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Dames & Moore

FINAL REPORT

Phase II Investigation
Underground Storage Tank Area

CARRIER CORPORATION
Syracuse, New York

January 16, 1987

Job No. 14750-002

Dames & Moore

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HAZARDOUS WASTE TECHNOLOGY
DIVISION OF SOLID AND
HAZARDOUS WASTE

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1.0 Introduction

This report details the Phase II investigation in which Dames & Moore was contracted by the Carrier Corporation to install two additional monitoring wells, and perform sampling and analysis on groundwater samples from seven wells, at Carrier's manufacturing facility off Thompson Road in Syracuse, New York. This Phase II investigation follows a Phase I investigation which was performed at the site by Dames & Moore in late 1985 and early 1986.

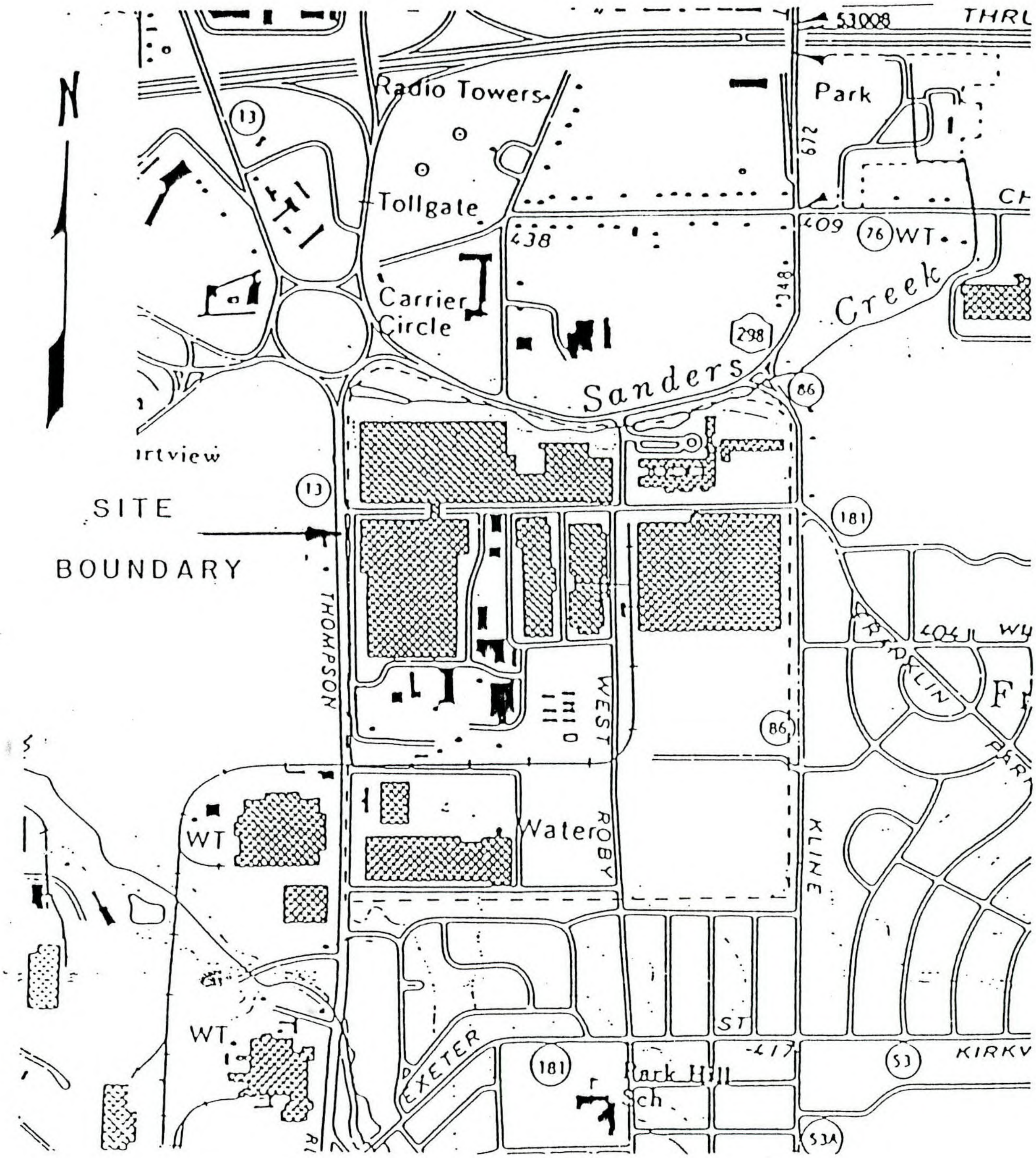
The site location is shown on Figure 1. The area of primary concern, and which is the focus of this investigation, is an underground storage tank area which includes four tanks; two 20,000 gallon cement tanks and two 8,000 gallon steel tanks. The tanks contain a variety of different materials including acids and caustics, waste coolants and waste oil. In the past, trichloroethene still bottoms were also stored in the tanks. Closure of the tanks is currently being planned by Carrier.

This report includes a description of the underground tanks and their history, a description of the work performed, and an analysis of the data. Recommendations for additional studies are also provided.

1.1 Site Location

The location of the Carrier Corporation's facility in Syracuse, New York is shown on Figure 1. The facility is in the northeast portion of Syracuse, approximately one mile south of the New York State Thruway. The site is bounded by Sanders Creek to the north, Thompson Road to the west, Kinne Street to the east and residential roads and fields to the south.

The site slopes slightly to the north and northwest towards Sanders Creek. The elevation difference between the north and south



SITE LOCATION MAP

CARRIER CORPORATION

SYRACUSE, NEW YORK

DAMES & MOORE

FIGURE 1

boundaries is about 10 to 20 feet, based on the USGS topographic map of the site.

This study investigated a group of below-grade tanks located west of the center of the site. The location of the tanks is shown in Figure 2. The land surrounding the tanks, like the rest of the site, has a slight slope to the north. The elevation in the area of the tanks is about 405 feet above mean sea level (MSL).

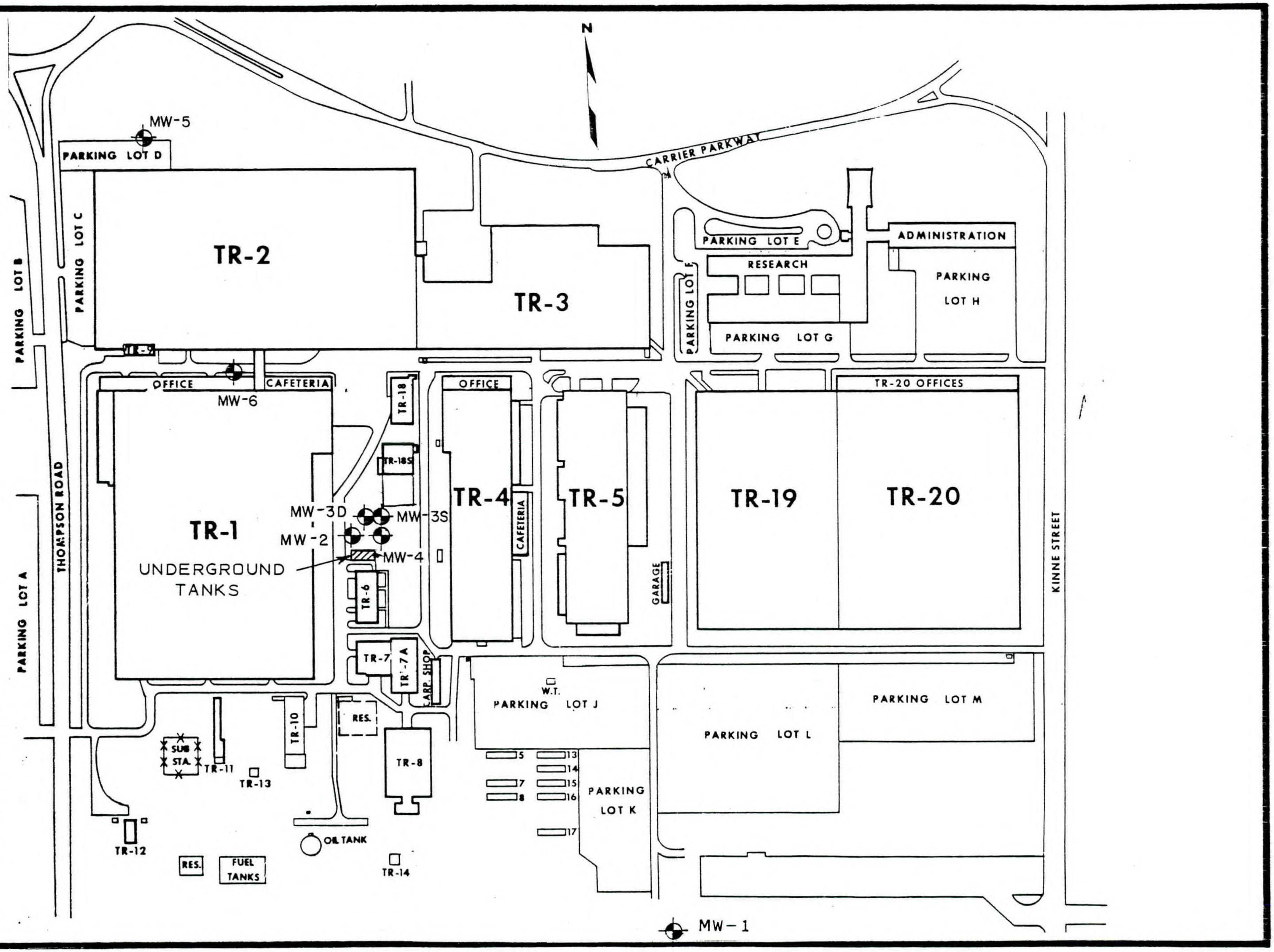
1.2 Site Background

This section provides a summary of a history of the four tanks which was provided by Carrier Corporation to Dames & Moore.

The underground tank area includes two 20,000 gallon underground cement tanks. One contains acids and caustics, with some chromic acid, and the other contains water soluble coolants (cutting oils). The other two tanks are 8,000 gallon underground steel tanks. One contains waste oil and the other previously contained trichloroethene still bottoms. It is now empty. (Note: Trichloroethene can also be spelled trichloroethylene. Carrier uses the latter spelling while Galson Technical Services, the laboratory for this project, uses the former. Since the laboratory results used the former spelling, that spelling is used in this report for consistency.)

The two concrete tanks were installed around 1945 by General Electric (G.E.), former owner of the site. They were used primarily as central settling and neutralization basins for their storm, process, and sanitary wastewater. The wastewater was then discharged into the sewer system.

In the 1950's, Carrier purchased the property from G.E. and use of the tanks for wastewater was discontinued. They remained unused and in 1969 they were filled in with stone. In 1978, Carrier rebuilt these concrete tanks for use in storing spent process wastes prior to their



BORING LOCATION MAP

DAMES & MOORE

FIGURE 2

disposal. Wastes temporarily stored at this time were: oils, acids, caustics, trichloroethene still bottoms and coolants.

In 1980, Carrier installed the two steel 8,000 gallon storage tanks. Addition of these tanks allowed segregation of the various process wastes. One steel tank was reserved for waste oils and the other for waste trichloroethene still bottoms. One concrete tank was used for acids and alkalis, and the other for waste coolants.

Around 1982, the use of the one steel tank to store waste trichloroethene still bottoms was discontinued. The material was completely pumped out. Since that time, still bottom waste has been put into drums for disposal offsite. The tank remains in place.

1.3 Previous Investigation

On March 24, 1986, Dames & Moore produced a final report which described the Phase I investigation at this Carrier Corporation facility. The Phase I study included the installation of five monitoring wells; one well upgradient and four wells downgradient of the waste tanks being investigated. These wells were sampled and analyzed for pH, total organic carbon (TOC), total organic halogens (TOX), specific conductance, volatile organic compounds (VOCs), oil and grease, PCBs and selected metals. Five subsurface soil samples were also collected and analyzed for chromium, trichloroethene and oil and grease. Groundwater contamination and flow directions were assessed.

The results of the Phase I investigation indicated that VOCs were present in the groundwater samples, and were probably attributable to the tank area. Wells MW-2 and MW-4 contained the highest measured concentrations of VOCs. These are the two wells closest to the underground tanks. Contamination of the groundwater with metals was not found to be significant. Analysis of the soil samples showed detectable amounts of trichloroethene at MW-4 and oil and grease in soil samples from borings MW-2, 3, and 4.

Based on these findings, this Phase II investigation was initiated to further define the extent of the groundwater contamination.

1.4 Phase II Investigation

The scope of work for this Phase II investigation consisted of three tasks. Task 1 consisted of the installation of two shallow overburden monitoring wells, located downgradient of the contaminated groundwater found in the Phase I investigation. In Task 2, the wells were developed for one hour each, surveyed, and sampled for laboratory analyses, consisting of: pH, specific conductance, TOX, TOC, and VOC(s). Task 3 was report preparation. The field work for this Phase II investigation began on October 13, 1986.

1.5 Organization of this Report

This report consists of five sections. This introduction (Section 1.0) summarizes the site and history of investigations. Section 2.0 describes the procedures employed in performing the tasks for this Phase II investigation. Section 3.0 details the data analysis results in terms of subsurface stratigraphy, groundwater flow and chemical analyses, and provides a concise summary of the findings of this Phase II investigation within the context of the Phase I results. Section 4.0 presents our conclusions and recommendations regarding the site conditions. Appendix A contains the laboratory analytical results and Appendix B contains the boring logs for all seven on-site wells.

2.0 Site Investigation Procedures

The scope of this investigation included the installation of two additional monitoring wells and sampling of these two wells and the five existing wells installed during the Phase I study in December, 1985. This section describes the procedures used in performing these activities.

2.1 Soil Borings and Monitoring Well Installations

The location of the monitoring wells in this Phase II investigation were selected after discussions with Ed Besaw of Carrier Corporation. The locations were to be far enough downgradient of the waste tanks previously mentioned, so that the wells were beyond the contaminant plume identified during the Phase I work. Figure 2 shows the location of the two wells installed (MW-5 and MW-6) in relation to the five Phase I wells.

The soil borings were performed with a truck mounted drilling rig, which utilized continuous flight augers to advance the bore holes. No drilling fluid is used in this process. Representative soil samples were obtained using a split-spoon sampler in general accordance with ASTM Specification D-1586. Using this method, a 2-inch nominal O.D. split-spoon sampler is driven into the soil by a 140-pound hammer with a free fall of 30 inches. Representative portions of the soil samples were placed in jars and retained by Dames & Moore. Boring logs were prepared by Dames & Moore, based on visual observations of the samples.

During drilling, the samples were scanned with an HNU photo-ionization meter to detect releases of volatile organic compounds (VOCs). The samples were again scanned after being placed in jars and brought to room temperature (head space test). No significant releases of VOCs were measured in either test.

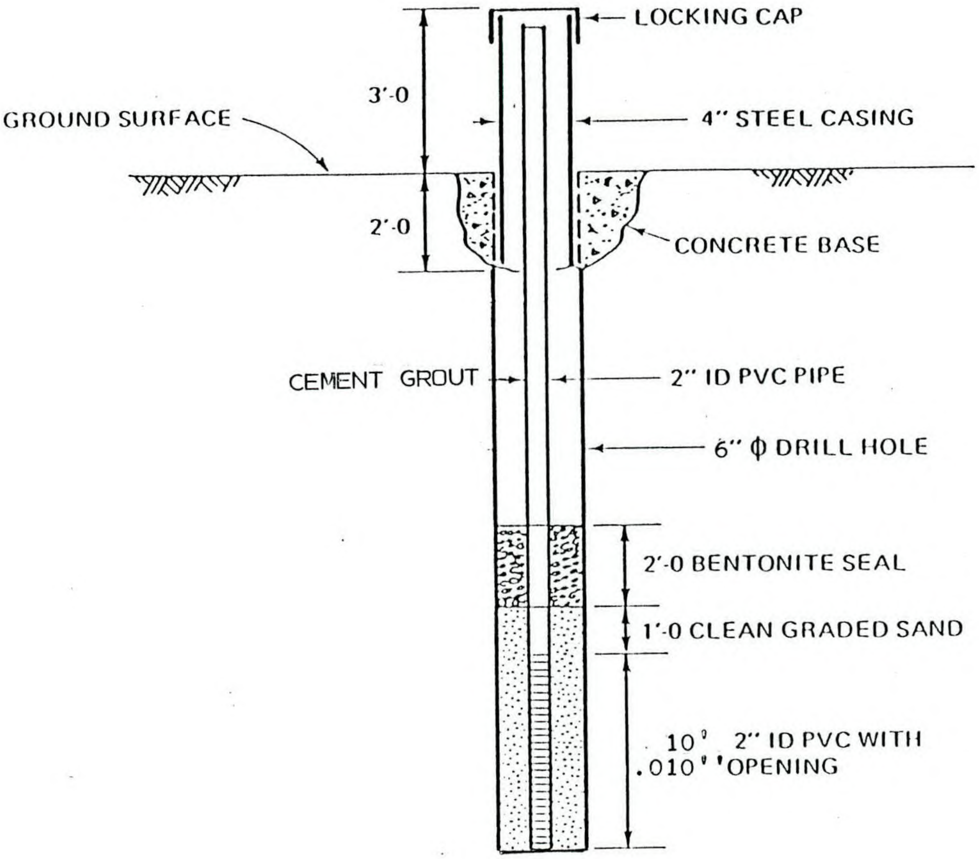
The soils were sampled at intervals of at least every five feet, to a final depth of 15.0 feet. The wells were then installed. The well materials consist of 2-inch diameter PVC with .010-inch slotted screens. In both wells 10-foot screens were used. A typical well schematic is presented as Figure 3. Where practicable, the well screens were installed to intersect the water table. This would allow those compounds which are lighter than water to enter the well. The two wells installed as part of the Phase II work (MW-5 and MW-6) monitor the upper part of the overburden aquifer.

After the wells were installed, 4-inch diameter protective casings were grouted in place over the well pipe. The following day, the wells were developed by evacuation for one hour each to remove fine sediments, and provide better quality groundwater samples. The wells were installed on October 13, 1986 and developed on October 14, 1986. The new wells were surveyed in relation to the existing wells and tied into an on-site benchmark on October 23, 1986.

2.2 Sampling and Analysis

On October 17, 1986, samples from all seven wells installed under the Phase I and II work were collected and sent to a laboratory for analysis of priority pollutant volatile organic compounds (VOCs), TOX, TOC, pH and specific conductance utilizing EPA-approved protocols and procedures. Additional samples from each well were field tested for pH, specific conductance and temperature.

Prior to collecting the sample to be analyzed, two to three well volumes of water were removed from each well. This process provides a more representative sample of the water in the aquifer. A stainless steel bailer was used for evacuation and sampling of groundwater. Between wells, the bailer was rinsed with successive washes of hexane, methanol and distilled, deionized water to limit possible cross-contamination. The samples were contained in laboratory-prepared bottles and packed in an ice-filled cooler. The seven groundwater



TYPICAL OBSERVATION WELL

Dames & Moore

FIGURE 3

samples were collected and delivered to the laboratory, Galson Technical Services in East Syracuse, on the same day.

3.0 Data Analysis Results

This section details the results of the data analysis which was conducted as part of the Phase II investigation. These results incorporate pertinent information from the Phase I investigation as well. This section presents the data analysis results in three subsections; soil stratigraphy, groundwater flow and groundwater quality, as investigated within the scope of work previously outlined.

3.1 Soil Stratigraphy

The soils in the vicinity of the underground waste tanks consist of medium to coarse textured lake sediments which are dominated by fine sand and silt, are relatively gravel-free and moderately permeable (see boring logs for MW-2, 3S, 3D and 4 in Appendix B). Downgradient of the tanks, in the vicinity of MW-6, the soils are predominantly glacial till deposits. The soil samples taken from MW-6 indicate the soils there are stiff, slowly permeable and contain 10 to 20% gravel. Below a depth of about 8.5 feet, the soil becomes increasingly moist, sandy and relatively gravel-free. Farther downgradient, at MW-5, the soils consist of fill to at least a depth of 7.0 feet. Underlying the fill are organic-rich lake sediments or possibly alluvial deposits associated with Sanders Creek. Lake sediments were encountered at the bottom of MW-5, a soft silty-clay soil.

Based on the limited soil characterization provided by the few borings performed, it would appear that the underground tanks are located in relatively coarse, moderately permeable sediments. Downgradient groundwater flow toward MW-6 may be impeded by the dense, slowly permeable soils encountered there. However, due to the presence of foundations, utility conduits, etc. at the site, defining the path of contaminant movement is difficult. Impermeable or slowly-permeable materials can allow increased contaminant movement if they are breeched by man-made subsurface drainage features. As a result, predictions of present and future migration pathways based upon soil stratigraphy alone may be misleading.

3.2 Groundwater Flow

Table 1 contains information regarding monitoring well construction and water levels taken at the time of sampling on October 17, 1986. The overburden units which occur within the screened portion of the wells are listed with accompanying elevation information. Those units described on the boring logs as having less than 20 percent silt and clay are marked with an asterisk. These are the zones which, based on the boring log descriptions, would be the most permeable zones in the boring. If contaminants are present in the groundwater, they would probably be transmitted through these zones most easily.

The northward groundwater flow direction is confirmed by the water level information in Table 1. The elevation of the groundwater surface in the overburden aquifer, as monitored by the wells, is highest at MW-1. The groundwater surface is slightly lower in elevation at MW-2 and MW-4, and continues to lower toward MW-3, MW-6 and MW-5. The water levels from MW-3D and MW-3S indicate a slight downward gradient is present at that location.

3.3 Groundwater Quality

3.3.1 Volatile Organic Compounds

Tests to detect volatile organic compounds (VOCs) were performed on a sample from each of the seven wells installed during the Phase I and II work. The results are presented in Table 2. Only those compounds which were detected are listed. The analytical data are presented in their entirety in Appendix A. The concentrations are compared to applicable New York State groundwater standards or guidance values. Also listed are the results from a lab blank which is a quality assurance measure to determine if bottle preparation or shipment and

TABLE 1

Monitoring Well Details

WELL NUMBER	UNIT SCREENED	SCREEN ELEVATION	WATER ELEVATION (10/17/86)
MW-1	Silty Sand Lacustrine	405.2 - 395.2	402.4
MW-2	Silty Lacustrine	399.5 - 395.5	399.3
	Sandy Lacustrine*	395.5 - 391.5	
	Silty Lacustrine	391.5 - 389.5	
MW-3S	Silty Lacustrine	399.6 - 397.6	398.1
	Sandy Lacustrine*	397.6 - 393.6	
	Silty Lacustrine	393.6 - 389.6	
MW-3D	Silty-Sand Lacustrine	381.5 - 379.0	397.5
	Sandy Till*	379.0 - 376.5	
MW-4	Gravel Fill*	399.5 - 391.5	400.8
	Silty Lacustrine	391.5 - 389.5	
MW-5	Silty Fill	390.2 - 388.2	394.2
	Silty Alluvium	388.2 - 380.2	
MW-6	Silty Till	399.4 - 389.4	395.7

*Permeable Zones

TABLE 2

Volatile Organic Compounds Detected in Groundwater Samples in (ug/1)

SAMPLE ID:	MW-1	MW-2	MW-3D	MW-3S	MW-4	MW-5	MW-6	LAB BLANK	LOQ	NYSDEC STANDARD OR CRITERIA
BENZENE	ND	< 4.4	ND	ND	< 4.4	ND	ND	ND	4.4	
CHLOROFORM	ND	ND	ND	ND	2	ND	ND	ND	1.6	100.0A
1,1-DICHLOROETHANE	ND	380-	ND	240+	500-	< 4.7	ND	ND	4.7	50.0B
1,2-DICHLOROETHANE	ND	40-	ND	11+	26+	ND	ND	ND	2.8	1.0B
1,1-DICHLOROETHENE	ND	880+	ND	70+	290+	ND	ND	ND	2.8	0.9B
TRANS-1,2-DICHLOROETHENE	ND	610-	ND-	60-	60-	ND	ND	ND	1.6	50.0B
ETHYLBENZENE	ND	ND	ND	ND	< 7.2	ND	ND	ND	7.2	
METHYLENE CHLORIDE	3	19	4	7	15	7	3	8	2.8	10.0B
TETRACHLOROETHENE	ND	ND	ND	ND	< 4.1	ND	ND	ND	4.1	
1,1,1-TRICHLOROETHANE	ND	620+	ND	< 3.8	250-	ND	ND	ND	3.8	50.0B
1,1,2-TRICHLOROETHANE	ND	180+	ND	< 5.0	13-	ND	ND	ND	5.0	0.5B
TRICHLOROETHENE	ND	240+	ND	ND	6-	< 1.9	ND	ND	1.9	10.0A 5.0B
TOLUENE	ND	< 6.0	ND	ND	64	< 6.0	< 6.0	ND	6.0	
VINYL CHLORIDE	ND	6600	ND	77	7000	ND	ND	ND	5.0	5.0A

A – New York State Department of Environmental Conservation, NYCRR 703.5 – Standards for Class 6A groundwaters.

B – New York State Department of Environmental Conservation "Ambient Water Quality Criteria" memo dated August 5, 1983. Guidance Values.

LOQ – Limit of Quantitation

(<) – Less than Limit of Quantitation

ND – Not Detected

(+) – Indicates increase in concentration since Phase I study

(–) – Indicates decrease in concentration since Phase I study storage have caused contamination. It appears from the results that methylene chloride concentrations detected are the result of contamination from either bottle preparation, shipping or extraction processes which are part of the analytical procedure. Methylene chloride is commonly used by laboratories in these extraction processes. As a result of methylene chloride being detected in the lab blank, it is probably attributable to some form of external contamination previously mentioned.

No other VOCs were detected in MW-1, the upgradient well. As expected, the highest concentrations of VOCs were detected at MW-2 and MW-4, the locations nearest the tanks. At these locations, the applicable standards or guidance values were exceeded for 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethane and vinyl chloride. For these and other detected compounds, it generally appears that the concentrations are less in MW-4, and higher in MW-2, as compared to the results from the Phase I sampling.

Vinyl chloride concentrations were the highest of those detected. This could be attributable to degradation of the PVC well screen and casing by the contaminants in the groundwater. For instance, trichloroethene is listed as having a severe effect on PVC (Cole Parmer, Inc., 1984). The high concentrations of trichloroethene and other associated solvents is probably deteriorating the PVC wells over time.

No VOCs, other than methylene chloride, were detected in MW-3D. MW-3S contained slightly higher levels of several VOCs as compared to the Phase I sampling. Standards or guidance values were exceeded in MW-3S for 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, trans-1,2-dichloroethene and vinyl chloride.

At MW-5, near Sanders Creek, trichloroethene, 1,1-dichloroethane and toluene were reported as below the limit of quantitation. The limit of quantitation is, in essence, the detection limit for the analytical instrument. It is the smallest amount of a particular compound that can be accurately quantified. Results which are reported to be below the limit of quantitation are estimates, and can be the result of interferences in the analysis. Because these three compounds were reported as below the limit of quantitation, as was toluene at MW-6, there is not conclusive evidence that these compounds are present in wells MW-5 and MW-6.

The only VOC reportedly stored in the waste tanks was trichloroethene. However, other products, primarily various types of dichloroethenes and dichloroethanes were also found in the groundwater samples. In groundwater systems where trichloroethene has been released, it is quite common to also find the dichloro type compounds. They are decomposition products of trichloroethene.

An example of a decomposition chain of a chloroethane compound is: 1,1,1-trichloroethane——> 1,1-dichloroethane——> chloroethane.

Other chloroethene and chloroethane compounds exhibit similar transformations. These transformations probably account for the wide variety of compounds found in the groundwater. The fact that these compounds were detected indicates that the VOCs being found are due to past leakage or spillage. However, the rates of decomposition are not well established and cannot be used to determine the time a leak or spill occurred.

The following subsections summarize the results of the other analyses performed. Table 3 presents those results.

3.3.2 Total Organic Halogens

Total organic halogens (TOX) were detected in very small amounts (<0.1 mg/l) at MW-1, MW-3D, MW-5 and MW-6. The highest levels were at

TABLE 3

Summary of Other Analytical Results

WELL ID	TOX mg/1	TOC mg/1	SP. COND. umhos/cm	pH
MW-1	< 0.1	20-	1550+	7.0-
MW-2	10+	35+	2740+	6.9
MW-3S	2.6-	11+	1790-	7.2
MW-3D	< 0.01-	8+	2180+	7.4+
MW-4	3.6-	82-	1230+	6.8-
MW-5	0.02	16	2130	6.8
MW-6	< 0.01	6	570	7.8

(+) - Indicates increase since Phase I study

(-) - Indicates decrease since Phase I study

MW-2, MW-4 and MW-3S. These levels were generally slightly less than the Phase I results.

3.3.3 Total Organic Carbon

Total organic carbon (TOC) was measured in each well, and found to be highest at MW-2 and MW-4. Interestingly, the levels for MW-1 and MW-5 were above that of MW-3S. Generally, all values were slightly below those found in the Phase I work.

3.3.4 Specific Conductance

The conductivity of groundwater can serve as an indication of the quantity of dissolved ions present. An increase in the conductivity indicates more (or different valence), ions are entering the groundwater between two monitoring points. As was the case during the Phase I work, the highest conductivity value was at MW-2. MW-3D, MW-5 and MW-3S were also in the upper range. The lowest values were at MW-6 and MW-4.

3.3.5 pH

The pH in all wells varied between 6.8 and 7.8 which is within the normal, expected range.

3.4 Summary of Results

Two additional monitoring wells were installed. MW-5 occurs in a downgradient location within alluvial sediments. MW-6 is also downgradient of the tanks and occurs within glacial till.

All wells were sampled and analyzed for VOCs, TOX, TOC, pH and specific conductance. Wells MW-1 and MW-3D were generally free of VOCs. The highest concentrations of VOCs were detected in MW-2 and MW-4, with lower concentrations at MW-3S.

Trichloroethene, 1,1-dichloroethane and toluene were reported as below the limit of quantitation at MW-5, and toluene was reported as below the limit of quantitation at MW-6. As a result, it cannot be shown conclusively that the compounds were present in the samples from these wells.

Overall, the types of compounds detected in the five existing wells (MW-1, 2, 3S, 3D, 4) were generally similar. In about one-half of the cases where similar compounds were detected, the concentrations were lower than those reported during the Phase I investigation.

TOX, TOC, pH and specific conductance all were in general agreement with the previous sampling results.

4.0 Recommendations

The high concentration of vinyl chloride in the groundwater samples from MW-2, 3S and 4 indicate degredation of the PVC well casing. If monitoring is to continue on a long-term basis, stainless steel wells could be installed. This would lessen the interaction between the contaminants and the well casing materials.

The closure of the tanks will most likely result in removal of wells MW-2 and MW-4, due to their proximity to the tanks. If wells MW-3S and MW-3D are to remain as future monitoring points, it is suggested that these wells be replaced with stainless steel well screens and casings.

APPENDIX A

LABORATORY ANALYTICAL RESULTS

LABORATORY ANALYSIS REPORT

Galson
Technical Services, Inc.
6601 Kirkville Road
Post Office Box 546
E. Syracuse, N.Y. 13057
Tel: (315) 432-0506

Client: DAMES & MOORE
Task Number: 86101707
Location: CARRIER

Job Number: G6274

Date Sampled: 17-OCT-1986

TOTAL ORGANIC HALOGENS

Sample ID	Lab ID	MG/L
MW-1	D24394	<0.1
MW-2	D24395	10
MW-3D	D24396	<0.01
MW-3S	D24397	2.6
MW-4	D24398	3.6
MW-5	D24399	0.02
MW-6	D24400	<0.01

(<) - Less Than LOQ
(>) - Greater Than
NA - Not Applicable
ND - Not detectable
NS - Not specified
MG - Milligrams
μg/l - Micrograms Per Liter
LOQ - Limit of Quantitation

Method(s): TOX ANALYZER
Footnotes:

Submitted by:
Approved by: Eric Galson
Date: 4-NOV-1986

Galson
Technical Services, Inc.
6601 Kirkville Road
Post Office Box 546
E. Syracuse, N.Y. 13057
Tel: (315) 432-0506

LABORATORY ANALYSIS REPORT

Client: DAMES & MOORE
Task Number: 86101707
Location: CARRIER

Job Number: G6274

Date Sampled: 17-OCT-1986

TOTAL ORGANIC CARBON

Sample ID	Lab ID	MG/L
MW-1	D24387	20
MW-2	D24388	35
MW-3D	D24389	8
MW-3S	D24390	11
MW-4	D24391	82
MW-5	D24392	16
MW-6	D24393	6

(<) - Less Than LOQ
(>) - Greater Than
NA - Not Applicable
ND - Not detectable
NS - Not specified
MG - Milligrams
μg/l - Micrograms Per Liter
LOQ - Limit of Quantitation

Method(s): EPA 600/4-79-020
Footnotes:

Submitted by: A Lee
Approved by: Eric Galson
Date: 4-NOV-1986

Galson
Technical Services, Inc.
6601 Kirkville Road
Post Office Box 546
E. Syracuse, N.Y. 13057
Tel: (315) 432-0506

LABORATORY ANALYSIS REPORT

Client: DAMES & MOORE
Task Number: 86101707
Location: CARRIER

Job Number: G6274

Date Sampled: 17-OCT-1986

Sample ID	Lab ID	pH ELECTRODE	SPECIFIC CONDUCTANCE µHMOS/CM
MW-1	D24380	7.0	1550
MW-2	D24381	6.9	2740
MW-3D	D24382	7.4	2180
MW-3S	D24383	7.2	1790
MW-4	D24384	6.8	1230
MW-5	D24385	6.8	2130
MW-6	D24386	7.8	570

(<)	Less Than LOQ
(>)	Greater Than
NA	Not Applicable
ND	Not detectable
NS	Not specified
MG	Milligrams
µg/l	Micrograms Per Liter
LOQ	Limit of Quantitation

Method(s): EPA 600/4-79-020
Footnotes:

Submitted by: D. J. Fagan
Approved by:
Date: 4-NOV-1986

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6601 Kirkville Road
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E. Syracuse, N.Y. 13057
Tel: (315) 432-0506

LABORATORY ANALYSIS REPORT

Client: DAMES & MOORE
Job Number: G6274
Task Number: 86101707
Location: CARRIER
Date Sampled: 17-OCT-1986

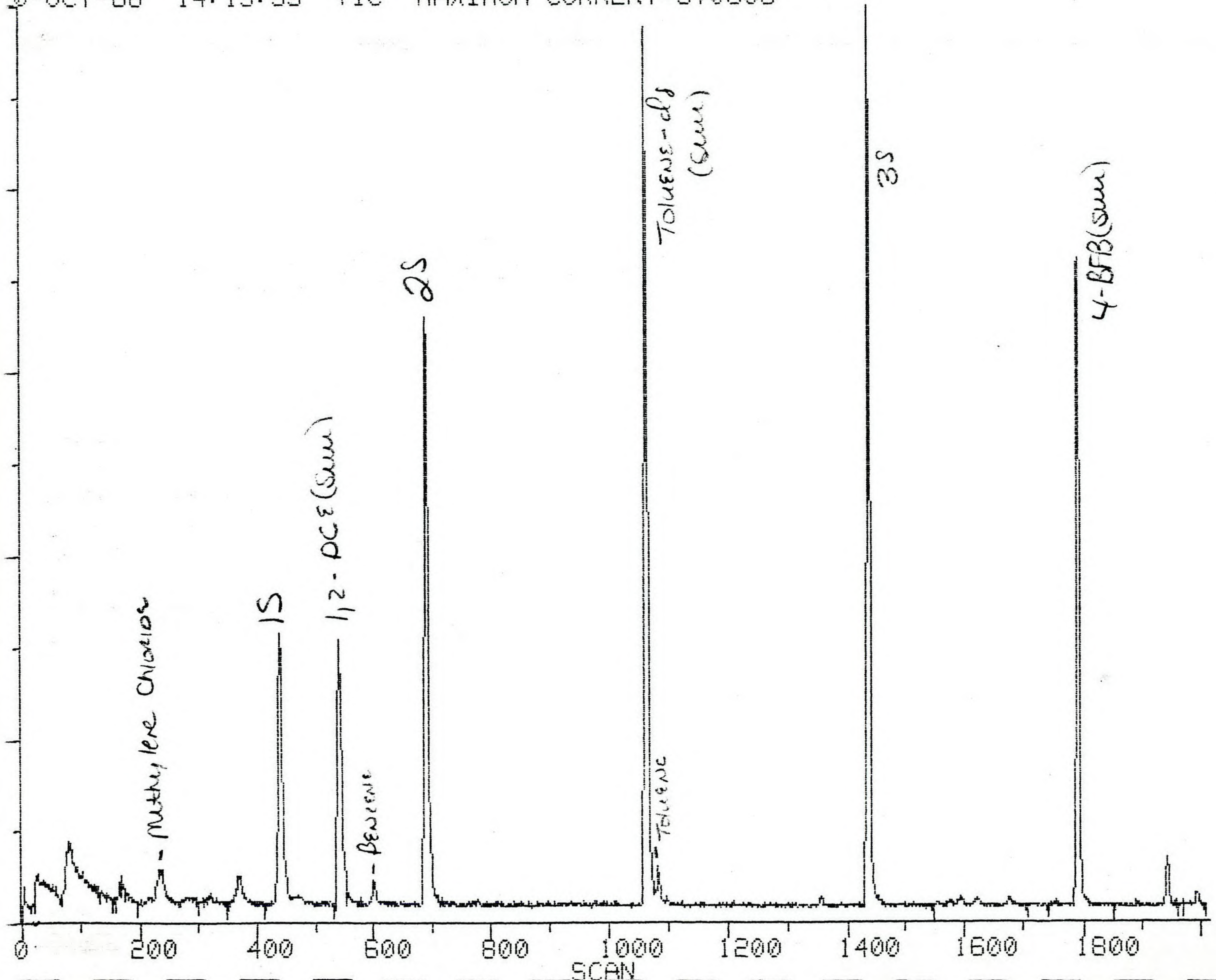
		D24401	D24402	D24403	D24404	D24405	D24406	D24407	IN-HOUSE	
	Lab ID: Client ID:	MW-1	MW-2	MW-3D	MW-3S	MW-4	MW-5	MW-6	BLANK	LOQ
BENZENE	µg/l	ND	<4.4	ND	ND	<4.4	ND	ND	ND	4.4
BROMOMETHANE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	5.0
BROMODICHLOROMETHANE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	2.2
BROMOFORM	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	4.7
CARBON TETRACHLORIDE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	2.8
CHLOROBENZENE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	6.0
CHLOROETHANE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	5.0
2-CHLOROETHYLVINYL ETHER	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	10.0
CHLOROFORM	µg/l	ND	ND	ND	ND	2	ND	ND	ND	1.6
CHLOROMETHANE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	5.0
DIBROMOCHLOROMETHANE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	3.1
1,3-DICHLOROBENZENE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	5.0
1,2-DICHLOROBENZENE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	5.0
1,4-DICHLOROBENZENE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	5.0
1,1-DICHLOROETHANE	µg/l	ND	380	ND	240	500	<4.7	ND	ND	4.7
1,2-DICHLOEOETHANE	µg/l	ND	40	ND	11	26	ND	ND	ND	2.8
1,1-DICHLOROETHENE	µg/l	ND	880	ND	70	290	ND	ND	ND	2.8
TRANS-1,2-DICHLOROETHENE	µg/l	ND	610	ND	60	60	ND	ND	ND	1.6
1,2-DICHLOROPROPANE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	6.0
CIS-1,3-DICHLOROPROPENE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	5.0
TRANS-1,3-DICHLOROPROPENE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	5.0
ETHYLBENZENE	µg/l	ND	ND	ND	ND	<7.2	ND	ND	ND	7.2
METHYLENE CHLORIDE	µg/l	3	19	4	7	15	7	3	8	2.8
1,1,2,2-TETRACHLOROETHANE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	6.9
TETRACHLOROETHENE	µg/l	ND	ND	ND	ND	<4.1	ND	ND	ND	4.1
1,1,1-TRICHLOROETHANE	µg/l	ND	620	ND	<3.8	250	ND	ND	ND	3.8
1,1,2-TRICHLOROETHANE	µg/l	ND	180	ND	<5.0	13	ND	ND	ND	5.0
TRICHLOROETHENE	µg/l	ND	240	ND	ND	6	<1.9	ND	ND	1.9
TRICHLOROFLUOROMETHANE	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	5.0
TOLUENE	µg/l	ND	<6.0	ND	ND	64	<6.0	<6.0	ND	6.0
VINYL CHLORIDE	µg/l	ND	6600	ND	77	7000	ND	ND	ND	5.0

Method(s): EPA 624
Footnotes:

(<) - Less Than LOQ
(>) - Greater Than
NA - Not Applicable
ND - Not detectable
NS - Not specified
MG - Milligrams
µg/l - Micrograms Per Liter
LOQ - Limit of Quantitation

Submitted by:
Approved by:
Date: 4-NOV-1986

024401 DAMES&MOORE MW-1 +1.0UL INT STD, SURR EMV 2.85
0-OCT-86 14:19:33 TIC MAXIMUM CURRENT=370609



EXTREL Quantitation Report

```
Name:_____________________________      W.O._________________________________
Analyst:__________________________      Date:________________________________
Reviewer:_________________________      Date:________________________________
Comments:____________________________________________________________________
         ____________________________________________________________________


Library used:      SY:VOASUR
Data file name:    SY:D24401
Injection time:    20-OCT-86 14:19:33
Comments:
    DAMES&MOORE MW-1 +1.OUL INT STD,SURR EMV 2.85
Dilution factor:       1.00

Library entries as follows:

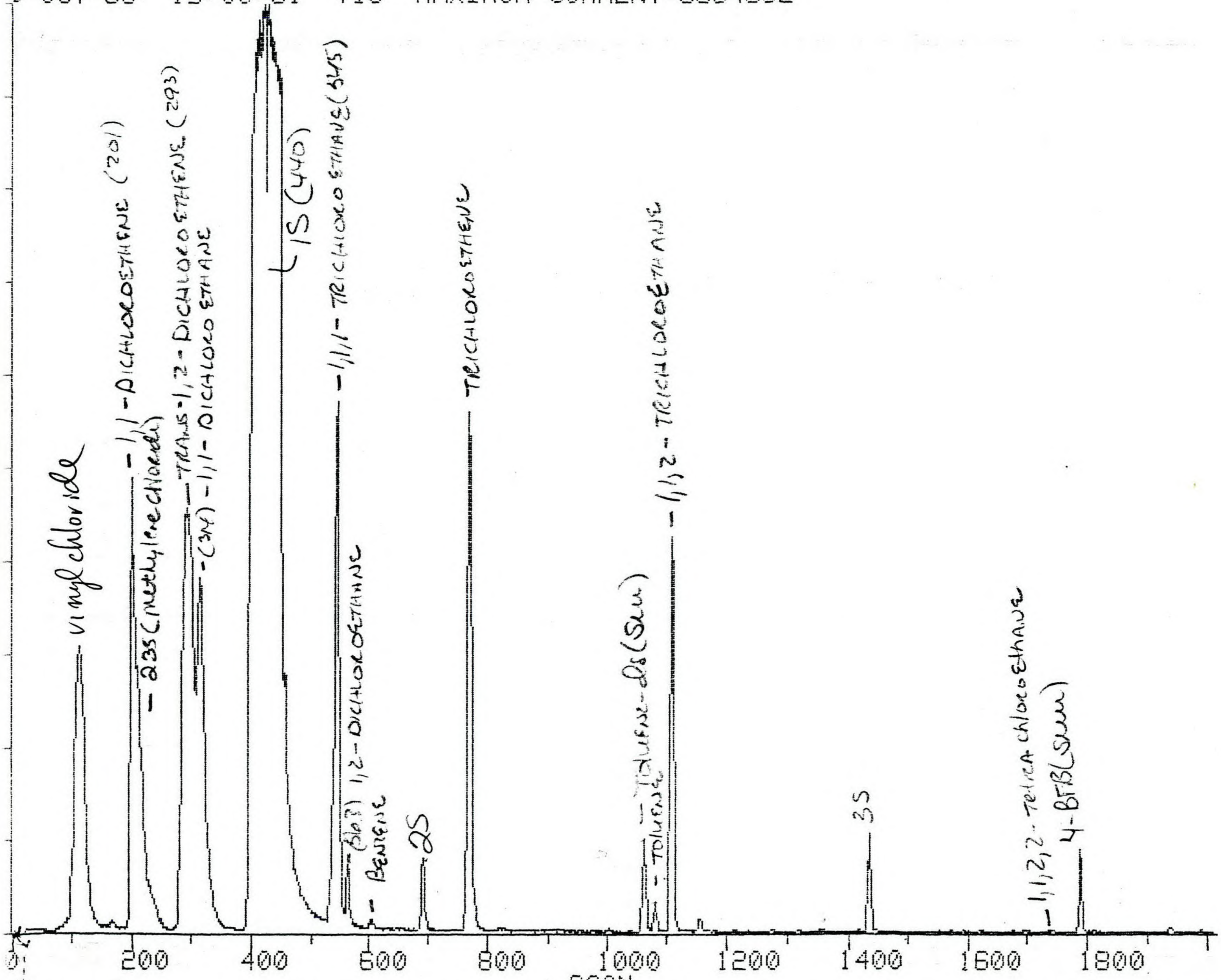
    Standards:
   1S   BROMOCHLOROMETHANE
   2S   1,4-DIFLUOROBENZENE
   3S   CHLOROBENZENE-D5

    Targets:
   1T   1,2-DICHLOROETHANE-D4
   2T   TOLUENEN-D8
   3T   4-BFB

 No.    Time   Scan    Tmass/Smass     Tarea/Sarea         Ref   Fit    Conc   Units

  1S    5.12    441                                        STD   0.79   100.0   %
  2S    7.43    689                                        STD   0.73   100.0   %
  3S   14.43   1438                                        STD   0.80   100.0   %
  1T    6.07    542      65./ 128.    323136./   122376.     1   0.77   100.7   %
  2T   10.92   1062      98./ 117.    710720./   579792.     3   0.74   102.0   %
  3T   17.72   1790      95./ 117.    301696./   579792.     3   0.54    95.9   %
```

24402 5.0ML MW-2 DAMES&MOORE +1.0 UL INT STD, SURR EMV2.85
0-OCT-86 15:00:31 TIC MAXIMUM CURRENT=3664832



```
                         EXTREL Quantitation Report

Name:_________________________    W.O.___________________________________
Analyst:______________________    Date:__________________________________
Reviewer:_____________________    Date:__________________________________
Comments:________________________________________________________________
         ________________________________________________________________


Library used:     SY:VOASUR
Data file name:   SY:D24402
Injection time:   20-OCT-86 15:00:31
Comments:
    5.0ML MW-2 DAMES&MOORE +1.0 UL INT STD,SURR EMV2.85
Dilution factor:       1.00

Library entries as follows:

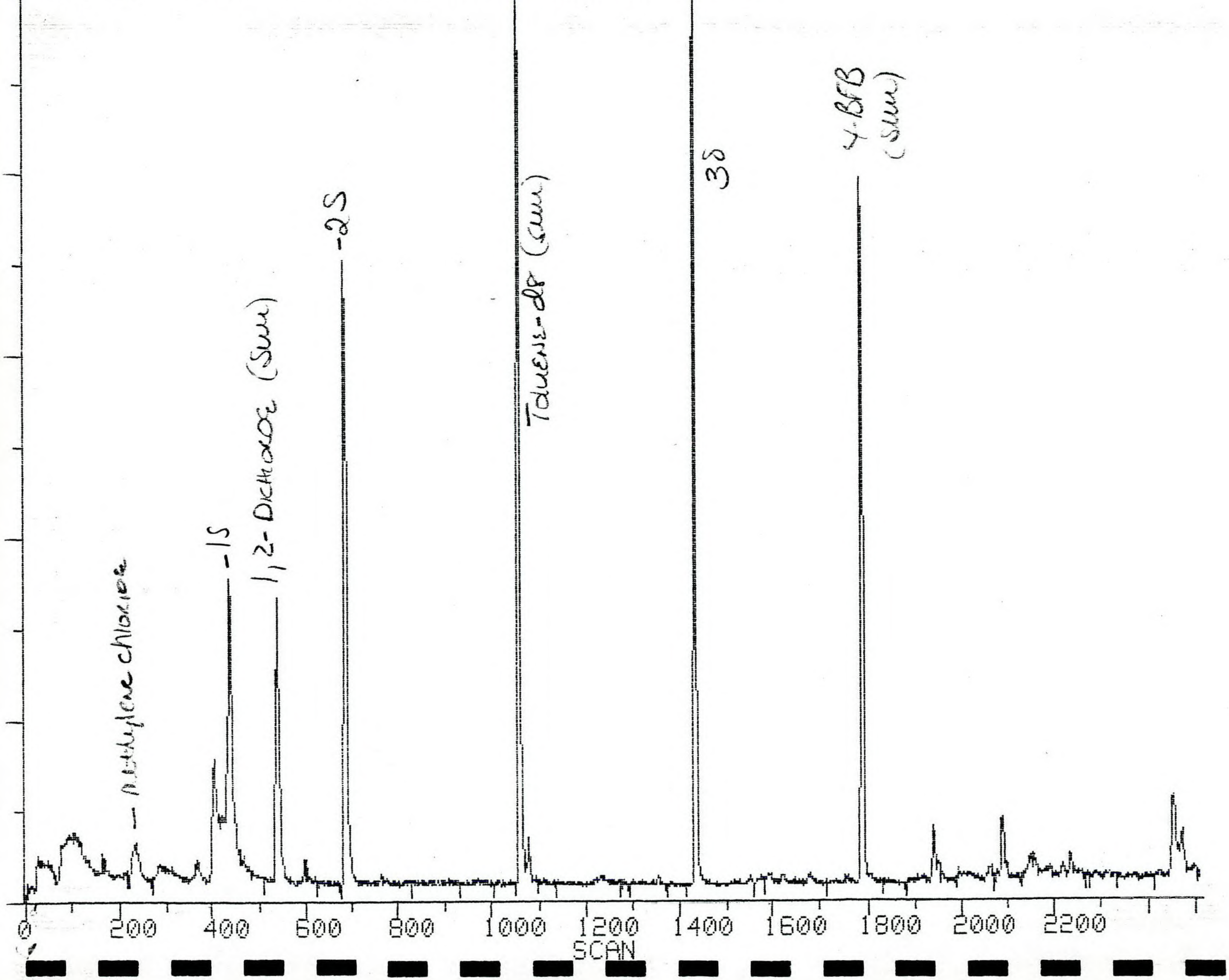
    Standards:
   1S   BROMOCHLOROMETHANE
   2S   1,4-DIFLUOROBENZENE
   3S   CHLOROBENZENE-D5

    Targets:
   1T   1,2-DICHLOROETHANE-D4
   2T   TOLUENEN-D8
   3T   4-BFB

 No.   Time   Scan   Tmass/Smass     Tarea/Sarea        Ref   Fit    Conc   Units

  1S    5.10   440                                       STD   0.23   100.0   %
  2S    7.45   691                                       STD   0.73   100.0   %
  3S   14.42  1436                                       STD   0.76   100.0   %
  1T                          Not Found
  2T   10.92  1062     98./ 117.   752728./  640084.      3   0.74    97.8   %
  3T   17.72  1789     95./ 117.   359200./  640084.      3   0.70   103.4   %
```

024403 5.0ML MW-3D DAMES&MOORE +1.0UL INT STD,SURR EMV2.85
20-OCT-86 15:39:47 TIC MAXIMUM CURRENT=380832



EXTREL Quantitation Report

```
Name:__________________________   W.O.______________________________
Analyst:_______________________   Date:_____________________________
Reviewer:______________________   Date:_____________________________
Comments:___________________________________________________________
         ___________________________________________________________


Library used:      SY:VOASUR
Data file name:    SY:D24403
Injection time:    20-OCT-86 15:39:47
Comments:
     5.0ML MW-3D DAMES&MOORE +1.0UL INT STD,SURR EMV2.85
Dilution factor:        1.00

Library entries as follows:

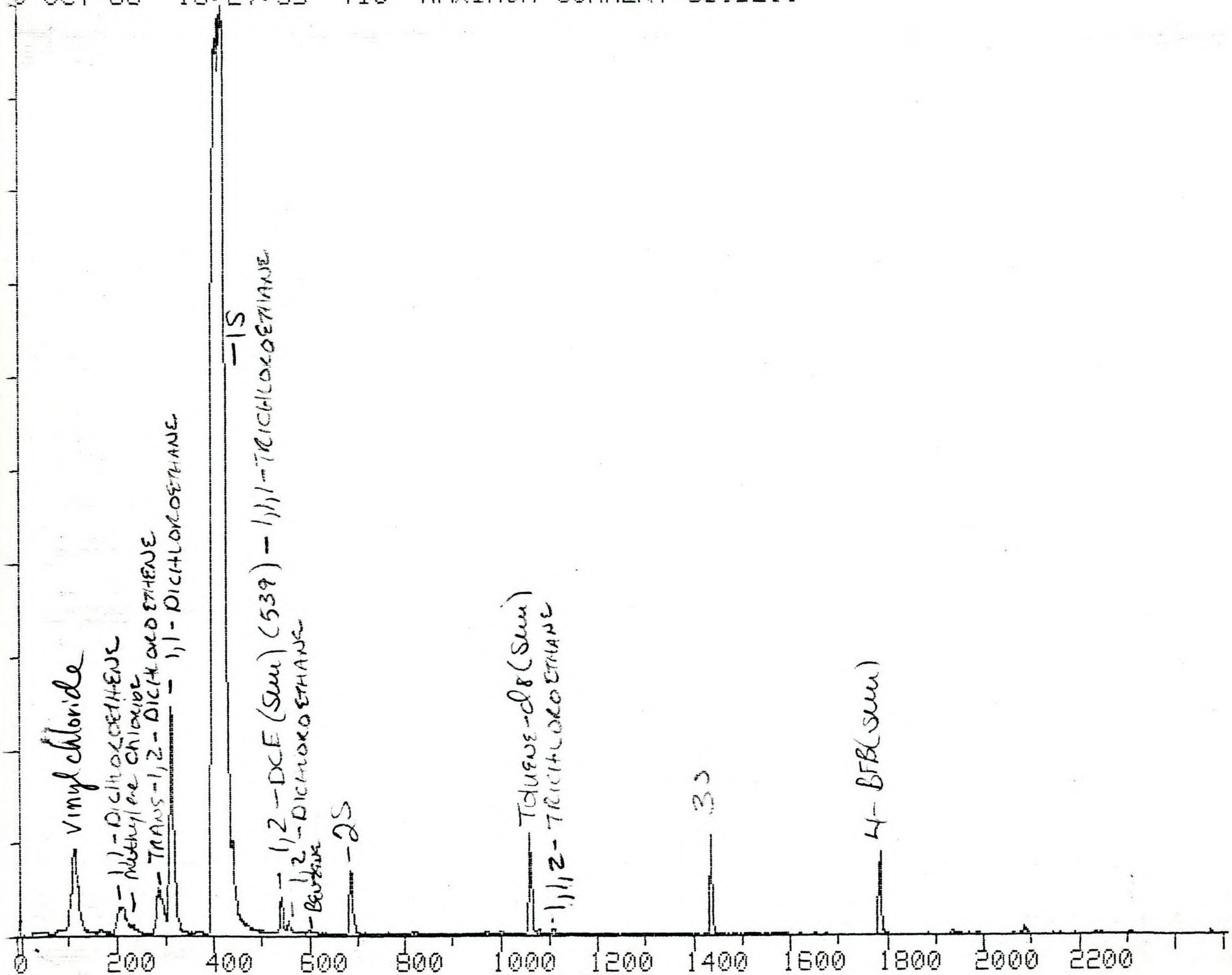
     Standards:
    1S   BROMOCHLOROMETHANE
    2S   1,4-DIFLUOROBENZENE
    3S   CHLOROBENZENE-D5

     Targets:
    1T   1,2-DICHLOROETHANE-D4
    2T   TOLUENEN-D8
    3T   4-BFB

 No.    Time   Scan    Tmass/Smass      Tarea/Sarea        Ref    Fit    Conc   Units

  1S    5.07    436                                        STD   0.79   100.0   %
  2S    7.40    686                                        STD   0.73   100.0   %
  3S   14.42   1435                                        STD   0.76   100.0   %
  1T    6.02    537     65./ 128.   337472./   127976.      1    0.84   100.6   %
  2T   10.90   1060     98./ 117.   758912./   617040.      3    0.81   102.3   %
  3T   17.70   1788     95./ 117.   322936./   617040.      3    0.57    96.4   %
```

24404 MW-3S DAMES $ MOORE EMV2.85
0-OCT-86 16:27:35 TIC MAXIMUM CURRENT=3605210



```
                        EXTREL Quantitation Report

Name:_____________________________    W.O.______________________________
Analyst:__________________________    Date:_____________________________
Reviewer:_________________________    Date:_____________________________
Comments:___________________________________________________________________
         ___________________________________________________________________


Library used:      SY:VOASUR
Data file name:    SY:D24404
Injection time:    20-OCT-86 16:27:35
Comments:
    MW-3S DAMES $ MOORE EMV2.85
Dilution factor:       1.00

Library entries as follows:

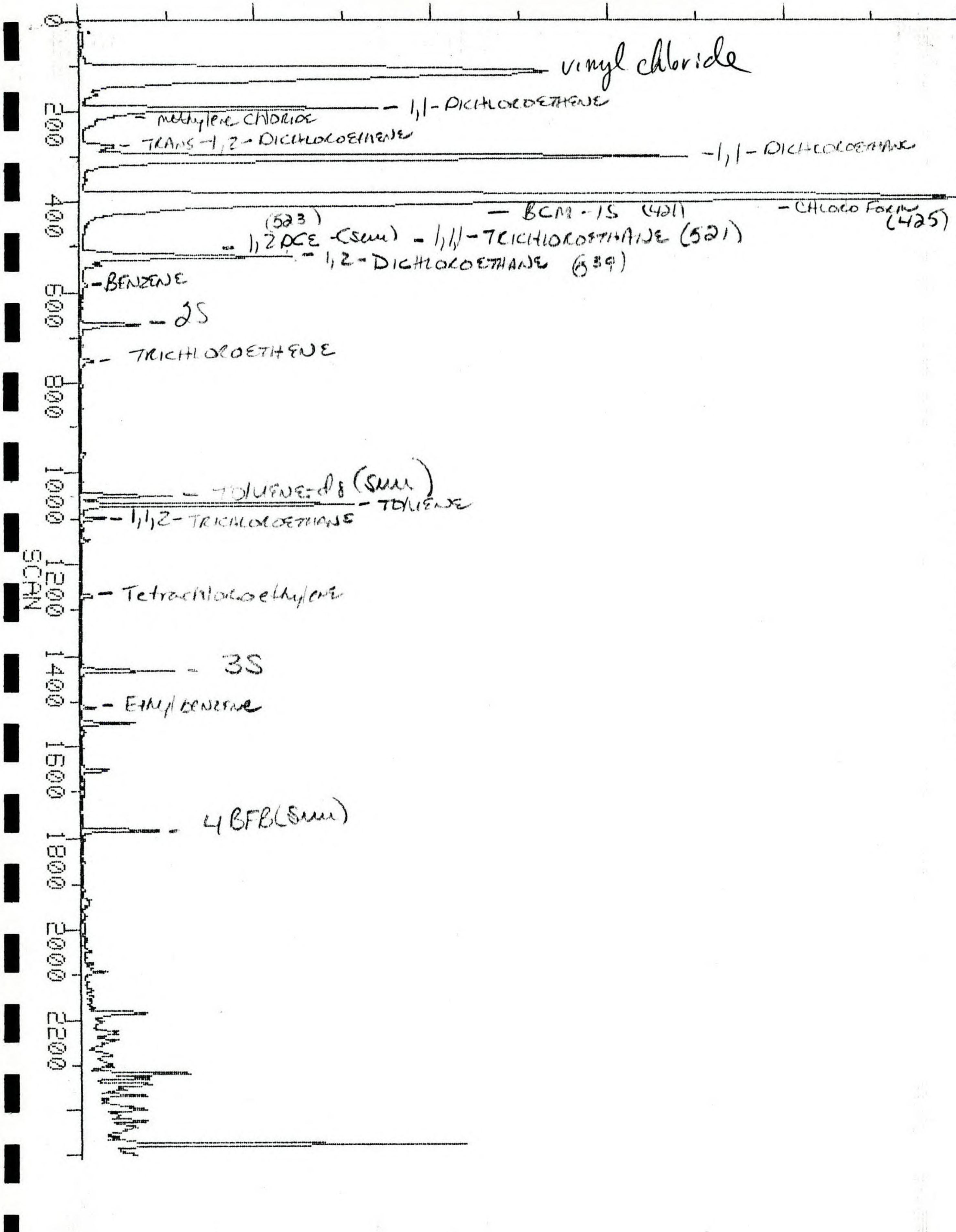
    Standards:
   1S   BROMOCHLOROMETHANE
   2S   1,4-DIFLUOROBENZENE
   3S   CHLOROBENZENE-D5

    Targets:
   1T   1,2-DICHLOROETHANE-D4
   2T   TOLUENEN-D8
   3T   4-BFB

 No.    Time   Scan    Tmass/Smass     Tarea/Sarea        Ref   Fit    Conc   Units

  1S    5.10    440                                       STD   0.71   100.0   %
  2S    7.42    687                                       STD   0.73   100.0   %
  3S   14.42   1436                                       STD   0.80   100.0   %
  1T    6.03    539     65./ 128.   354566./  122926.      1    0.79   110.0   %
  2T   10.90   1060     98./ 117.   781248./  638256.      3    0.81   101.8   %
  3T   17.67   1784     95./ 117.   339994./  638256.      3    0.57    98.1   %
```

D24405 5.0ML DAMES&MOORE + 1.0UL INT STD/SURR EMV2.85
20-OCT-86 17:13:11 TIC MAXIMUM CURRENT=3638992



EXTREL Quantitation Report

```
Name:_____________________________   W.O.______________________________
Analyst:__________________________   Date:_____________________________
Reviewer:_________________________   Date:_____________________________
Comments:__________________________________________________________________
         __________________________________________________________________


Library used:      SY:VOASUR
Data file name:    SY:D24405
Injection time:    20-OCT-86 17:13:11
Comments:
     5.0ML DAMES&MOORE + 1.0UL INT STD/SURR EMV2.85
Dilution factor:       1.00

Library entries as follows:

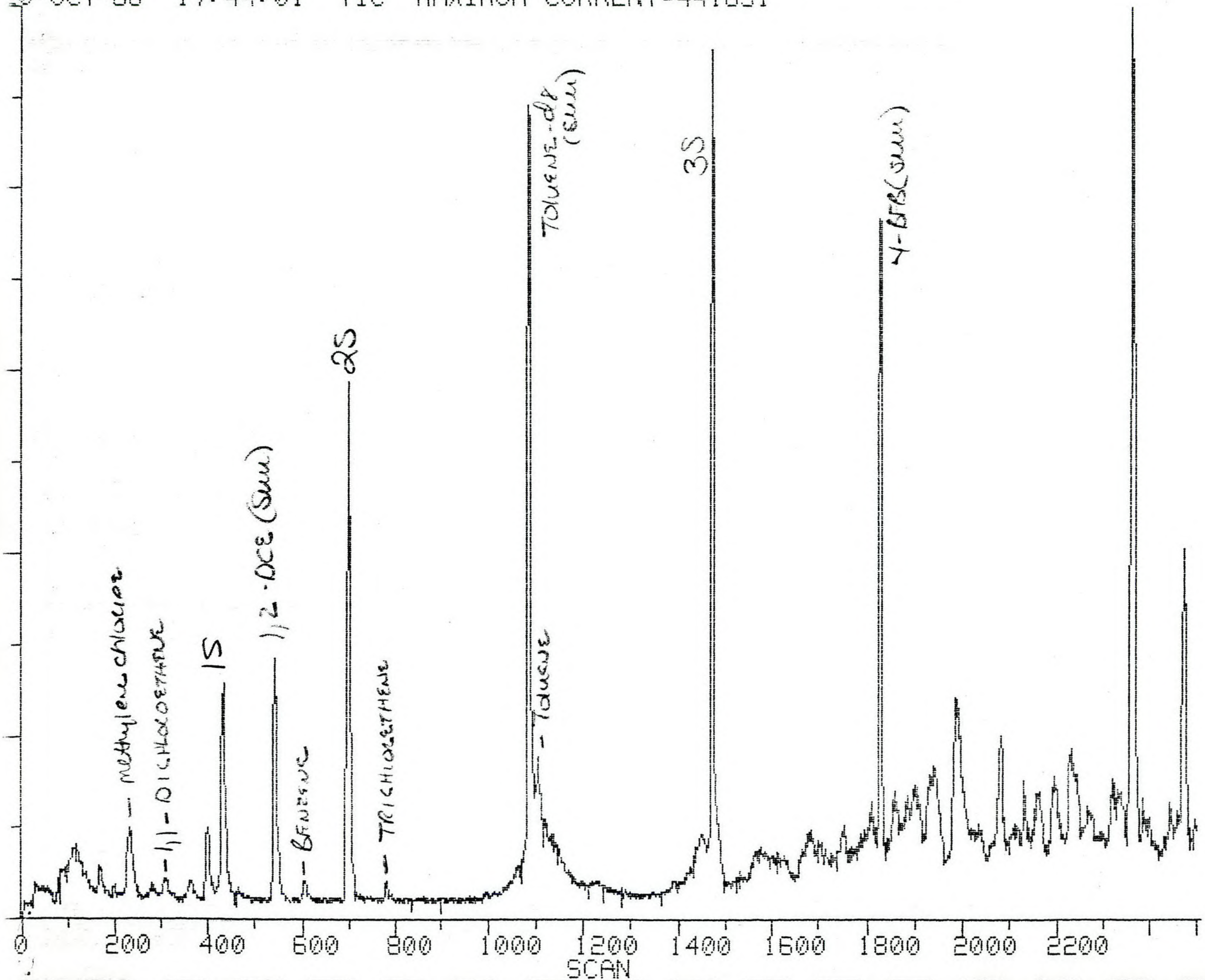
     Standards:
    1S   BROMOCHLOROMETHANE
    2S   1,4-DIFLUOROBENZENE
    3S   CHLOROBENZENE-D5

     Targets:
    1T   1,2-DICHLOROETHANE-D4
    2T   TOLUENEN-D8
    3T   4-BFB

 No.    Time   Scan    Tmass/Smass     Tarea/Sarea          Ref    Fit    Conc   Units

  1S    4.93    421 ✓                                       STD   0.67   100.0    %
  2S    7.27    671 ✓                                       STD   0.73   100.0    %
  3S   14.37   1431 ✓                                       STD   0.84   100.0    %
  1T    5.88    523 ✓    65./ 128.   314784./     90672.     1    0.54   132.4    %
  2T   10.82   1050 ✓    98./ 117.   832544./    665904.     3    0.70   104.0    %
  3T   17.67   1784 ✓    95./ 117.   349488./    665904.     3    0.57    96.7    %
```

024406 5.0ML DAMES&MOORE MW-5 + 1.0UL INT STD/ SURR EMV 2.85
20-OCT-86 17:44:01 TIC MAXIMUM CURRENT=441631



```
                    EXTREL Quantitation Report

Name:_______________________________   W.O._____________________________
Analyst:____________________________   Date:____________________________
Reviewer:___________________________   Date:____________________________
Comments:___________________________________________________________________
         ___________________________________________________________________


Library used:      SY:VOASUR
Data file name:    SY:D24406
Injection time:    20-OCT-86 17:44:01
Comments:
    5.0ML DAMES&MOORE MW-5 + 1.0UL INT STD/ SURR EMV 2.85
Dilution factor:        1.00

Library entries as follows:

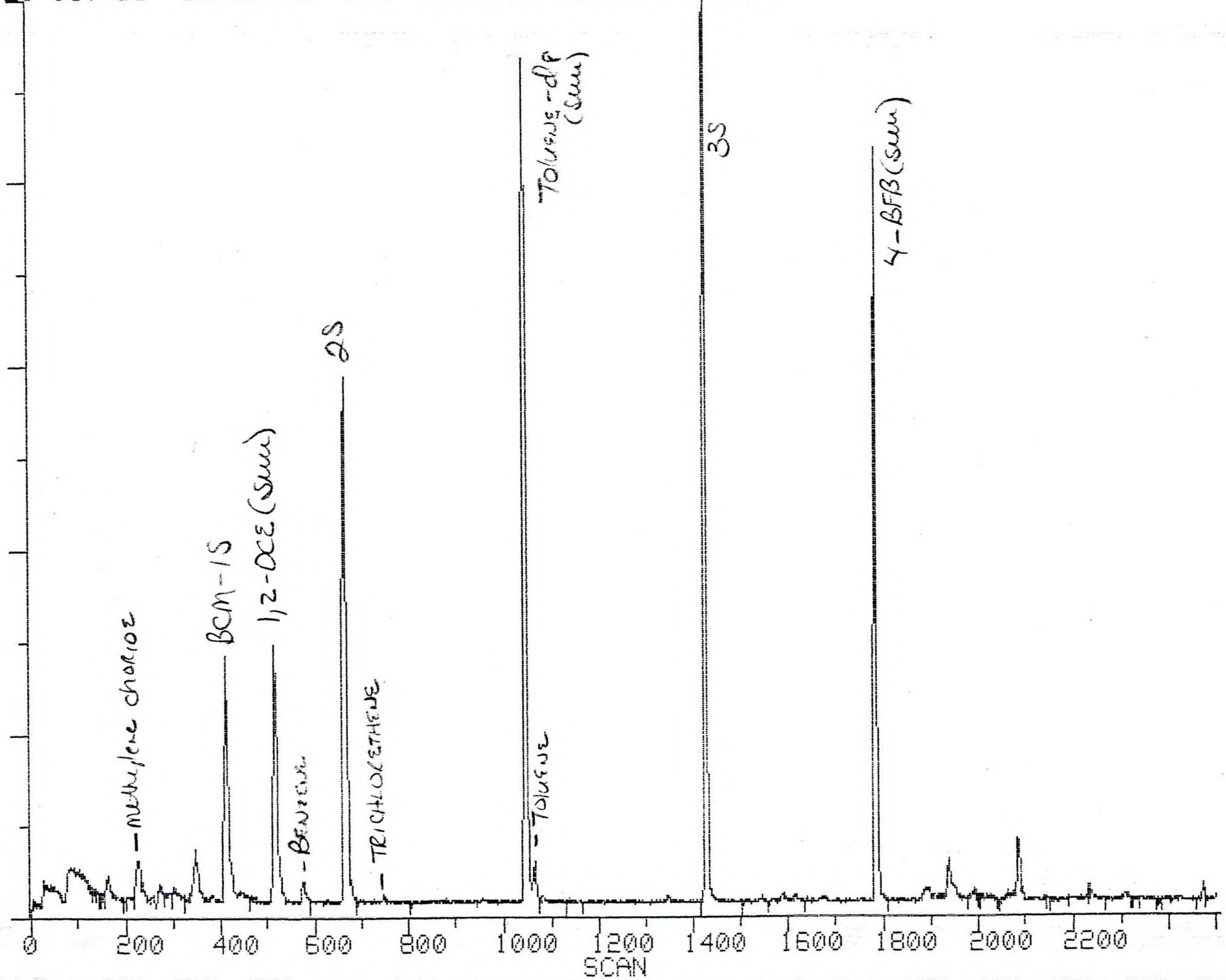
    Standards:
   1S   BROMOCHLOROMETHANE
   2S   1,4-DIFLUOROBENZENE
   3S   CHLOROBENZENE-D5

    Targets:
   1T   1,2-DICHLOROETHANE-D4
   2T   TOLUENEN-D8
   3T   4-BFB

 No.    Time   Scan    Tmass/Smass      Tarea/Sarea        Ref    Fit    Conc   Units

  1S    5.03    432                                        STD   0.79   100.0   %
  2S    7.50    696                                        STD   0.79   100.0   %
  3S   14.73   1470                                        STD   0.76   100.0   %
  1T    6.05    540     65./ 128.   347970./   133502.       1   0.74    99.4   %
  2T   11.13   1085     98./ 117.   795456./   653968.       3   0.81   101.2   %
  3T   18.08   1828     95./ 117.   346056./   653968.       3   0.54    97.5   %
```

D24407 5.0ML DAMES&MOORE MW-6 + 1UL INT STD/SURR 2.85EMV
20-OCT-86 22:00:15 TIC MAXIMUM CURRENT=450941



```
                    EXTREL Quantitation Report

Name:____________________________   W.O.______________________________
Analyst:_________________________   Date:_____________________________
Reviewer:________________________   Date:_____________________________
Comments:_____________________________________________________________
         _____________________________________________________________


Library used:      SY:VOASUR
Data file name:    SY:D24407
Injection time:    20-OCT-86 22:00:15
Comments:
    5.0ML DAMES&MOORE MW-6 + 1UL INT STD/SURR 2.85EMV
Dilution factor:       1.00

Library entries as follows:

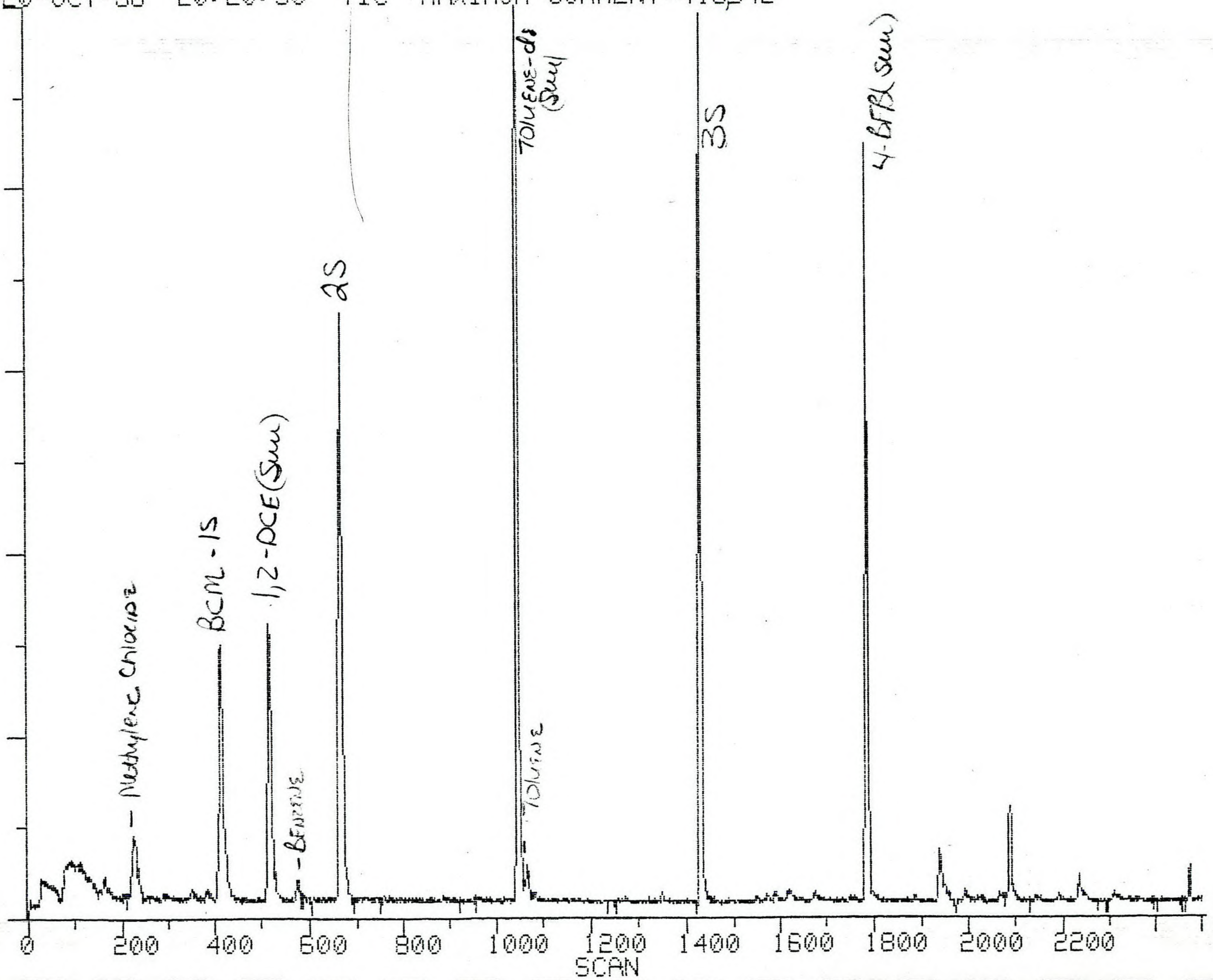
    Standards:
   1S   BROMOCHLOROMETHANE
   2S   1,4-DIFLUOROBENZENE
   3S   CHLOROBENZENE-D5

    Targets:
   1T   1,2-DICHLOROETHANE-D4
   2T   TOLUENEN-D8
   3T   4-BFB

 No.   Time   Scan    Tmass/Smass      Tarea/Sarea          Ref   Fit    Conc   Units

  1S    4.88   416                                           STD   0.87   100.0   %
  2S    7.23   667                                           STD   0.73   100.0   %
  3S   14.35  1429                                           STD   0.76   100.0   %
  1T    5.80   514      65./ 128.    395076./  145375.        1    0.74   103.7   %
  2T   10.78  1047      98./ 117.    802824./  752384.        3    0.72    88.7   %
  3T   17.68  1785      95./ 117.    408928./  752384.        3    0.70   100.1   %
```

DMBLK 5.0ML BLANK DAMES&MOORE + INTSTD/SURR EMV2.85
20-OCT-86 20:20:30 TIC MAXIMUM CURRENT=419542



EXTREL Quantitation Report

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Name:_____________________________   W.O.________________________________
Analyst:__________________________   Date:_______________________________
Reviewer:_________________________   Date:_______________________________
Comments:________________________________________________________________
         ________________________________________________________________


Library used:      SY:VOASUR
Data file name:    SY:DMBLK
Injection time:    20-OCT-86 20:20:30
Comments:
    5.0ML BLANK DAMES&MOORE + INTSTD/SURR EMV2.85
Dilution factor:        1.00

Library entries as follows:

    Standards:
   1S   BROMOCHLOROMETHANE
   2S   1,4-DIFLUOROBENZENE
   3S   CHLOROBENZENE-D5

    Targets:
   1T   1,2-DICHLOROETHANE-D4
   2T   TOLUENEN-D8
   3T   4-BFB

 No.    Time   Scan    Tmass/Smass      Tarea/Sarea        Ref    Fit    Conc   Units

  1S    4.88    416                                        STD   0.83   100.0   %
  2S    7.23    667                                        STD   0.73   100.0   %
  3S   14.37   1430                                        STD   0.84   100.0   %
  1T    5.82    515    65./ 128.   390792./   154686.        1   0.84    96.4   %
  2T   10.78   1047    98./ 117.   896432./   735152.        3   0.72   101.4   %
  3T   17.68   1787    95./ 117.   396616./   735152.        3   0.57    99.4   %
```

APPENDIX B

BORING LOGS

DAMES & MOORE
BORING LOG

CLIENT: Carrier
LOCATION: Syracuse, NY

BORING NO.: MW-1
SURFACE ELEV: 409.16'

DRILLING METHOD: Hollow-Stem Auger

SAMPLING METHOD: Split Spoon

DATE STARTED: 12/19/85

DATE FINISHED: 12/19/85

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			0	ML	Silt, little fine sand, (fill); brown
1	30	SS	1	FILL	
			2	ML	Silt, little fine sand, brown
2	42	SS	3		
			4	▤	Silty fine sand; trace clay, brown Top of screen at 4 feet
3	16	SS	5	▤	
			6	▤	
4	12	SS	7	▤	
			8	▤	
			9	SM ▤	
			10	▤	
5	13	SS	11	▤	
			12	▤	
			13	▤	Bottom of screen at 14 feet
			14	CL -- ML	Clay, little silt
6	17	SS	15		
			16		Boring terminated at a depth of 16.0 feet on 12/19/85.

EXPLANATION:

▤ SCREENED AREA

DAMES & MOORE
BORING LOG

CLIENT: Carrrier
LOCATION: Syracuse, NY

BORING NO.: MW-2
SURFACE ELEV: 404.46'

DRILLING METHOD: Hollow-Stem Auger

SAMPLING METHOD: Split Spoon

DATE STARTED: 12/19/85

DATE FINISHED: 12/19/85

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			0	-----	Asphalt, 1" Gravel, little fine sand and silt; brown
			1	GP	
			2		
1	23	SS	3		Silt, little fine sand grading to some fine sand, brown
			4	ML	
2	16	SS	5	▤	Top of screen at 5 feet
			6	▤	
3	14	SS	7	▤	Fine sand, little silt; brown
			8	▤	
			9	SM ▤	
			10	▤	
4	23	SS	11	▤	
			12	▤	
			13	ML -- ▤	Silt, little clay, trace fine sand; brown
5	7	SS	14	CL ▤	
			15		Bottom of screen at 15 feet
			16		
			17		
			18		
			19		
			20		Boring terminated at a depth of 20.0 feet on 12/19/85.

EXPLANATION:

▤ SCREENED AREA

DAMES & MOORE
BORING LOG

CLIENT: Carrier
LOCATION: Syracuse, NY

BORING NO.: MW-3S
SURFACE ELEV: 403.56'

DRILLING METHOD: Hollow-Stem Auger

SAMPLING METHOD: Split Spoon

DATE STARTED: 12/18/85

DATE FINISHED: 12/19/85

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			0	-----	1" Asphalt Silt, little fine sand, some fine sand layers; brown
			1		
			2	ML	
			3		
			4	▤	Top of screen at 4 feet
			5	▤	
			6	▤	Fine sand, little silt; brown
			7	SM ▤	
			8	▤	
			9	▤	
			10	▤	Silt, some clay, trace fine sand; brown
			11	ML ▤	
			12	▤	
			13	▤	
			14		Bottom of screen at 14 feet Boring terminated at a depth of 14.0 feet on 12/19/85. No samples taken. Boring was adjacent to MW-3D and assumed to have the same stratigraphy.

EXPLANATION:

▤ SCREENED AREA

DAMES & MOORE
BORING LOG

CLIENT: Carrier
LOCATION: Syracuse, NY

BORING NO.: MW-3D
SURFACE ELEV: 403.46'

DRILLING METHOD: Hollow-Stem Auger

SAMPLING METHOD: Split Spoon

DATE STARTED: 12/18/85

DATE FINISHED: 12/18/85

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			0	-----	1" Asphalt Silt, little fine sand, some fine sand layers; brown
1	12	SS	1		
			2		
			3	ML	
			4		
2	18	SS	5		
			6		Fine sand, little silt; brown
3	34	SS	7		
			8	SM	
4	23	SS	9		
			10		Silt, some clay, trace fine sand; brown
5	4	SS	11		
			12		
6	7	SS	13		
			14		
			15	ML	
7	6	SS	16		
			17		
			18		
			19		
			20		Fine sand and silt; brown
8	8	SS	21	SM -- ML	Top of screen at 22 feet
			22	▤	
			23	▤	
			24	▤	
			25	▤	Sand, little fine to medium gravel and silt; brown (this layer correspondsto till noted on other on-site boring logs)
			26	SM ▤	Bottom of screen at 27 feet
			27		Boring terminated at a depth of 27.o feet on 12/18/85.

EXPLANATION:

▤ SCREENED AREA

DAMES & MOORE
BORING LOG

CLIENT: Carrier
LOCATION: Syracuse, NY

BORING NO.: MW-4
SURFACE ELEV:404.46'

DRILLING METHOD:Hollow-Stem Auger

SAMPLING METHOD: Split Spoon

DATE STARTED: 12/19/85

DATE FINISHED: 12/19/85

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			0		Gravel, little fine sand and silt; brown (fill)
			1		
			2		
1	20	SS	3	GW -- GM	
			4		Top of screen at 5 feet
2	4	SS	5	▤	
			6	FILL ▤	
3	2	SS	7	▤	
			8	▤	
			9	▤	
			10	▤	
4	10	SS	11	▤	
			12	▤	
			13	▤	Silt, some clay, trace fine sand; brown
5	4	SS	14	ML ▤	Bottom of screen at 15 feet
			15		Boring terminated at a depth of 15 feet on 12/19/85.

EXPLANATION:

▤ SCREENED AREA

DAMES & MOORE
BORING LOG

CLIENT: Carrier
LOCATION: Syracuse, NY

BORING NO.: MW-5
SURFACE ELEV: 395.46'

DRILLING METHOD: 4 1/4" Hollow Stem Auger

SAMPLING METHOD: Split Spoon

DATE STARTED: 10/13/86

DATE FINISHED: 10/13/86

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			0	ML	Extremely moist, black sand-silt-clay fill with little gravel and wood fragments
1	13	SS	1	FILL	
			2	SM	Extremely moist to wet, reddish-brown fine to coarse sand, some silt, trace fine fine gravel, loose
			3	FILL	
2	10	SS	4		Top of screen at 5 feet
			5	ML	Extremely moist, gray sand-silt-clay with little fine gravel, medium stiff
3	5	SS	6		
			7		Extremely moist, black organic richsilt and fine sand, numerous roots and wood fragments
4	4	SS	8	ML	
			9		Extremely moist, black silt and fine to medium sand with organic debris, roots, wood chips, some bedding apparent
5		SS	10		
			11	SM	
6	4	SS	12		grading to fine sand, some silt, little organic debris, occasional dark stained beds, loose, slight tendency to liquify when disturbed
			13		
7	2	SS	14		Wet, grayish-brown silty clay
				CL	Bottom of screen at 15 feet
			15		Boring terminated at a depth of 15.0 feet on 10/13/86.

EXPLANATION:

▤ SCREENED AREA

DAMES & MOORE
BORING LOG

CLIENT: Carrier
LOCATION: Syracuse, NY

BORING NO.: MW-6
SURFACE ELEV: 404.68'

DRILLING METHOD: 4 1/4" Hollow Stem Auger

SAMPLING METHOD: Split Spoon

DATE STARTED: 10/13/86

DATE FINISHED: 10/13/86

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			0		Auger to 1' and began sampling at 1'
			1		Moist, reddish-brown silt with little fine gravel and occasional thin (<1"thick) sand lens, stiff, becoming very stiff below 3.0 feet
1	10	SS	2		
			3	ML	
2	24	SS	4		
			5		Top of screen at 5 feet
3	24	SS	6		
			7		
4	51	SS	8		Moist, reddish-brown, fine to medium sand, some silt, little to trace fine gravel, very dense in place
			9		
5	19	SS	10		grades at 9.0 feet to extremely moist with a slight tendency to liquify when disturbed, medium dense
			11	SM	grades to trace fine gravel below 11'
6	12	SS	12		grades to fine to coarse sand, some silt, occasional thin (<2") silt beds, medium dense
			13		
7	20	SS	14		grades to gray, very fine sand with some silt, dense
			15		Bottom of screen at 15 feet Boring terminated at a depth of 15.0 feet on 10/13/86.

EXPLANATION:

▤ SCREENED AREA