*ERROR*  2:ILLEGAL QUANTITY
DATE$="05/10/89"
TIME$="08/45/00"
LIST WIDTH(0)
ANALYSIS PARAMETER  FILE 0

WIDTH     5                  SLOPE     [illegible]
DRIFT     1666               [illegible]
T.DBL     60                 STOP.TM   [illegible]
ATTEN     [illegible]        SPEED     [illegible]
METHOD#     24               FORMAT    [illegible]
SPL.WT    100                [illegible]

STOP.TM(0)=7.5
LIST TIME.PRG
TIME PROGRAM  FILE 0

0.01   PRINT DATE$/TIME$

ATTEN(0)=6
BPLOT
          PRINT LEVEL
+430.667
          EPLOT
START
05/10/89             08:48:08
```


```
CHROMATOPAC   C-R3A              [illegible]
SAMPLE NO    0                   [illegible]      [illegible]
REPORT NO    3410                [illegible]      100
```

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.398	[illegible]			[illegible]	
2	0.568	31.0	V			
	TOTAL	17170			[illegible]	

043

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

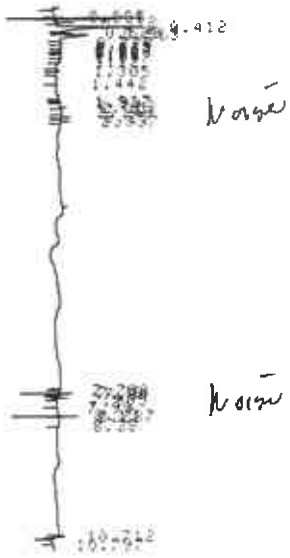
HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Blank
Vol. Inj: 50 µl

Date: 5/10/89
Analysts: MHE/JO
Std. Vol. Inj: 50 µl
Comments:

ERROR 16:UNDEF'D STATEMENT

ATTEN(0)=6
START
05/10/89 11:44:22



CHROMATOGRAM 9 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3428

PKNO	TIME	AREA	MK	ISWD	CONC	
1	0.089	9545				
2	0.312	7565	V			
3	0.410	25187	V			
4	0.520	1619	V			
5	0.562	185	V			
6	0.709	3436	V			
7	0.99	4951	V			
8	8.11	2294				
9	8.38	7042	V			
TOTAL		66784				

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	
M+P-XYL	O- BEN	PNDI	
**			
4.01939	0	0	0
0.403018	0.431879	1.02026	0
5.88454			

ERROR 16:UNDEF'D STATEMENT IN 190
EDIT
LINE PROGRAM
20 PD=80000
END
RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	
M+P-XYL	O- BEN	PNDI	
**			
1.75453	0	0	0
0.403018	0.431879	1.02026	0
3.61969			

ERROR 16:UNDEF'D STATEMENT IN 190

056

057

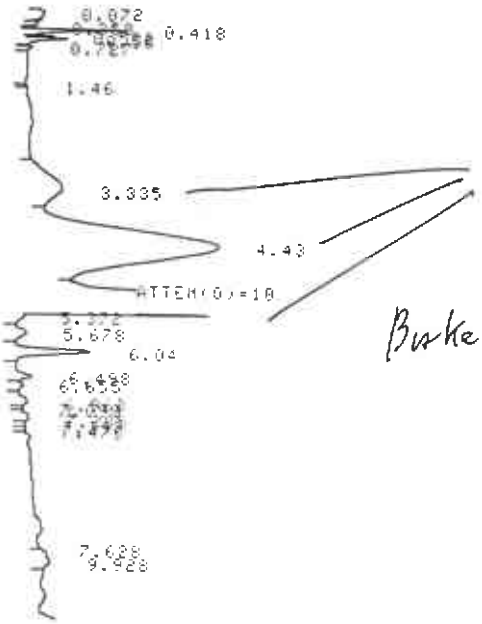
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Blank
Vol. Inj: 50ul

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ul
Comments:

ATTEN(0)=6
START
05/10/89 13:55:56



Late Peaks from previous sample

Bakeout

CHROMATOGRAM 17 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3406

FILE 0
METHOD 24
SAMPLE % 100

PEAK	TIME	AREA	MM	IDNO	CONC	NAME
1	0.072	3744				
2	0.418	20961	V			
3	0.532	3275	V			
4	0.58	10020	V			
5	0.435	59113				
6	4.43	341700				
7	5.372	1409.6				
8	5.678	153301	V			
9	6.04	744342				
10	6.498	149090				
11	6.655	46782	V			
12	6.968	102067				
13	7.098	6917	V			
14	7.285	93582	V			
15	7.397	24411	V			
16	7.478	16448	V			
17	7.628	316478	V			
18	9.928	163808	V			
	TOTAL	2596987			0	

PRINT TIME:
14:09:49
RUN
VOLUME INJECTED (UL)
= 50
DILUTION
= 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PCB	PHO
-0.196937	0	0	0
0	0	235.659	16.1395
25.791			

⊕ Shimadzu 221 25412 065

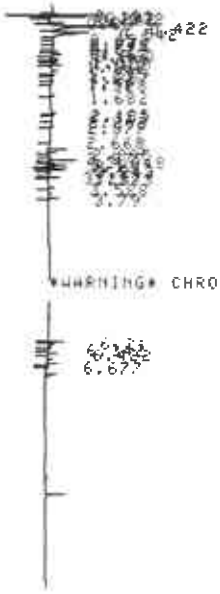
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Blank
Vol. Inj: 50 ml

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ul
Comments:

START
05/10/89 14:48:12



Noise

WARNING CHROMATOGRAM MEMORY OVER

CHROMATOGRAM 20 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3409

PKNO	TIME	AREA	MK	IDNO	CONC	RATIO
1	0.193	6842				
2	0.232	5628				
3	0.242	8636	V			
4	0.33	24302	V			
5	0.422	46669	V			
6	0.542	37562	V			
7	0.652	15317	V			
8	0.743	19679	V			
9	0.823	20628	V			
10	0.913	12645	V			
11	0.963	17164	V			
12	1.077	14418	V			
13	1.109	8058	V			
14	1.162	11834	V			
15	1.295	32068	V			
16	1.387	7210	V		0.6227 PPM	
17	1.46	17239	V			
18	1.528	11709	V			
19	1.662	35329	V			
20	2.125	47262	V			
21	2.153	4716	V			
22	2.262	13981	V			
23	2.377	12983	V			
24	2.668	28081	V			
25	2.895	15134	V			
26	2.977	4016	V			
27	3.043	5190	V			
28	3.13	4242	V			
29	3.588	4674	V			
	TOTAL	493163			2.7631	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PEB	BEN	TOL	O-XY
M,P-XYL	ET BEN	PNOI	PHO
TT			
30.8101	0	0	0
0	0	13.8133	0

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

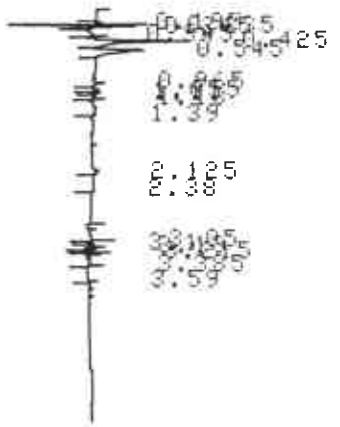
HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Blank
Vol. Inj: —

Date: 5/10/89
Analysts: MAE/JD
Std. Vol. Inj: 50 ul
Comments: Reanalyze 14448 Blank

[illegible] 390

SLOPE(0)=10000
ANAL 20
05/10/89 15:03:46



CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3440

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.195	6842				
2	0.235	5627				
3	0.245	8624	V			
4	0.345	24257	V			
5	0.425	46475	V			
6	0.545	37373	V			
7	0.965	84443	V			
8	1.055	14172	V			
9	1.11	7918	V			
10	1.18	11596	V			
11	1.39	38329	V	7	3.3154	HEX
12	2.125	111160	V			
13	2.38	24971	V			
14	3.05	45475	V			
15	3.13	3324	V			
16	3.385	4187	V			
	TOTAL	474771			3.3154	

Shinaku 221-25412

069

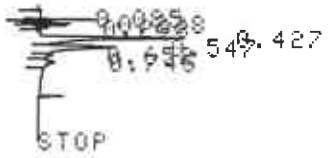
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Blank - Short
Vol. Inj: 50 ml

Date: 5/10/89
Analysts: MAE/JO
Std. Vol. Inj: 50 ul
Comments:

START
05/10/89 15:06:55



CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3441

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.085	3277				
2	0.238	3342	V			
3	0.427	26093	V			
4	0.547	15978	V			
	TOTAL	48691			0	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	P-DI	PBO
TT			
0.855818	0	0	0
0	0	-5.882246E-8	0
0.855818			

ERROR <illegible>

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Blank
Vol. Injected: 50 ul

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ul
Comments:

ERROR IS UNDEF'D STATEMENT IN 390
EPLOT

EPLOT
START
05/10/89 16:58:33

CHROMATOGRAM 7 MEMORIZED

CHROMATOPRO C-93A
SAMPLE NO 0
REPORT NO 3449

FILE 0
TET-ID 24
SAMPLE # 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.43	25792				
2	0.542	9088	V			
3	0.685	16209	V			
	TOTAL	51089			0	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PRO
TT			
1.09196	0	0	0

Schneider

221 25412

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

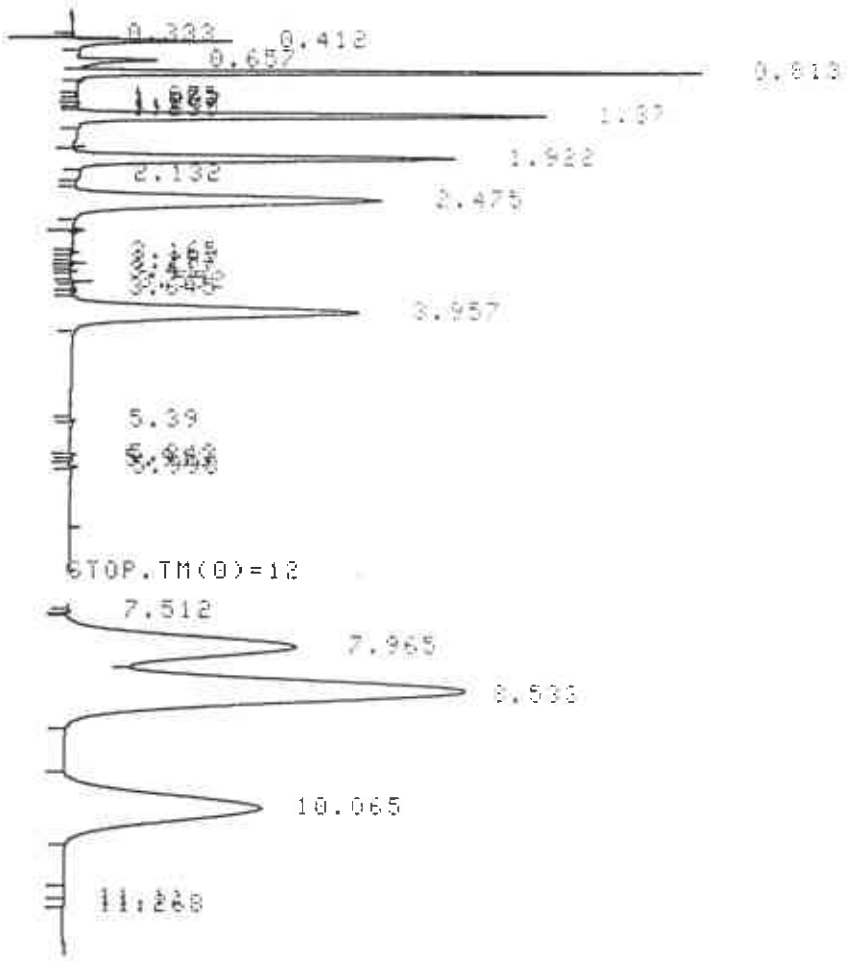
Project Number: 10705.63
Station Number: 9-1153
Sample: SB#4
Vol. Inj: 50 ul

Date: 5/10/89
Analysts: MAE/JD
Std. Vol. Inj: 50 ul
Comments:

221-25412

044

START
05/10/89 08:59:15



CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3414

MODE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.412	26902				
2	0.657	18719	V			
3	0.813	100758	V			
4	1.37	126544	V	B	5.7464	1-1ST
5	1.922	23231				
6	2.475	170310				
7	3.957	177604				
8	7.965	277136				
9	8.533	566163				
10	10.065	290986				

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Std #4
Vol. Inj: Printout

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ul
Comments:

EDIT ID

IDNO	NAME	TIME	FACTOR	CONC
1	BEN	1.9	6.55982E-5	9.6
2	TOL	4	4.98355E-5	9.4
3	ETBEN	8	4.18227E-5	9.5
4	M,P XY	8.5	3.76479E-5	17.7
5	O XYL	10	3.92868E-5	9.4
6	PEN	.8	7.73534E-5	9.2
7	HEX	1.37	6.45377E-5	9.5
8	I-OCT	1.36	2.48	9.4

END
CALIB 1
REPEAT

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3415
STANDARD 1

FILE 0
METHOD 29
SAMPLE AT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.412	26503				
2	0.657	18719	V			
3	0.813	100752	V	6		PEN
4	1.37	126544	V	7		HEX
5	1.922	125989		1		BEN
6	2.475	170810				
7	3.957	177604		2		TOL
8	7.965	277106		3		ETBEN
9	8.533	528165	V	4		M,P XY
10	10.065	290086		5		O XYL
	TOTAL	1842238				

CALIBRATION MADE IN IDENTIFICATION FILE 0
MODE# 1 WINDOW 1

IDNO	NAME	TIME	FACTOR	CONC
1	BEN	1.91	7.61973E-5	9.6
2	TOL	3.97	5.29262E-5	9.4
3	ETBEN	7.98	3.42829E-5	9.5
4	M,P XY	8.51	3.35122E-5	17.7
5	O XYL	10.03	3.24042E-5	9.4
6	PEN	0.8	9.13133E-5	9.2
7	HEX	1.37	7.50726E-5	9.5
8	I-OCT	1.36	2.48	9.4

$\frac{Pen}{Ben} = \frac{9.13}{7.62} = 1.2$

$\frac{I\text{-}oct}{Ben} = \frac{5.52}{7.62} = .72$

Shimadzu 221-25412

045

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Std #4
Vol. Inj: Printout

Date: 5/10/89
Analysts: MAE/JD
Std. Vol. Inj: 50 ml
Comments: Adjust I-Oct RT

```
EDIT
LINE    PROGRAM
10      S=1.25
15      OX=9.2
20      PS=34000
END
EDIT ID
IDNO    NAME    TIME    FACTOR          CONC
0       I-OCT   2.45    2.40            9.2
END
CALIB 1
REPEAT

CHROMATOPAC   C-R3A                    FILE          0
SAMPLE NO     0                        METHOD ID       2A
REPORT NO     3416                     SAMPLE WT     100
STANDARD      .


PKNO       TIME       AREA    MM   IDNO      IDNO        NAME

   1       0.412      20200
   2       0.657      18719   V
   3       0.813     100731   V       1                 PEN
   4       1.37      126544   V       7                 HEX
   5       1.922     183402           1                 BEN
   6       2.475     170310           8                 I-OCT
   7       3.957     177661           3                 TOL
   8       7.965     277106           4                 ETBEN
   9       8.533     528143   V       5                 M,P XY
  10      10.065     295086           6                 O XYL
                    ---------
          TOTAL     1842238

CALIBRATION MADE IN IDENTIFICATION FILE 0
  MODE# 1                          WINDOW 1

IDNO    NAME    TIME    FACTOR          CONC

1       BEN     1.91    7.61973E-5      9.6
2       TOL     3.96    5.29068E-5      9.4
3       ETBEN   7.97    3.42829E-5      9.5
4       M,P XY  8.52    1.35122E-4      17.7
5       O XYL   10.04   3.24042E-5      9.4
6       PEN     0.8     9.13138E-5      9.1
7       HEX     1.37    7.50726E-5      9.5
8       I-OCT   2.47    5.51934E-5      9.4
```

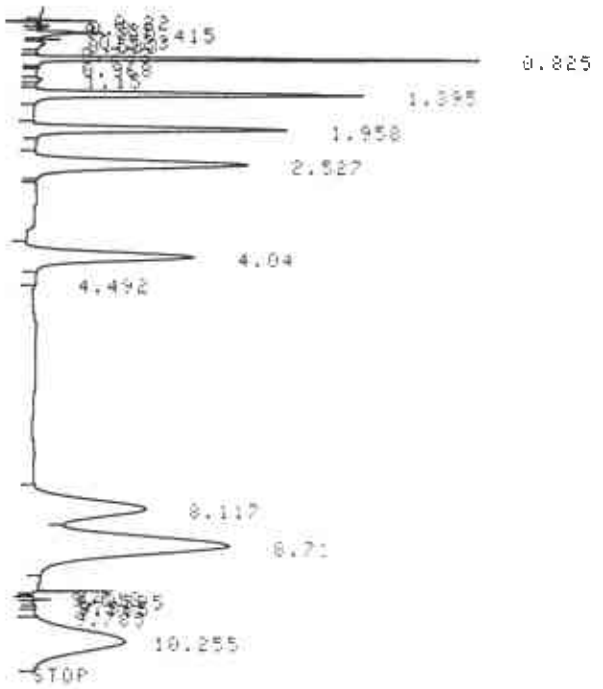
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: SW#4
Vol. Inj: 50 ml

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ml
Comments:

START
05/10/89 11:11:50



CHROMATOGRAM 7 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3424

PKNO	TIME	AREA	MK	[illegible]	[illegible]	NAME
1	0.3	3492				
2	0.415	16764	V			
3	0.583	4589	V			
4	0.825	88704	S		6.0999	PEN
5	1.395	109827			8.245	HEX
6	1.958	97490			7.4285	BEN
7	2.527	150025			8.2806	I-OCT
8	4.04	135419			7.1673	TOL
9	4.492	3160	V			
10	8.117	160557			5.5043	ETBEN
11	8.71	307526	V		13.3055	M/P XY
12	9.595	3350			0.1086	O XYL
13	9.785	5302	V		1.1718	O XYL
14	10.255	182775	V		5.9227	O XYL
	TOTAL	1268984			61.2345	

EDIT ID
IDNO NAME TIME FACTOR [illegible]
5 O XYL 10.255 3.24042E-5 9.4
END
3

53

Shinadra

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63 **Date:** 5/10/89

Station Number: 9-1153 **Analysts:** MAE/JD

Sample: Std #4 **Std. Vol. Inj:** 50 ul

Vol. Inj: Printout **Comments:** Re Calibrate

```
*ERROR*  ??INVALID SYNTAX
WINDOW(0)=3
REPEAT

CHROMATOPAC    C-R3A                    FILE          0
SAMPLE NO    0                          METHOD         24
REPORT NO    3425                       SAMPLE WT    100
```

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.3	[illegible]				
2	0.415	16764	V			
3	0.583	4549	V			
4	0.825	68704	S	6	3.0996	PEN
5	1.395	[illegible]		7	[illegible]	HEX
6	1.958	97490		1	7.4185	BEN
7	2.527	150069		8	[illegible]	I-OCT
8	4.04	135419		2	7.1679	TOL
9	4.492	3160	V			
10	8.117	160557		3	9.5042	ETBEN
11	8.71	307526	V	4	10.1159	M+P XY
12	9.595	[illegible]				
13	9.785	5302	V			
14	10.255	182775	V	5	9.3327	O XYL
	TOTAL	1268934			[illegible]	

```
CALIB 1
REPEAT

CHROMATOPAC    C-R3A                    FILE          0
SAMPLE NO    0                          METHOD         24
REPORT NO    3426                       SAMPLE WT    100
STANDARD      1
```

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.3	[illegible]				
2	0.415	16764	V			
3	0.583	4549	V			
4	0.825	68704	S	6		PEN
5	1.395	[illegible]		7		HEX
6	1.958	97490		1		BEN
7	2.527	150069		8		I-OCT
8	4.04	135419		2		TOL
9	4.492	3160	V			
10	8.117	160557		3		ETBEN
11	8.71	307526	V	4		M+P XY
12	9.595	2060				
13	9.785	5302	V			
14	10.255	182775	V	5		O XYL
	TOTAL	1268934				

```
CALIBRATION MADE IN IDENTIFICATION  FILE 0
  MODE# 1                                WINDOW 3
```

IDNO	NAME	TIME	FACTOR	CONC
1	BEN	1.99	9.84719E-5	[illegible]
2	TOL	4	6.9?41?E-5	[illegible]
3	ETBEN	8.04	5.91692E-5	[illegible]
4	M+P XY	8.61	5.?5568E-5	[illegible]
5	O XYL	10.25	5.14293E-5	[illegible]
6	PEN	0.81	0.000101?1?	[illegible]
7	HEX	1.38	8.64999E-5	[illegible]
8	I-OCT	2.49	6.?6544E-?	[illegible]

$\frac{10.37}{9.85} = 1.05$

$\frac{\text{I-Oct}}{\text{Ben}} = \frac{6.26}{9.85} = .64$

221 25412

054

Shimadzu

221

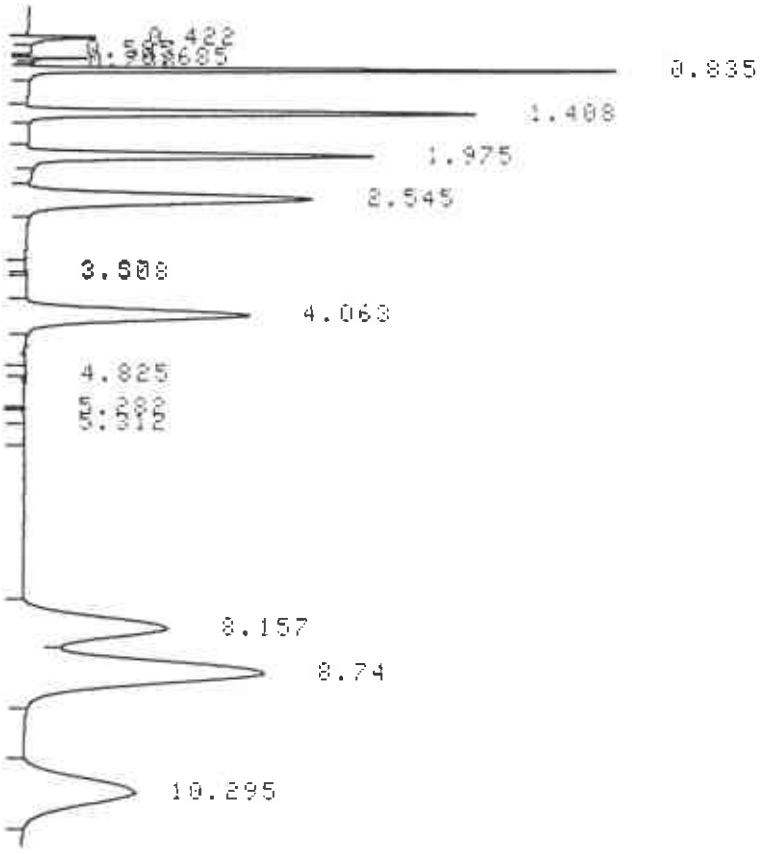
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Std #4
Vol. Inj: 50 µl

Date: 5/10/89
Analysts: MAE/JD
Std. Vol. Inj: 50 µl
Comments:

START
05/10/89 13:30:42



CHROMATOGRAM 15 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3434
FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.422	12216				
2	0.685	3226				
3	0.835	95817		6	9.9377	PEN
4	1.408	118983		7	10.292	HEX
5	1.975	111123		1	10.9425	BEN
6	2.545	159841		8	10.0148	I-OCT
7	4.063	139444		2	9.6794	TOL
8	8.157	166735		3	9.8656	ETBEN
9	8.74	312142	V	4	17.9657	M,P XY
10	10.295	160701		5	8.2647	O XYL
	TOTAL	1280228			86.9623	

⊕ Shimadzu

221-25412

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

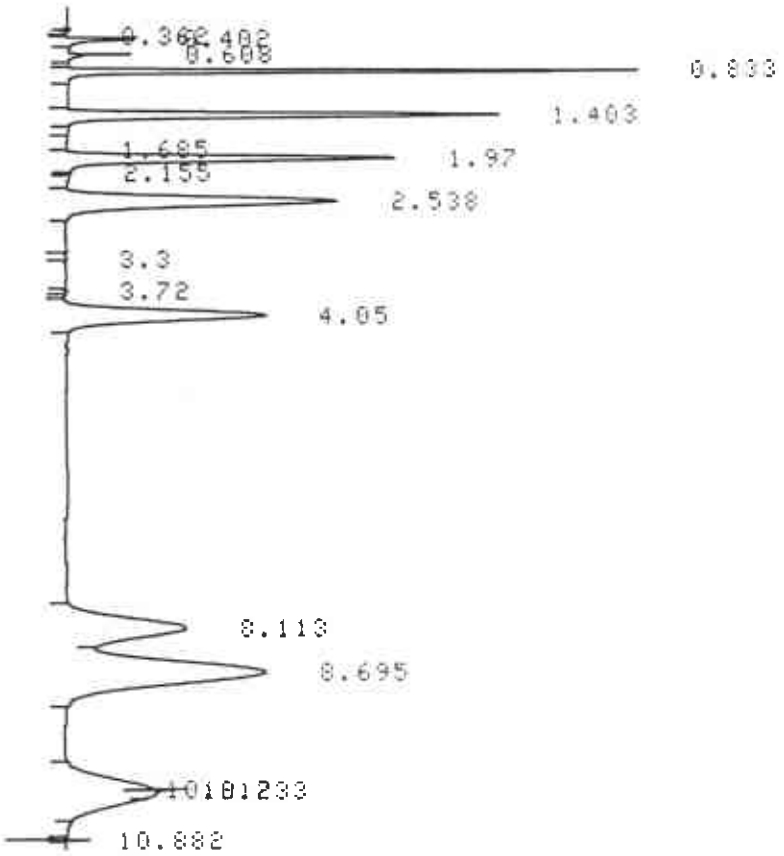
HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: Std #4
Vol. Inj: 50 ul

Date: 5/10/89
Analysts: MAE/JD
Std. Vol. Inj: 50 ul
Comments:

ERROR 16:UNDEF'D STATEMENT ...
START
05/10/89 15:44:54

Recalc by RK Ht



CHROMATOGRAM 2 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3444

FILE 5
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.402	12275	V			
2	0.608	5793	V			
3	0.833	93506		6	9.698	PEN
4	1.403	115038		7	9.9508	HEX
5	1.97	105727	S	1	10.4111	BEN
6	2.538	151398		8	9.4858	I-OCT
7	4.05	123842		2	8.5964	TOL
8	8.113	134361		3	7.95	ETBEN
9	8.695	259006	V	4	14.9074	M,P XY
10	10.217	53351		5	2.7438	O XYL
11	10.233	68334	V	5	3.5144	O XYL
	TOTAL	1122632			77.2577	

> 6.25

⊕ Shimadzu 221 25412

072

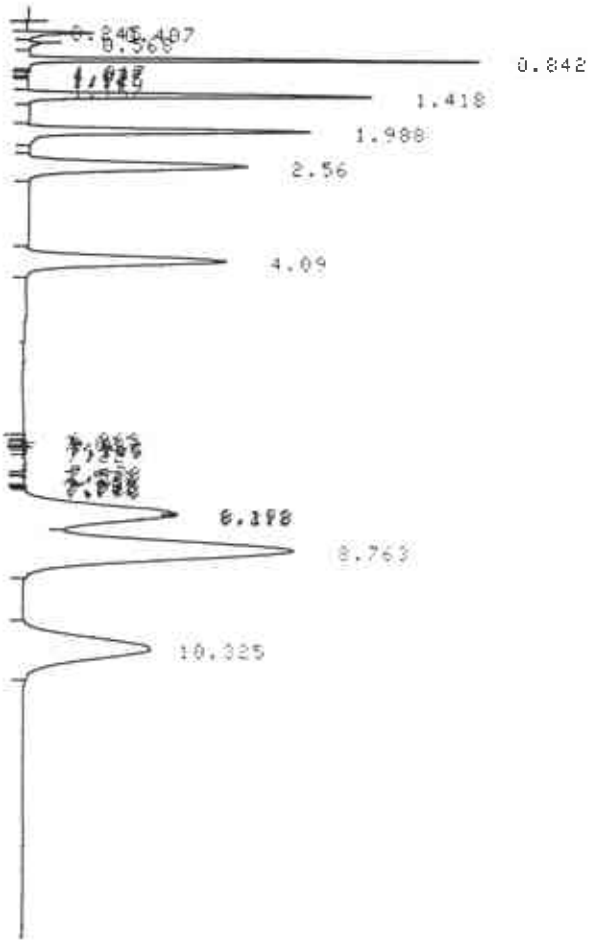
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: STS #4
Vol. Inj: 50 ul

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ul
Comments:

START
05/10/89 17:47:48



CHROMATOGRAM 10 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3452

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.245	7416				
2	0.407	19723	V			
3	0.568	11292	V			
4	0.842	99399	SV	6	10.3093	PEN
5	1.418	112886		7	9.7646	HEX
6	1.988	115498		1	11.3733	BEN
7	2.56	152439		8	9.551	I-OCT
8	4.09	157277		2	10.9173	TOL
9	6.963	3066				
10	7.478	6976	V			
11	8.178	116841	V	3	6.9134	ETBEN
12	8.198	10650	V	3	0.6302	ETBEN
13	8.212	103530	V	3	6.1258	ETBEN
14	8.763	436060	V	4	25.098	M.P XY
15	10.325	230227		5	11.8404	O XYL
	TOTAL	1583280			102.5231	

13

081

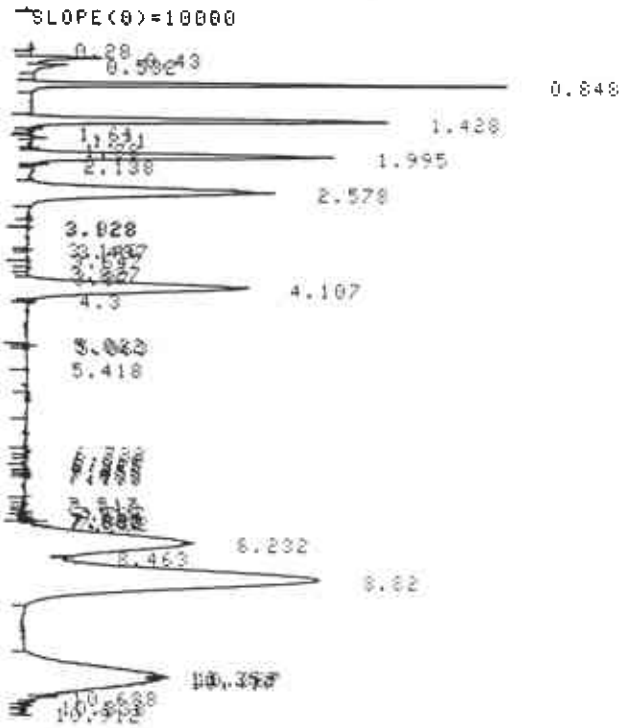
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: SB#4
Vol. Inj: 50 ml

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ml
Comments: High XE

START
05/10/89 18:33:13



CHROMATOGRAM 13 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3455

PKNO	TIME	AREA	MK	TYPE	CONC	NAME
1	0.082	3110				
2	0.43	14872				
3	0.532	7291	V			
4	0.848	96711		6	10.1304	PEN
5	1.428	125094		7	10.1205	HEX
6	1.98	3141	V	1	[illegible]	BEN
7	1.995	118879	SV	1	11.7068	BEN
8	2.578	157752		8	9.1839	1-OCT
9	3.148	9303				
10	3.647	5005	V			
11	4.107	166821	SV	2	11.5737	TOL
12	5.418	10883	V			
13	8.232	246305	V	3	14.5737	ETBEN
14	8.463	6729	V	4	[illegible]	M/P XY
15	8.82	478000	V	4	27.5119	M/P XY
16	10.352	101642		5	5.2274	O XYL
17	10.367	24840	V	5	1.2775	O XYL
18	10.417	99189	V	5	5.1012	O XYL
	TOTAL	1675567			108.409	

11.6

221-25412

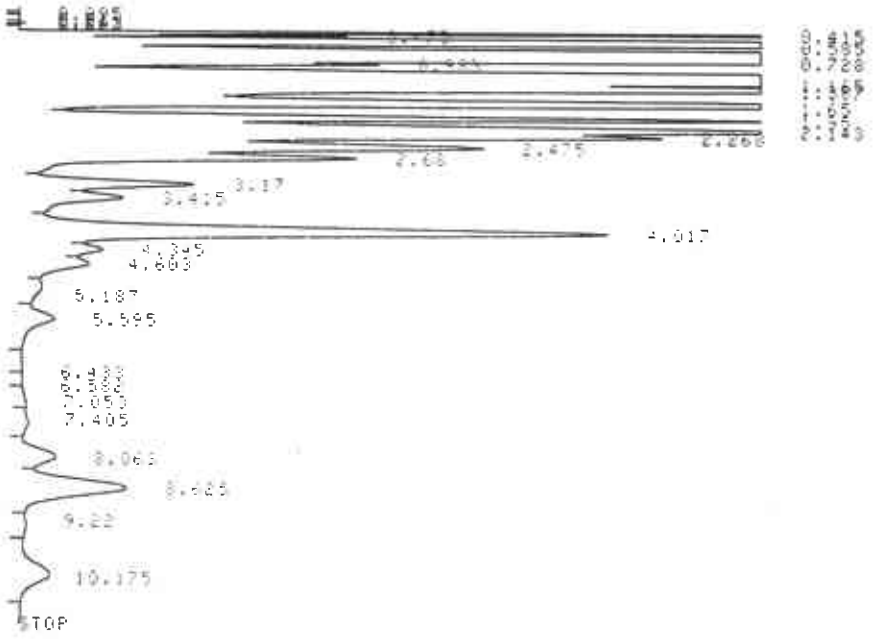
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V17
Vol. Inj: 10 ul

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ul
Comments:

ATTEN(0)=10
A.SAVE 1/50
START
05/10/89 09:29:03



CHROMATOGRAM 1 ME7041000

CHROMATOGRAM C-R3A
SAMPLE NO 0
REPORT NO 3417

PEAK	TIME	AREA	TYPE	CONC	NAME
1	0.2.	96.7	V		
2	0.203	9773	V		
3	0.303	3656			
4	0.415	3048805	VE		
5	0.475	671894	V		
6	0.585	10952650	VE		
7	0.728	30860.96	VE		
8	0.983	1777167	V		
9	1.165	20350814	VE		
10	1.387	11680582	VE		
11	1.65	112.45.6	VE		
12	1.95	6146644	VE		
13	2.143	940404	VE		
14	2.268	6177471	V		
15	2.475	2275245	V		
16	2.68	4305863	V		
17	3.17	2-0477	V		
18	3.415	1959503	V		
19	4.017	4372306	V		
20	4.345	1427513	V		
21	4.603	1549187	V		
22	5.187	632399	V		
23	5.595	674506	V		
24	6.403	35234			
25	6.582	30344	V		
26	7.053	118575	V		
27	7.405	136756	V		
28	8.063	877196	V		
29	8.625	30.85.	V		
30	9.22	82621	V		
31	10.175	302143			
	TOTAL	136467180		221.957	

⊕ Kimoto 221 25412

047

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63 **Date:** 5/10/89

Station Number: 9-1153 **Analysts:** MHE/JD

Sample: V17 **Std. Vol. Inj:** 50 ul

Vol. Inj: Repeat Vrontout **Comments:**

```
LIST WINDOW(0)
BASIC PROGRAM

PRINT WINDOW(0)
 1
WINDOW(0)=5
REPEAT

CHROMATOPAC   C-R3A
SAMPLE NO    0
REPORT NO    3418
```

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.21	[illegible]				
2	0.263	57[illegible]	V			
3	0.301	3336				
4	0.415	2046805	VI			
5	0.475	671254				
6	0.585	10952650	V			
7	0.728	20860[illegible]	VI			
8	0.963	1777167	V			
9	1.165	20350814	[illegible]			
10	1.387	11690582	VE	7	[illegible]	[illegible]
11	1.65	1.2149.6	VE			
12	1.95	6146644	VE	[illegible]	[illegible]	BEN
13	2.143	9404034	VI			
14	2.268	6177471	V			
15	2.475	6275295	V	[illegible]	[illegible]	[illegible]
16	2.68	4305663	V			
17	3.17	2409776	V			
18	3.415	1959503	V			
19	4.017	9372316	V	[illegible]	[illegible]	[illegible]
20	4.345	1427513	V			
21	4.603	1545127	V			
22	5.187	632399	V			
23	5.595	874569	V			
24	6.433	35284				
25	6.582	30344	V			
26	7.053	118575	V			
27	7.405	136733	V			
28	8.063	877126	V	3	[illegible]	ETBEN
29	8.625	3018501	V	[illegible]	[illegible]	[illegible]
30	9.22	82621	V			
31	10.175	[illegible]		[illegible]	[illegible]	[illegible]
	TOTAL	[illegible]			[illegible]	

```
RUN
VOLUME INJECTED (UL)
? 4
*BREAK* IN  130
EDIT
LINE  PROGRAM
10    B=1.8
END
RUN
VOLUME INJECTED (UL)
? 10
DILUTION
? 1
```

PBD	BEN	[illegible]	[illegible]
M+P-XYL	ET BEN	[illegible]	[illegible]
30700.6 37,000	[illegible]	[illegible]	[illegible]
505.783	150.352	15236.4 11,600	413.2[illegible]
51990.3			

ERROR [illegible]

⊕ Shimadzu 221 25417

048

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63 Date: 5/10/89

Station Number: 9-1153 Analysts: MHE/JD

Sample: VH9/4 Std. Vol. Inj: 50 ul

Vol. Inj: 50ul Comments:

ERROR 16: UNDEFINED STATEMENT IN 390

ATTEN(0)=6
SPLOT

CPLOT
START
05/10/89 09:53:49

CHROMATOGRAM 2 MEMORIZED

CHROMATOPAC C-R3A FILE 2
SAMPLE NO 0 ATT-CO 24
REPORT NO 3419 SAMPLE WT 100

PKNO	TIME	AREA	MK	ISTD	CONC	NAME
1	0.412	16780				
2	0.527	3652	V			
3	0.625	4987	V			
4	0.735	3088	V			
	TOTAL	28407				

SUM
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	C-XYL
M,P-XYL	ET BEN	PNO1	PNO
??			
0.86919	0	0	0
0	0	-5.960465E-8	0
0.86919			

⊕ Kimball 221 25412

049

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

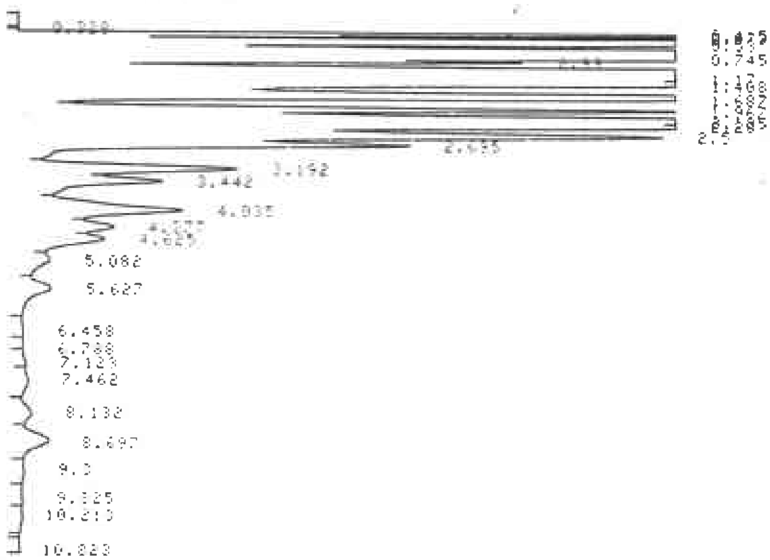
Project Number: 10705.63 Date: 5/10/89

Station Number: 9-1153 Analysts: MAE / JD

Sample: V18 Std. Vol. Inj: 50 ul

Vol. Inj: 50 ul Comments:

ATTEN(0)=10
START
05/10/89 10:06:53



CHROMATOGRAM 3 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3420

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.415	4290[illegible]	V			
2	0.473	2140202	VE			
3	0.53	12412[illegible]	VE			
4	0.745	21095346	VE			
5	0.93	1050340	V			
6	1.17	[illegible]	VE			
7	1.468	[illegible]	VE		[illegible]	
8	1.687	[illegible]	VE			
9	1.967	[illegible]	V		[illegible]	
10	2.175	13487690	VE			
11	2.23	[illegible]				
12	2.5	[illegible]	VE		[illegible]	
13	2.635	[illegible]	V			
14	3.152	1555104	V			
15	3.442	[illegible]				
16	4.035	4613327	V		[illegible]	
17	4.377	[illegible]	V			
18	4.625	2[illegible]529	V			
19	5.082	925[illegible]	V			
20	5.627	321794	V			
21	6.458	[illegible]				
22	6.788	39128	V			
23	7.123	127[illegible]	V			
24	7.462	144922	V			
25	8.132	[illegible]		[illegible]	[illegible]	
26	8.697	401230	V	4	[illegible]	
27	9.3	73[illegible]	V			
28	9.925	42579		5	[illegible]	
29	10.213	55849	V	[illegible]	[illegible]	
30	10.823	1635				
	TOTAL	155554768			2290.4434	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M+P-XYL	ET BEN	PHCI	PHO
TT			
7008.99 8400	486.431	222.932	1.00945
30.2022	10.4194	4077 2400	13.834
11851.0			

ERROR UNDEFINED STATEMENT IN 390

Shimadzu 221-25412

050

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

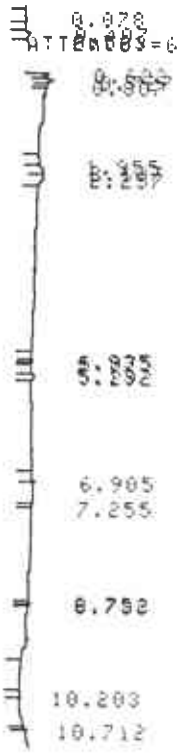
Project Number: 10705.63
Station Number: 9-1153
Sample: V19/B
Vol. Inj: 50 µl

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 µl
Comments:

BPLOT

PRINT LEVEL
123

START
05/10/89 10:22:51



CHROMATOGRAM 4 RECORDED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3421

PKNO	TIME	AREA	TYPE	BASE	HEIGHT
1	0.497	13287			
2	0.523	3314	V		
TOTAL		16581		0	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PRO
TT			
-0.0319551	0	0	0
0	0	0	0
-0.031955			

L1

⊕ Shimadzu 221/25412

051

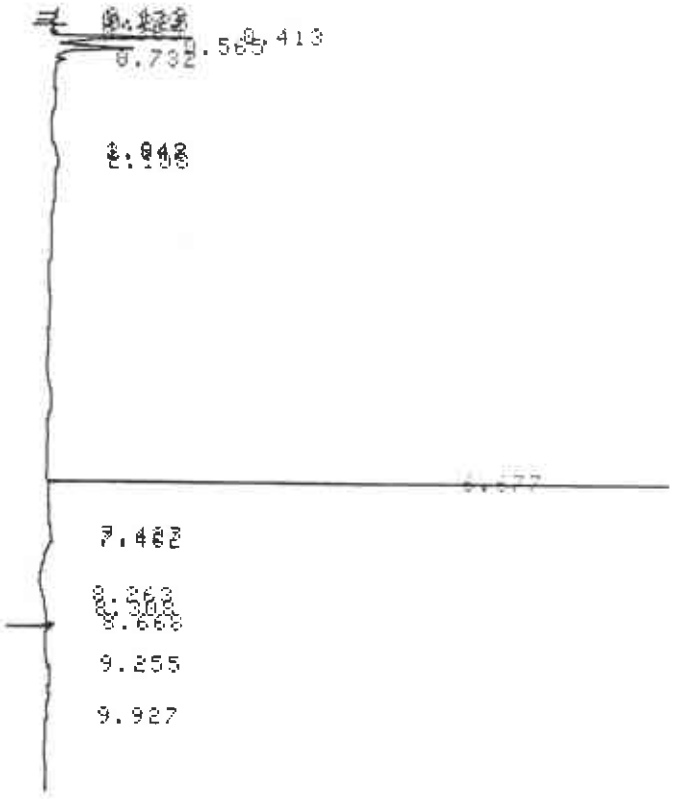
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V20/A
Vol. Inj: 50 ul

Date: 5/10/89
Analysts: MAE/JD
Std. Vol. Inj: 50 ul

[illegible] 16:UNDEF'D STATEMENT IN 390
START
05/10/89 10:39:53



CHROMATOGRAM 5 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3422

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.413	25207				
2	0.565	20021	V			
3	0.677	15561				
4	0.660	2574	V	4	0.1198	M,P-XYL
	TOTAL	64186			0.1198	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

P3B	BEN	T3	O-XYL
M,P-XYL	ET BEN	P-XYL	PAC
TT			
2.15694 3	0	0	0
0.119841	0	1.32466 17	0
3.59544			

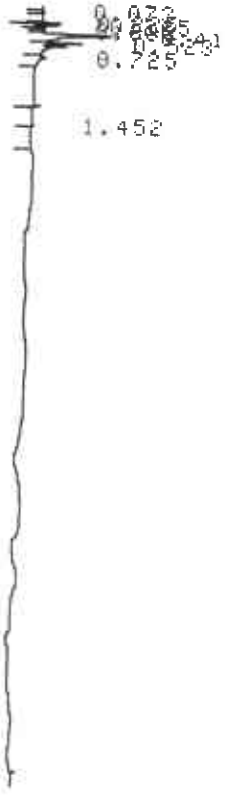
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V10/0
Vol. Inj: 50 µl

Date: 5/10/89
Analysts: MAE/JD
Std. Vol. Inj: 50 µl
Comments:

ERROR 16:UNDEF'D STATEMENT IN 390
START
05/10/89 10:54:42



CHROMATOGRAM 6 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3423

[illegible] 0
[illegible] 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.41	17591	V			
2	0.523	11249	V			
3	1.452	5097				
	TOTAL	33936			0	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
1.29441 2	0	0	0
0	0	-1.192093E-7	0
1.29441			

ERROR 16:UNDEF'D STATEMENT IN 390

Shimadzu

221-25412

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V72
Vol. Inj: 10 ul

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ul
Comments:

25412

ATTEN(0)=10
START
05/10/89 11:27:54

055

CHROMATOGRAM 8 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3427

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.201	3042	V			
2	0.402	20763	V			
3	0.478	22406	V			
4	0.568	13419	V			
5	0.655	7561	V			
6	0.735	15570	V			
7	0.82	6960	V	[illegible]	[illegible]	[illegible]
8	1.16	19573				
9	1.263	11935	V			
10	1.377	12152	V	[illegible]	[illegible]	[illegible]
11	1.662	11973	V			
12	1.955	13827	V	[illegible]	[illegible]	[illegible]
13	2.183	405.5	V			
14	2.44	10062	V	[illegible]	[illegible]	[illegible]
15	4.023	[illegible]		[illegible]	[illegible]	[illegible]
	TOTAL	225096			[illegible]	

PGM
VOLUME INJECTED (UL)
? 10
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M/P-XYL	ET BEN	PROJ	PAO
TT			
73.2409 77	6.80808	2.83806	0
0	0	26.2673 17	0
109.154			

****** STATEMENT IN 390

Shimadzu

22125

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

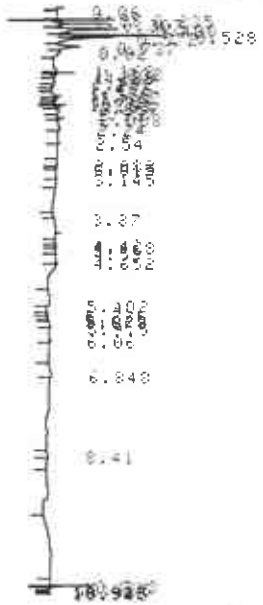
Project Number: 10705.63 Date: 5/10/89

Station Number: 9-1153 Analysts: MHE/JO

Sample: V2114 Std. Vol. Inj: 50 µl

Vol. Inj: 50 µl

START
05/10/89 11:59:08



CHROMATOGRAM 10 MEMORIZED

CHROMATOPAC C-R3A FILE 0
SAMPLE NO 0 METHOD 24
REPORT NO 3429 SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.08	9765				
2	0.285	5161	V			
3	0.307	18173				
4	0.408	29868	V			
5	0.528	19964	V			
6	0.572	22582	V			
7	0.727	17421	V			
8	0.82	14680	V		0.5320	PEN
9	1.162	17118	V			
10	1.283	4307	V			
11	1.402	5210	V		0.4543	HEX
12	1.667	1961	V			
13	1.827	1678	V		0.1523	BEN
14	2.54	5417	V			
15	3.402	5457	V			
16	6.06	3104	V			
	TOTAL	184942			2.1384	

*ON
VOLUME INJECTED (UL)
= 50
DILUTION
= 1

PEAK	BEN	TOL	PEN
AMP-SYL	ET BEN	PHOT	HEX
??			
18.6285-4, 9	0.1982827	2	1
0	0	1.20193 1	1
14.2727			

ERROR 16:UNDEF'D STATEMENT IN 390

Shrewsbury

0 58

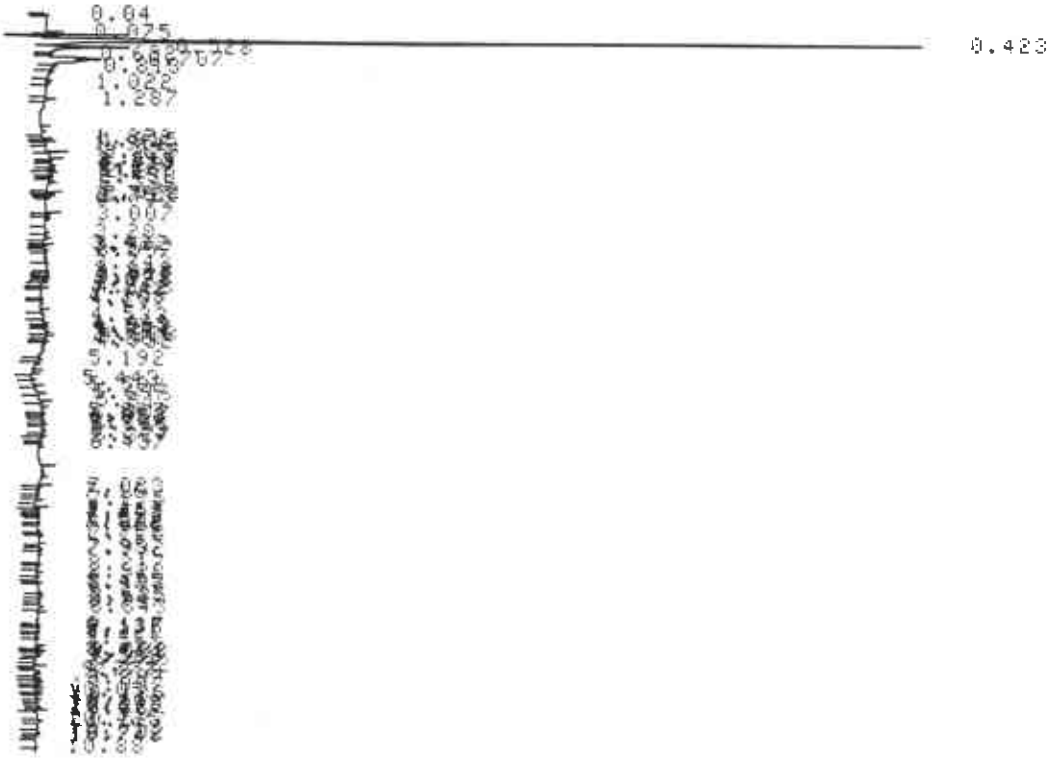
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V11B
Vol. Inj: 50 µl

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 µl
Comments:

START
05/10/89 12:15:32



CHROMATOGRAM 11 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3430

PEAK TIME AREA

PEAK	TIME	AREA	
1	0.423	[illegible]	
2	0.528	9793	V
3	0.707	12469	
4	5.812	3631	V
5	5.967	4108	V
	TOTAL	684169	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	P-DI	PRO
TT			
62.6676 -4 62	0	0	0
0	0	0.765026 21	0
63.4326			

⊕ Stimpson 221-2541

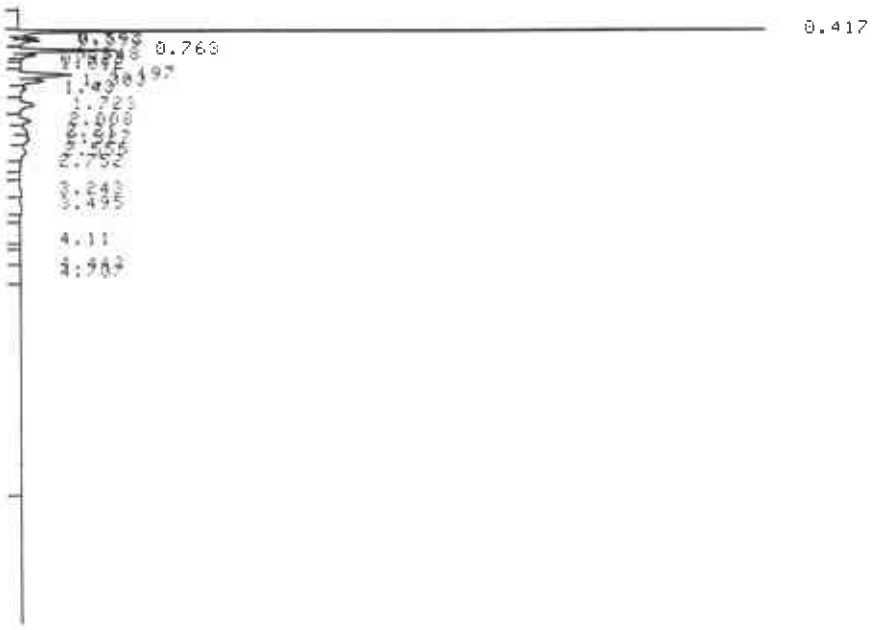
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

RNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V23
Vol. Inj: 50 ul

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ul
Comments:

ATTEN(0)=10
START
05/10/89 12:51:50



CHROMATOGRAM 12 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3431

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.417	1508556	B	C		
2	0.542	34419	T			
3	0.593	52034	TV			
4	0.763	357075	V			
5	0.848	68000	V	C	[illegible]	
6	0.922	8941	V			
7	1.012	14310	V			
8	1.197	311033	V			
9	1.303	151442	T			
10	1.49	19238	V	C	[illegible]	
11	1.701	1.0033				
12	2.008	84604				
13	2.21	3160[illegible]				
14	2.327	413926	V			
15	2.559	93922	V	C	[illegible]	
16	2.752	7470	V			
17	3.243	31744				
18	3.495	24456	V			
19	4.11	9221		C	[illegible]	
20	4.443	7427				
21	4.707	14050	T			
	TOTAL	3142705			[illegible]	

RUN
VOLUME INJECTED (UL)
= 50
DILUTION
= 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PHO
TP			
258.399 -4,270	0	0.640116	0
0	0	46.4905 30	0
305.529			

Shaw 221 2512

060

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromato
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V24/A
Vol. Inj: 50 ul

Date: 5/10/89
Analysts: MAE/JO
Std. Vol. Inj: 50 ul
Comments:

START
05/10/89 13:05:34

ATTEN(0)=6

L1 L1

CHROMATOGRAM 13 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3432

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.192	3103				
2	0.413	30388	V			
3	0.535	13300	V			
	TOTAL	46791			0	

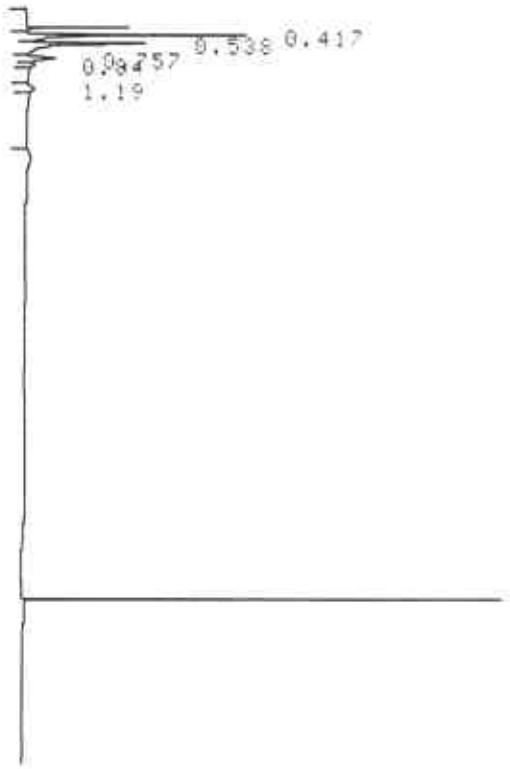
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V24/B
Vol. Inj: 50 ml

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ml
Comments:

START
05/10/89 13:17:07



CHROMATOGRAM 14 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3433

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.417	24602				
2	0.538	18753	V			
3	0.757	5326				
	TOTAL	48685			0	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PROPI	PRO
0.855226	0	0	0
0	0	0	0
0.855226			

ERROR 16:UNDEF'D STATEMENT IN 390

⊕ Shinadu 221 25412

062

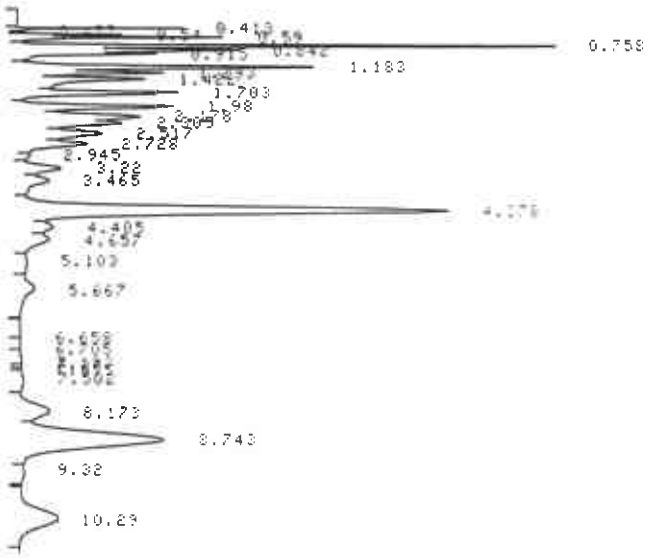
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V24- HS above Mud in Tg Std.
Vol. Inj: 50 uL

Date: 5/10/89
Analysts: MWE/JD
Vol. Inj: 50 uL
Comments: HS above Mud in Screen

WITEN(0)=10
START
05/10/89 13:42:47



CHROMATOGRAM 16 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3435

PKNO	TIME	AREA	BC	MK	AREA	CONC	WGT
1	0.413	2976.0	V				
2	0.477	7087	V				
3	0.54	279078	V				
4	0.59	745933	V				
5	0.796	2256447	V				
6	0.842	1287893	V				
7	0.915	703241	V				
8	1.183	2022885	V				
9	1.293	1013097	V				
10	1.422	1477015	V				
11	1.703	1440807	V				
12	1.98	1418809	V				
13	2.178	150861.6	V				
14	2.305	1168327	V				
15	2.517	1301141	V				
16	2.728	985079	V				
17	2.945	123245	V				
18	3.22	688801	V				
19	3.465	95655.	V				
20	4.278	7210823	V	2			
21	4.405	681463	V				
22	4.657	757110	V				
23	5.103	273336	V				
24	5.667	505119	V				
25	6.658	17682					
26	6.705	18985	V				
27	7.193	51035	V				
28	7.26	12777	V				
29	7.335	10755	V				
30	7.502	80732	V				
31	8.173	812680		3		48.0856	57854
32	8.743	4641152	SV	4		268.278	4.8
33	9.32	18937	T				
34	10.29	1467540		5		75.4746	1
	TOTAL	35933984				1369.7561	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PSB	BEN	TOL	ETHYL
M+P-XYL	ET BEN	PHOI	PHO
TT			
1128.79 1200	139.713	500.583	75.4746
268.278	48.0856	1827.3 790	146.375

063

064

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V25
Vol. Inj: 50 µl

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 µl
Comments:

START
05/10/89 14:18:32

CHROMATOGRAM 18 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3437

FILE 3
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	M	IDNO	CONC	NAME
1	0.415	71919	S			
2	0.54	28760	V			
3	0.757	6446				
4	1.188	5946				
5	1.42	3369			0.2662	-EN
6	1.71	5397				
7	2.18	14541	V			
8	2.298	14144	V			
9	2.523	26226	V		1.6495	I-OCT
10	2.72	10600	V			
11	3.22	21286				
	TOTAL	208675			1.9357	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	P-DI	PAO
TT			
7.56037	0	0	0
0	0	8.55703	0
16.1174			

4 4 5

⊕ Shimadzu 221 25412

066

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V14/C
Vol. Inj: 50 µl

Date: 5/10/89
Analysts: MWE/JD
Std. Vol. Inj: 50 µl
Comments:

```
*ERROR# 16:UNDEF'D STATEMENT IN    390
ATTEN(0)=10
START
05/10/89          14:35:51
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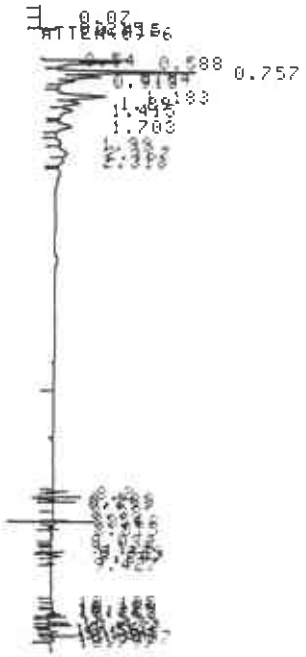



```
CHROMATOGRAM  19  MEMORIZED

CHROMATOPAC    C-R3A                    FILE          0
SAMPLE NO    0                          METHOD          24
REPORT NO    3438                       SAMPLE WT     100
```

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.415	41026				
2	0.54	13537	V			
3	0.588	12063	V			
4	0.757	31139				
5	0.84	12042	V	6	1.25-3	BEN
6	0.913	3547	V			
7	1.183	17543				
8	1.29	8226	V			
9	1.415	5836	V	7	0.52-3	TOL
10	1.703	6300				
11	2.167	6650	V			
12	2.318	3103	V			
13	8.38	7340	V	9	0.4825	M+P XYL
14	8.54	5866	V	8	0.3176	M+P XYL
15	8.68	3092	V	10	0.178	O-XYL
	TOTAL	177352			2.6969	

```
RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1
```

PBB	BEN	TOL	O-XYL
M/P-XYL	ET BEN	PN01	PN0
TT			
10.9601-4	0	0	0
0.177972	0	2.38724	0
13.5253			

```
*ERROR# 16:UNDEF'D STATEMENT IN    390
```

⊕ Shimadzu 221-25412 067

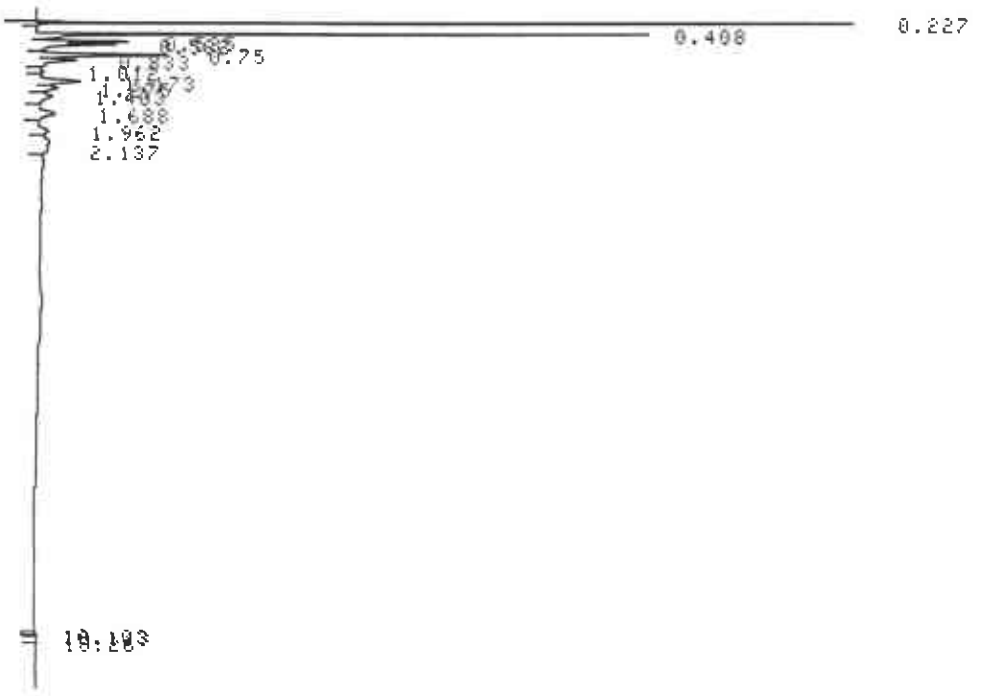
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V26
Vol. Inj: 50 µl

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 µl
Comments:

[illegible] STATEMENT IN 390
SLOPE(0)=5000
START
05/10/89 15:11:54



CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3442

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.227	113994				
2	0.408	81737	V			
3	0.535	18210	V			
4	0.582	25950	V			
5	0.75	35751	V			
6	0.833	20124	V	6	2.1872	PEN
7	1.012	9026	V			
8	1.173	25097	V			
9	1.275	11543	V			
10	1.403	13894	V	7	1.2019	HEX
11	1.688	14466	V			
12	1.962	7291	V	1	0.718	BEN
13	2.137	10561	V			
	TOTAL	387665			4.007	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PRO1	PRO
TT			
32.4772	0.71796	0	0
0	0	1.04	0
34.2352			

33

Thursday 22 25 12

070

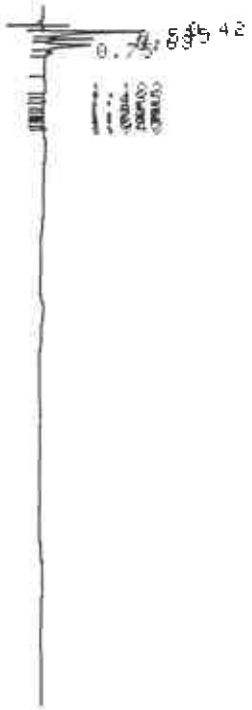
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V27 - Air Sample
Vol. Inj: 50 ul

Date: 5/10/89
Analysts: MAE/JD
Std. Vol. Inj: 50 ul
Comments: Air Sample under house

ERROR 16:UNDEF'D STATEMENT IN ...
A.SAVE 1,50
START
05/10/89 15:28:06



CHROMATOGRAM 1 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3443

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.42	18084				
2	0.535	6213	V			
3	0.63	10648	V			
4	1.183	3058				
	TOTAL	38003			0	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNCl	PAO
TT			
-0.196667	0	0	0
0	0	0	0
-0.196667			

ERROR 16:UNDEF'D STATEMENT IN ...

⊕ Shimadzu 221 2541 2

071

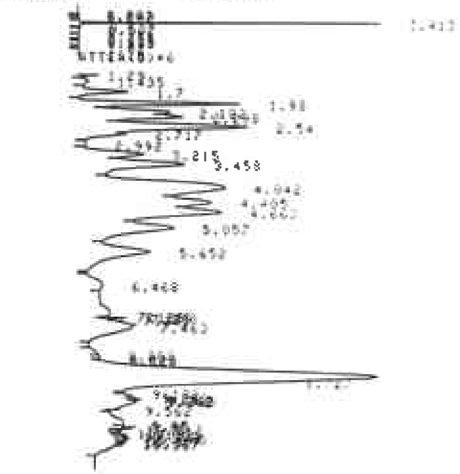
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V28/A
Vol. Inj: 50 ul

Date: 5/10/89
Analysts: MHE / JD
Std. Vol. Inj: 50 ul
Comments:

ATTEN(0)=10
START
05/10/89 15:57:25



CHROMATOGRAM 3 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 8
REPORT NO 3445

FILE 0
METHOD 34
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.247	9582				
2	0.302	8913	V			
3	0.413	1046744	SV			
4	0.537	5111	T			
5	0.562	3803	TV			
6	0.755	11867	T			
7	0.835	4991	TV	6	0.5175	[illegible]
8	0.888	7888	TV			
9	1.18	18460	T			
10	1.29	11963	TV			
11	1.435	9868	TV	7	0.8535	[illegible]
12	1.7	35676	TV			
13	1.98	102124	T	1	10.0564	BEN
14	2.182	73845	TV			
15	2.298	94041	TV			
16	2.54	192727	TV	8	12.0753	[illegible]
17	2.717	38570	TV			
18	2.992	5638	TV			
19	3.215	70973	TV			
20	3.458	162807	TV			
21	4.042	360192	TV	2	25.0024	TOL
22	4.485	218739	TV			
23	4.663	248570	TV			
24	5.057	193422	TV			
25	5.652	143948	TV			
26	6.468	31107				
27	7.125	69485	V			
28	7.285	6127	V			
29	7.348	7303	V			
30	7.463	[illegible]	V			
31	8.202	5805		[illegible]	[illegible]	[illegible]
32	8.223	6031	V	[illegible]	[illegible]	[illegible]
33	8.727	713245	V	4	41.0517	[illegible] ✓
34	9.132	7620	V			
35	9.24	24517	V			
36	9.303	18280	V			
37	9.323	4821	V			
38	9.342	50931	V			
39	9.562	6473	V			
40	9.85	55948	V			
41	9.95	15099	V	[illegible]	0.7765	[illegible]
42	10.012	6661	V	[illegible]	0.3426	[illegible]
43	10.082	11061	V	[illegible]	0.5698	[illegible]
44	10.138	8426	V	[illegible]	[illegible]	[illegible]
45	10.182	15165	V	[illegible]	[illegible]	[illegible]
46	10.245	11970	V	[illegible]	[illegible]	[illegible]
47	10.287	7425	V	[illegible]	[illegible]	[illegible]
48	10.317	10038	V	[illegible]	[illegible]	[illegible]
49	10.367	24905	V	[illegible]	[illegible]	[illegible]
	TOTAL	4300965			[illegible]	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PZB	BEN	TOL	O-XYL
M/P-XYL	ET BEN	PHOI	PAD
TT			
112.245 120	10.0564	25.0024	1.28086
41.0517	0.359794	202.841 130	26.7485
419.586			

ERROR [illegible] STATEMENT IN [illegible]

Shimadzu 221 25412

073

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

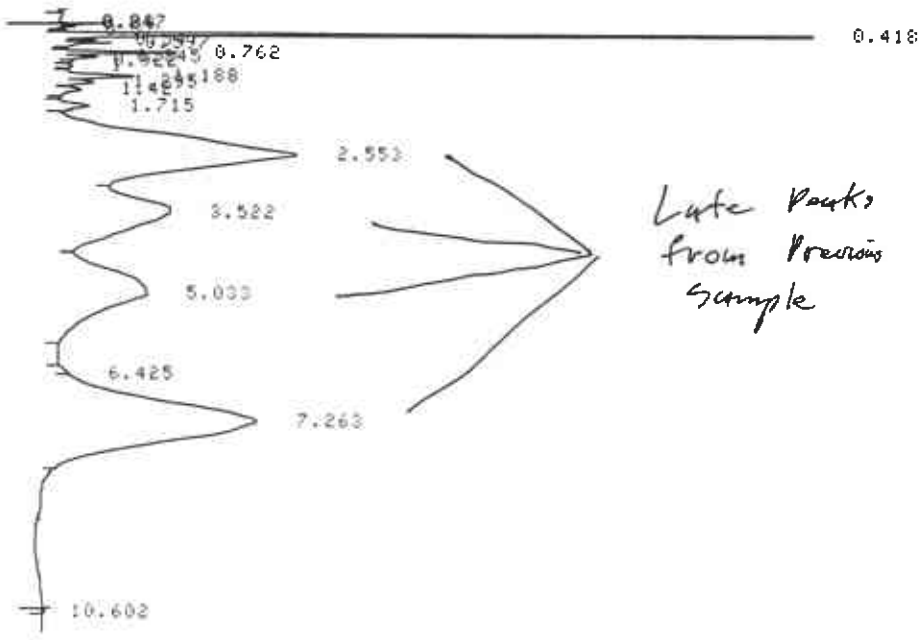
HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V27/A
Vol. Inj: 50 ul

Date: 5/10/89
Analysts: MAE/JD
Std. Vol. Inj: 50 ul
Comments:

221-25412

ERROR 10:UNDEF'D STATEMENT IN 390
START
05/10/89 16:12:29



Late Peaks from Previous Sample

074

CHROMATOGRAM 4 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3446

FILE 2
METHOD 14
SAMPLE WT 100

PK NO	TIME	HPEA	MK	IDNO	CONC	NAME
1	0.08	4051				
2	0.247	4255	V			
3	0.418	488183	SV			
4	0.597	4565	TV			
5	0.762	25818	T			
6	0.845	9121	TV	6	0.946	PEN
7	1.188	24152	TV			
8	1.295	8709	TV			
9	1.42	4905		7	0.4243	HE
10	1.715	16129				
11	2.553	746587		8	46.7732	I-OCT
12	3.522	351069	V			
13	5.033	200293				
14	6.425	3910				
15	7.263	884778	V			
16	10.602	3783				
	TOTAL	2805245			48.1484	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PAO
TT			
54.1484 56	0	0	0
0	0	217.223 140	0.372528
272.299			

ERROR 10:UNDEF'D STATEMENT IN 390

1

⊕ Stanadyne

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

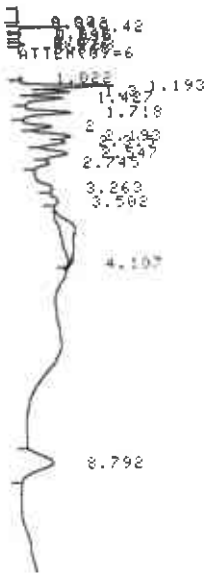
HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V28/B
Vol. Inj: 25 ml

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ml
Comments:

ERROR 16:UNDEF'D STATEMENT IN 390

ATTEN(0)=10
START
05/10/89 16:28:15



CHROMATOGRAM 5 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3447

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.08	18280				
2	0.342	7617				
3	0.42	89346	V			
4	0.543	15834	V			
5	0.595	20852	V			
6	0.692	16183	V			
7	0.763	37865	V			
8	0.848	28581	V	6	2.9641	PE
9	1.022	6743	V			
10	1.193	48928	V			
11	1.3	26519	V			
12	1.427	28431	V	7	2.9592	PE
13	1.718	34262	V			
14	2	17878	V			
15	2.193	35472	V			
16	2.315	27169	V			
17	2.547	37220	V	8	3.332	[illegible]
18	2.745	18390	V			
19	3.263	11815				
20	3.502	16532	V			
21	4.107	31602	V	2	6.3515	TCE
22	8.792	51468		4	2.9620	m,p- XY
	TOTAL	680927			17.0762	

RUN
VOLUME INJECTED (UL)
? 25
DILUTION
? 1

FBB	BEN	TOL	[illegible]
M,P-XYL	ET BEN	PROI	PHO
TT			
70.7897 73	0	42.7169 41	0
5.92462	0	40.7348 26	0
130.165			

ERROR 16:UNDEF'D STATEMENT IN 390
BPLOT

221/2542 075

221/2542 076

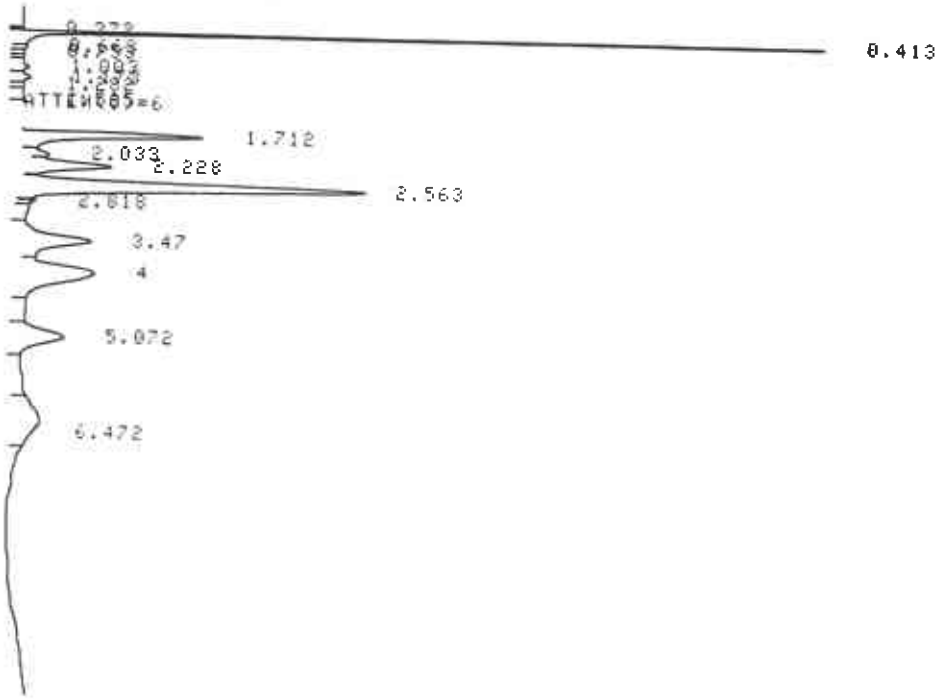
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V27/B
Vol. Inj: 25 ml

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ml
Comments:

ATTEN(0)=10
START
05/10/89 16:44:14



CHROMATOGRAM 6 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3448

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	M/	ISTD	CONC	NAME
1	0.413	2437404	BV			
2	0.663	5946	T			
3	1.003	30123	T			
4	1.173	46263	T			
5	1.282	3133	TV			
6	1.525	4129	TV			
7	1.712	103913	TV			
8	2.033	10502	TV			
9	2.228	59026	TV			
10	2.563	241342	TV	8	15.1211	I-OCT
11	3.47	72971				
12	4	105665	V	2	7.3346	TOL
13	5.072	46851				
14	6.472	33670				
	TOTAL	3200936			22.4557	

RUN
VOLUME INJECTED (UL)
? 25
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M.P-XYL	ET BEN	PNOI	PAO
TT			
514.203 540	0	14.6692	0
0	0	97.5938 62	0
626.466			

221.2412

074

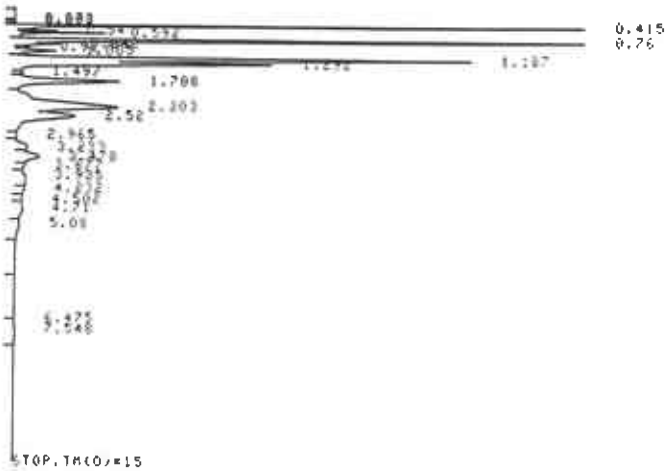
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

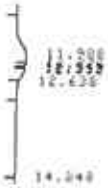
Project Number: 10705.63
Station Number: 9-1153
Sample: 129
Vol. Inj: 25 ul

Date: 5/10/89
Analysts: MME/JD
Std. Vol. Inj: 50 ul
Comments:

ATTEN(0)=10
START
05/10/89 17:12:17



STOP,TM(0)=15
PRINT TIMES
17:23:08



Bake out

CHROMATOGRAM 8 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3450

FILE 1
METHOD 24
SAMPLE WT 130

PKNO	TIME	AREA	MK	CONC	NAME
1	0.415	2604758	V		
2	0.54	78545	T		
3	0.592	332326	V		
4	0.76	5241005	VE		
5	0.848	216249	V		
6	0.98	80476	V		
7	1.005	305347	V		
8	1.187	8399351	V		
9	1.392	216066	BV		
10	1.497	8507	T		
11	1.708	1255774	V		
12	2.303	2304659	V		
13	2.52	1198182	BV	8	75.4714 T-01
14	2.965	3013	T		
15	3.233	241422	V		
16	3.478	536021	V		
17	3.677	134308	V		
18	3.935	359974	V	3	24.5707 TOL
19	4.232	165871	V		
20	4.502	118302	V		
21	4.71	261474	V		
22	5.08	86590	V		
23	6.475	72736			
24	7.548	71603	V		
25	11.988	591388			
26	12.223	82240	V		
27	12.315	44874	V		
28	12.352	186159	V		
29	12.638	47937	V		
	TOTAL	20180248			122.0705

RUN
VOLUME INJECTED (UL)
? 25
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PHOT	P-XYL
TT			
2690.16 2800	0	49.1415	0
0	0	1043.55 670	167.607
3970.44			

ERROR# 16 UNDEFD STATEMENT IN 290

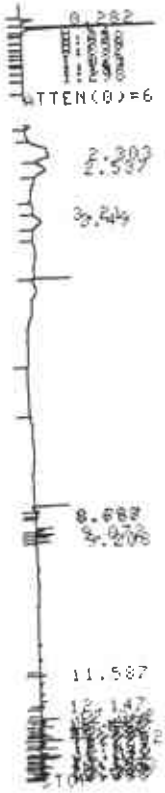
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V30
Vol. Inj: 50 µl

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 µl
Comments:

START
05/10/89 17:32:47



CHROMATOGRAM 9 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3451

FILE 0
METHOD 24
SAMPLE WT 100

P.NO	TIME	AREA	MI	IDNO	AMT	NAME
1	0.282	36037				
2	0.418	252753	SV			
3	0.54	4403	T			
4	0.636	6654	T			
5	0.758	8472				
6	1.19	10189	V			
7	1.298	5649	V			
8	1.702	5714				
9	2.303	23079				
10	2.537	10054	V	3	1.6299	1-DCB
11	3.449	5915				
	TOTAL	369519			1.6299	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PROC	PAD
TT			
28.6033 29	0	0	0
0	0	3.84509 2	0
32.4484			

#ERROR# 16:UNDEFD STATEMENT IN 390

⊕ Skinner 221 25412

080

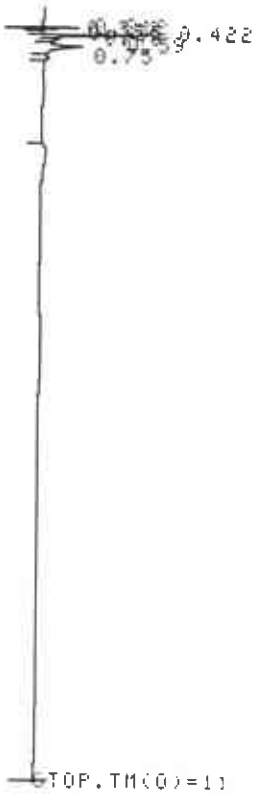
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V31
Vol. Inj: 50 ml

Date: 5/10/89
Analysts: MAE/JD
Std. Vol. Inj: 50 ml
Comments:

START
05/10/89 18:07:53



CHROMATOGRAM 11 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3453

FILE 0
METHOD 34
SAMPLE WT 100

PKNO	TIME	AREA	MK	[ISTD]	[CONC]	NAME
1	0.375	4037	V			
2	0.422	13678	V			
3	0.46	5804	V			
4	0.59	18128	V			
	TOTAL	41647			0	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PRO
TT			
0.162167	0	0	0
0	0	0	0
0.162167			

ERROR 16:UNDEFD STATEMENT IN 390

Shimadzu 221 2541

082

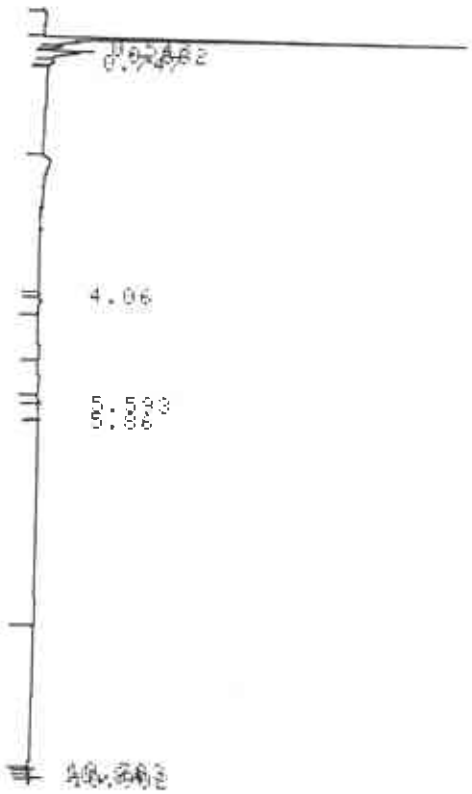
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

HNU 421 Gas Chromatogram
report sheet

Project Number: 10705.63
Station Number: 9-1153
Sample: V32
Vol. Inj: 50ul

Date: 5/10/89
Analysts: MHE/JD
Std. Vol. Inj: 50 ul
Comments:

START
05/10/89 18:21:20



CHROMATOGRAM 12 MEMORIZED

CHROMATOPAC C-R3A
SAMPLE NO 0
REPORT NO 3454

FILE 0
METHOD 24
SAMPLE WT 100

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.418	49125	S			
2	0.632	6549	T			
	TOTAL	55674			0	

RUN
VOLUME INJECTED (UL)
? 50
DILUTION
? 1

PBB	BEN	TOL	O-XYL
M,P-XYL	ET BEN	PNOI	PNO
TT			
1.54345 2	0	0	0
0	0	-1.19209E-7	0
1.54345 2			

ERROR 16:UNDEF'D STATEMENT IN 390

Shimadzu 221-25412

083

Former Chevron SS 9-1153, Alameda, California

Photo 1: Looking northwest along Fernside Boulevard.

Photo 2: Looking southeast along Fernside Boulevard.

Photo 3: Looking west toward Gibbons Drive from High Street.

Photo 4: Looking east along Gibbons Drive.

Photo 5: Looking east along southern site boundary.

Photo 6: Looking southeast along the northeastern site boundary.

Photo 7: **Looking southwest along the northwestern site boundary.**

CHEVRON SITE STATUS REPORT

SITE NUMBER 9-1153 DATE 6-9-89

CONSULTANT EA ENGG, Science, & Technology, Inc.

This sheet must be attached to any reports submitted to Chevron. All status information must be updated. The status information will be used in Chevron's quarterly summary reports to the RWQCB.

1. Please indicate the status of the definition of soil, liquid hydrocarbon and dissolved hydrocarbon plumes.

INVESTIGATION STATUS:

SOIL: I **LIQUID HYDROCARBON:** I
DISSOLVED HYDROCARBON: _____

Use the following letters to describe the status of the investigation:

STATUS CODE/DESCRIPTION	EXPLANATION
I = In progress	We are still in the process of defining the plume.
N = Not applicable	There has been no contamination of this nature found - i.e., there is no liquid hydrocarbon found.
X = Definition complete	We have defined the plume - located the zero line.

2. Please indicate the status of the remediation of soil, liquid hydrocarbon and dissolved hydrocarbon.

REMEDIATION STATUS:

SOIL: T **LIQUID HYDROCARBON:** T
DISSOLVED HYDROCARBON: _____

Use the following codes to describe the status of the remediation:

STATUS CODE/DESCRIPTION	EXPLANATION
T = To be determined	This is the code used until it is determined whether or not remediation will be required.
D = Design or permitting	The system is being designed or we are waiting for permits.
I = In progress	The remediation system is operating.
N = Not applicable	Remediation is not required.
X = Remediation complete	Remediation has been completed.

KGH/mlc:Z133

Prepared by Mo. Singh