compound was identified, the minimum, maximum, and mean (arithmetic average) concentrations of the compound in ppbv. The target compounds identified fall into at least four categories: (1) those occurring in more than 70% of the samples tested, (2) those occurring in from 10% to 27% of the samples, (3) those occurring in less than 10% of the samples, and (4) those not identified in any of the 3-hour air samples at concentrations above their method detection limits. These results are summarized in Table 7-3.

Overall concentrations ranged from 0.01 ppbv for 1,1,2-trichloroethane and m-dichlorobenzene to 88.90 ppbv for m/p-xylene.

7.2 SITE RESULTS

Table 7-4 gives 3-hour ambient air concentrations by site code for the 38 target air toxics compounds. The overall site means range from 0.92 ppbv for C3IL to 5.34 for C6IL. Appendix tabulates the complete analytical results and includes the NMOC concentrations for each of the 3-hour air toxics samples. There appeared to be little correlation between the NMOC concentrations and the 38 target air toxics compound concentrations under investigation.

TABLE 7-3. FREQUENCY OF OCCURRENCE OF TARGET COMPOUNDS IN 3-HOUR AMBIENT AIR SAMPLES

Range for Frequency of Occurrence	Target Compounds	
100% to 70%	1,1,1-Trichloroethane	Carbon tetrachloride
	Benzene	Trichloroethylene
	Toluene	Ethylbenzene
	m/p-Xylene	Styrene/o-xylene
69% to 40%	1,3-Butadiene	Chloroprene
	Tetrachloroethylene	p-Dichlorobenzene
20% to >0%	Acetylene	Propylene
	Chloroethane	Bromomethane
	Methylene chloride	Chloroform
	1,2-Dichloropropane	Bromodichloromethane
	n-Octane/ t-1,3-dichloropropylene	cis-1,3-Dichloropropylene
	1,1,2-Trichloroethane	Chlorobenzene
	m-Dichlorobenzene	o-Dichlorobenzene
Zero	Vinyl chloride	Chloromethane
	trans-1,2-Dichloroethylene	1,1,-Dichloroethane
	Bromochloromethane	1,2-Dichloroethane
	Dibromochloromethane	Bromoform

TABLE 7-4. COMPOUND IDENTIFICATIONS WITH GC/MD BY SITE CODE

Site Code	Compound	Cases	Minimum ppbv	Maximum ppbv	Mean ppbv
C3IL	Acetylene	2	1.73	3.27	2.50
	1,3-Butadiene	1	0.05	0.05	0.05
	Chloroethane	1	0.05	0.05	0.05
	Bromomethane	1	0.07	0.07	0.07
	Methylene chloride	3	1.32	2.07	1.67
	Chloroprene	5	0.06	0.13	0.10
	1,1,1-Trichloroethane	9	0.75	3.13	1.41
	Carbon tetrachloride	10	0.13	0.15	0.14
	Benzene	10	0.25	2.44	1.19
	Trichloroethylene	8	0.14	0.74	0.43
	1,2-Dichloropropane	1	0.46	0.46	0.46
	Bromodichloromethane	1	0.08	0.08	0.08
	Toluene	10	0.24	6.59	2.81
	cis-1,3-Dichloropropylene	2	0.22	0.31	0.27
	Tetrachloroethylene	5	0.09	1.82	1.05
	Ethylbenzene	10	0.04	0.67	0.27
	m/p-Xylene	10	0.18	3.59	1.37
	Styrene/o-Xylene	10	0.06	1.09	0.43
	m-Dichlorobenzene	2	0	0.03	0.03
	p-Dichlorobenzene	3	0	0.84	0.37
	o-Dichlorobenzene	1	0	0.07	0.07
C6IL	Acetylene	2	1.75	17.33	9.54
	1,3-Butadiene	7	0.31	1.58	0.91
	Methylene chloride	1	2.78	2.78	2.78
	Chloroprene	7	0.03	1.30	0.35
	1,1,1-Trichloroethane	9	0.98	6.87	2.89
	Carbon tetrachloride	9	0.11	0.21	0.16
	Benzene	9	2.20	8.78	5.63
	Trichloroethylene	9	0.37	1.76	0.93
	1,2-Dichloropropane	3	1.04	1.64	1.34
	Toluene	9	9.05	54.31	19.52
	n-Octane/trans-1-3-dichloropropylene	1	1.53	1.53	1.53
	1,1,2-Trichloroethane	3	0.03	0.08	0.06
	Tetrachloroethylene	3	1.76	2.98	2.17
	Chlorobenzene	2	0.03	0.95	0.49
	Ethylbenzene	9	1.05	16.48	3.57
	m/p-Xylene	9	5.64	88.90	19.19
	Styrene/o-Xylene	9	1.80	18.64	5.24
	m-Dichlorobenzene	1	0.02	0.02	0.02
	p-Dichlorobenzene	4	0.82	1.21	1.08
	o-Dichlorobenzene	2	0.12	0.40	0.26
	Propylene	1	19.46	19.46	19.46

(Continued)

TABLE 7-4. (Continued)

Site Code	Compound	Cases	Minimum ppbv	Maximum ppbv	Mean ppbv
GRMI	1,3-Butadiene	7	0.10	0.96	0.52
	Chloroprene	3	0.10	0.13	0.12
	1,1,1-Trichloroethane	9	0.76	3.50	2.14
	Carbon tetrachloride	9	0.13	0.20	0.15
	Benzene	9	1.16	5.99	2.91
	Trichloroethylene	9	0.12	7.56	1.81
	1,2-Dichloropropane	2	0.07	1.14	0.61
	Toluene	9	2.07	17.79	7.92
	n-Octane/trans-1,3-dichloropropylene	1	1.87	1.87	1.87
	Tetrachloroethylene	6	0.07	0.38	0.21
	Chlorobenzene	1	0.04	0.04	0.04
	Ethylbenzene	9	0.41	2.17	0.97
	m/p-Xylene	9	2.07	11.83	5.42
	Styrene/o-Xylene	9	0.64	3.58	1.67
	p-Dichlorobenzene	3	0.21	0.67	0.35
	Propylene	1	9.58	9.58	9.58
MINY	1,3-Butadiene	8	0.14	0.54	0.31
	Chloroethane	2	0.74	1.49	1.12
	Bromomethane	1	0.05	0.05	0.05
	Methylene chloride	1	2.51	2.51	2.51
	Chloroprene	2	0.09	0.18	0.14
	Chloroform	1	0.09	0.09	0.09
	1,1,1-Trichloroethane	9	0.62	4.87	1.79
	Carbon tetrachloride	9	0.13	0.23	0.16
	Benzene	9	0.13	7.80	2.78
	Trichloroethylene	7	0.06	0.57	0.21
	Toluene	9	2.84	25.01	7.70
	n-Octane/trans-1,3-dichloropropylene	1	0.12	0.12	0.12
	cis-1,3-Dichloropropylene	1	0.25	0.25	0.25
	1,1,2-Trichloroethane	1	0.11	0.11	0.11
	Tetrachloroethylene	4	0.61	1.91	1.50
	Chlorobenzene	1	0.13	0.13	0.13
	Ethylbenzene	9	0.28	2.06	0.75
	m/p-Xylene	9	1.54	12.01	4.35
	Styrene/o-Xylene	9	0.14	4.55	1.51
	m-Dichlorobenzene	3	0.01	0.02	0.01
	p-Dichlorobenzene	5	0.16	1.41	0.64
	Propylene	5	3.41	14.19	6.96

(Continued)

TABLE 7-4. (Continued)

Site Code	Compound	Cases	Minimum ppbv	Maximum ppbv	Mean ppbv
MNY	Acetylene	4	1.02	8.69	4.47
	1,3-Butadiene	9	0.10	0.62	0.24
	Chloroethane	1	0.11	0.11	0.11
	Methylene chloride	1	1.87	1.87	1.87
	Chloroprene	5	0.08	0.52	0.28
	Chloroform	2	0.10	0.10	0.10
	1,1,1-Trichloroethane	9	0.56	1.79	1.03
	Carbon tetrachloride	9	0.14	0.17	0.15
	Benzene	9	0.94	4.18	1.88
	Trichloroethylene	7	0.03	0.22	0.12
	Toluene	9	2.01	13.38	5.10
	cis-1,3-Dichloropropylene	1	0.29	0.29	0.29
	1,1,2-Trichloroethane	1	0.11	0.11	0.11
	Tetrachloroethylene	7	1.07	4.85	3.01
	Chlorobenzene	1	0.20	0.20	0.20
	Ethylbenzene	9	0.19	1.24	0.50
	m/p-Xylene	9	1.16	6.86	2.83
	Styrene/o-Xylene	9	0.44	2.52	1.08
	m-Dichlorobenzene	2	0.01	0.03	0.02
	p-Dichlorobenzene	4	0.13	0.30	0.19
	o-Dichlorobenzene	2	0.23	0.30	0.27
	Propylene	4	2.39	6.22	3.75
NWNJ	1,3-Butadiene	7	0.08	0.96	0.32
	Methylene chloride	3	0.93	5.57	2.60
	Chloroprene	2	0.07	0.56	0.31
	1,1,1-Trichloroethane	9	0.49	2.57	1.33
	Carbon tetrachloride	9	0.13	0.21	0.15
	Benzene	9	0.92	5.98	2.47
	Trichloroethylene	7	0.11	1.95	0.80
	1,2-Dichloropropane	2	0.29	0.93	0.61
	Toluene	9	2.40	23.67	10.27
	n-Octane/trans-1,3-dichloropropylene	1	0.61	0.61	0.61
	cis-1,3-Dichloropropylene	1	0.92	0.92	0.92
	1,1,2-Trichloroethane	1	0.51	0.51	0.51
	Tetrachloroethylene	7	0.15	1.78	1.00
	Chlorobenzene	2	0.26	1.29	0.78
	Ethylbenzene	9	0.33	2.44	1.03
	m/p-Xylene	9	2.02	14.04	5.80
	Styrene/o-Xylene	9	0.66	5.06	1.91
	m-Dichlorobenzene	3	0.02	0.13	0.06
	p-Dichlorobenzene	4	0.08	2.54	0.71
	o-Dichlorobenzene	1	0.09	0.09	0.09

(Continued)

TABLE 7-4. (Continued)

Site Code	Compound	Cases	Minimum ppbv	Maximum ppbv	Mean ppbv
PLNJ	Acetylene	1	3.89	3.89	3.89
	1,3-Butadiene	4	0.14	0.46	0.31
	Bromomethane	1	0.06	0.06	0.06
	Methylene chloride	2	1.87	9.94	5.91
	Chloroprene	4	0.10	0.47	0.25
	1,1,1-Trichloroethane	9	0.28	2.04	1.02
	Carbon tetrachloride	9	0.13	0.17	0.15
	Benzene	9	0.49	3.48	1.91
	Trichloroethylene	4	0.16	0.47	0.27
	1,2-Dichloropropane	1	0.26	0.26	0.26
	Toluene	9	1.04	8.95	4.85
	cis-1,3-Dichloropropylene	2	0.30	0.71	0.51
	1,1,2-Trichloroethane	2	0.01	0.07	0.04
	Tetrachloroethylene	6	0.04	1.30	0.47
	Chlorobenzene	3	0.04	0.06	0.05
	Ethylbenzene	9	0.08	0.99	0.47
	m/p-Xylene	9	0.40	5.35	2.56
	Styrene/o-Xylene	9	0.18	1.89	1.06
	m-Dichlorobenzene	1	0.01	0.01	0.01
	p-Dichlorobenzene	5	0.05	1.86	0.73
	o-Dichlorobenzene	3	0.10	0.26	0.19
	Propylene	1	1.52	1.52	1.52

8.0 THREE-HOUR AIR TOXICS TECHNICAL NOTES

This section describes the equipment used to sample and analyze the 3-hour air toxics samples. Also described are sample handling procedures, sampler certification procedures, standards generation and instrument calibration procedures, compound identification procedures, GC/MS compound identification confirmation, quality assurance/quality control procedures, and data records for the 3-hour air toxics compounds.

8.1 SAMPLING EQUIPMENT AND INTERFACE

The sampling equipment for the 3-hour air toxics samples was the NMOC Monitoring Program sampling equipment described in Section 3.1. The original sample was collected as an integrated ambient air sample from 6:00 a.m. to 9:00 a.m. with a final sample pressure of about 16 psig. As stated above, after NMOC analysis the canister was bled to atmospheric pressure and allowed to stand at least 18 hours before being analyzed by GC/MD.

An interface system was designed and built by Radian Corporation to take a sample from the canister and inject it into the gas chromatograph for analysis.

Figure 8-1 shows the GC/MD system including the Sample Interface System, Analytical System, and Data System. The sample interface takes a 250-mL sample approximately from the canister, draws it through Trap Assembly 1 and condenses all the water and organic compounds, with the exception of methane, in the air sample drawn from the canister. Trap Assembly 1 is a cryogenic, liquid argon trap packed with glass beads. The cryogen is removed, and an electrical heater quickly heats Trap Assembly 1, vaporizing the water and organic compounds condensed from the canister sample.

8.2 THREE-HOUR AIR TOXICS SAMPLING SYSTEMS CERTIFICATION

The sampling systems used to collect 3-hour air toxics samples were certified for use per the specifications described in U.S. EPA Compendium of Methods TO-14.[16]

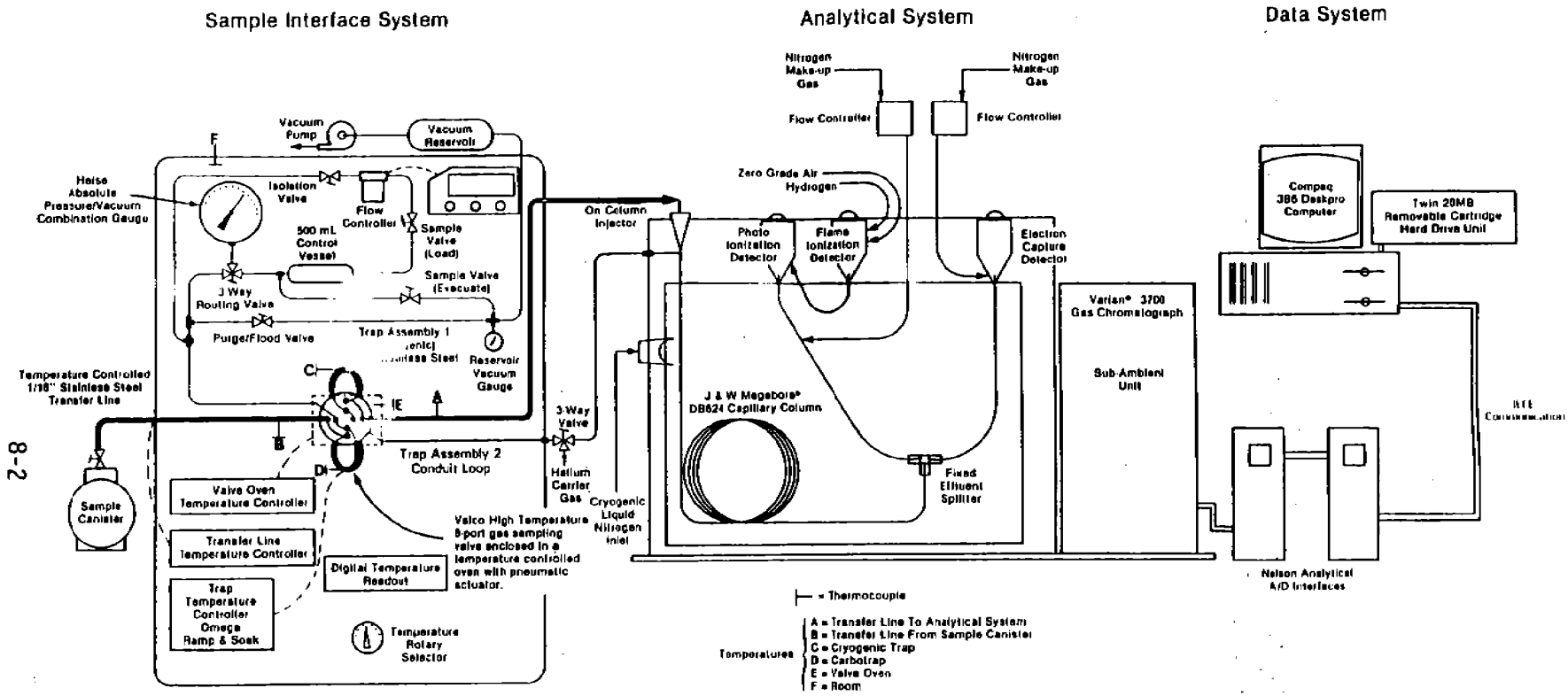


Figure 8-1. Gas chromatographic multidetector system.

8.2.1 Certification Blanks - Humidified Zero Air

Zero certification consisted of purging the sampler with cleaned, humidified air, followed by collecting a sample of the cleaned, dried air that had been humidified through the purged NMOC samplers for GC/MD analysis. The purpose of the wet purge was to help remove any adherent contaminants from the sampler. The chromatograms from these certification sample analyses were archived for each sampler. Results presented in Table 8-1 showed a range of 0.00 ppmC to 0.013 ppmC of NMOC, with an average of 0.006 ppmC. The sampling systems were determined to be very clean and showed no characteristics of additive bias.

8.2.2 Sampler Certification Selected Target Compound Challenge

Following the NMOC sampler blank certification, a challenge gas containing seven selected target compounds was passed through the samplers. The average concentration of the compounds in the challenge gas was 15.3 ppbv/species. Table 8-2 shows the average system percent bias calculated with the analysis of the challenge gas being used as a reference concentration.

System percent bias ranged from -6.4% to 3.2% with an overall average of 0.5 percent. The systems showed acceptable subtractive bias characteristics.

8.3 STANDARDS GENERATION

The GC/MD analytical equipment was calibrated daily with a gas mixture that averaged 5 ppbv of each of the 38 target compounds at 70% relative humidity.

The standard gas mixtures were generated by dynamic flow dilutions of Scott certified gas mixtures with cleaned, dried air that had been humidified with HPLC-grade water. The Scott gas mixtures were dry and contained in cylinders under pressure at a concentration of about 120 ppbv per compound for two of the standards, and about 500 ppbv for one of the standards. The concentration for each target gas in the 120 ppbv Scott cylinders was certified to ±5% with the exception of the bromoform which was certified to ±20 percent. The concentration for each target gas in the 500 ppbv Scott cylinder was certified to within ±10 percent.

TABLE 8-1. ZERO CERTIFICATION RESULTS

Canister Number	Canister Blank Date	Blank Sample Concentration (ppmC)	Sampler System Number	Sampler Zero Collection Date	Sampler Zero Sample (ppmC)	Difference (ppmC)
041	5-18-89	0.005	31	5-20-89	0.003	-0.002
104	5-18-89	0.002	22	5-20-89	0.007	0.005
902	5-18-89	0.005	27	5-20-89	0.000	-0.005
868	5-18-89	0.003	21	5-20-89	0.010	0.007
643	5-18-89	0.000	23	5-20-89	0.006	0.006
401	5-18-89	0.004	44	5-20-89	0.002	-0.002
180	5-18-89	0.016	17	5-20-89	0.013	-0.003
071	5-18-89	0.000	1	5-20-89	0.009	0.009
				Average	0.006	

TABLE 8-2. CHALLENGE CERTIFICATION RESULTS

System Number		Percent	
		Average Compound Recovery	System Bias
31		101.9	1.9
22		101.6	1.6
27		103.2	3.2
21		93.6	-6.4
23		102.9	2.9
44		100.4	0.4
17		98.9	-1.1
1		101.7	1.7
	Average	100.5	0.5

Figure 8-2 diagrams the dynamic flow dilution apparatus. One Scott cylinder contains 18 of the air toxics target compounds, a second Scott cylinder contains 11 target compounds, while the third Scott cylinder contains the remaining 9 target compounds. The three Scott cylinders were connected to Channels 1, 2, and 3 of the flow dilution apparatus. The fourth channel was connected to a cylinder of zero-grade air by way of a catalytic oxidizer that oxidized all of the hydrocarbon material in the zero-grade air. The four mass flow controllers were set to flow rates that would give the desired final concentration of the diluted gas.

The cleaned zero-grade air was partially humidified by bubbling part of the air stream through HPLC-grade water contained in a stainless steel canister. The wet and dry rotameters and all the mass flow controllers were calibrated with a bubble flowmeter before being connected to the flow dilution apparatus. All of the flow controllers, the connecting lines, and the mixing flask were heat traced to reduce adsorption of the target compounds. The temperature controller that regulated electrical current flow to the heat tracing was set for 100°C.

To generate a standard, the following procedure is used. The canister into which the standard is being mixed is connected to the flow dilution apparatus at the bellows valve shown in Figure 8-2. The temperature controller for the heat tracing is activated. The mass flow controllers are then set for the appropriate flow rate to obtain the desired dilution and the humidifier, lines, and mixing flask are purged for at least 10 minutes. The isolation valve is closed and the vacuum pump turned on. The tubing, the canister, and the absolute pressure gauge are all evacuated initially to about 5 mm Hg absolute pressure. The vacuum pump is then isolated from the system and the isolation valve is opened to the diluted gas mixture. The standard mixture fills the canister at a controlled rate until atmospheric pressure is reached. The canister with the diluted standard is disconnected from the flow dilution apparatus and allowed to equilibrate before use. The barometric pressure and room temperature are also recorded.

In order to calculate the exact concentration of each target compound in the standard mixture, a correction is made for the residual gas in the

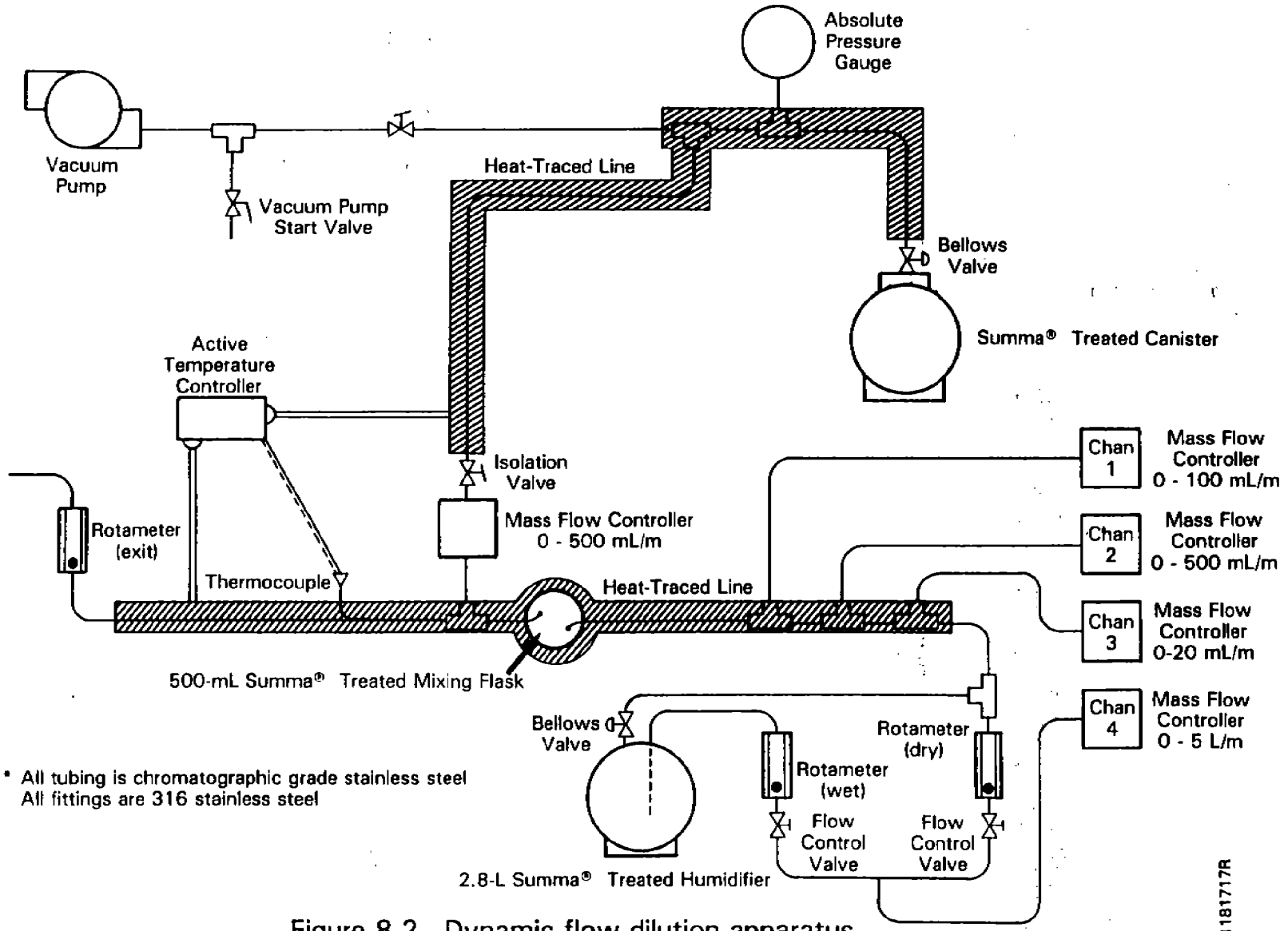


Figure 8-2. Dynamic flow dilution apparatus.

standard canister before the filling with the diluted gas is begun. A correction also is made for the water vapor added to the dilution air.

8.4 CALIBRATION ZERO AND SPAN

Most of the compound quantitation is performed with the calibrated response of the FID detector. For purposes of compound identification and quantitation (when there may be interference on the FID detector) it is also necessary to calibrate the PID and ECD responses. Initial calibration curves for each compound were generated on all three detectors with calibration standards at 1, 5, and 10 ppbv. In addition to the usual response (area counts) versus concentration curves, response times and response ratios for PID/FID and ECD/FID were determined for each target compound.

8.5 GAS CHROMATOGRAPH/MULTIDETECTOR ANALYSIS AND COMPOUND IDENTIFICATION

A Varian® 3700 gas chromatograph, configured with a PID in series with an FID and an ECD operating in parallel, performed the air toxics analyses. Fused silica was used for the detector-to-detector connections. The Air Toxics Multiple Detector System is shown in Figure 8-3 and diagrams the effluent splitter and multidetectors connected to the end of the Megabore® DB-624 capillary column.

The entire GC/MD system is shown in Figure 8-1, including the sample interface, the gas chromatograph/multidetector analytical system, and the data handling system. Sample volumes for the GC/MD analyses were about 250-mL.

Compound identification was performed using measured retention times and ratios of PID/FID and ECD/FID responses. The analyst's skill and experience was also needed in making a judgment about the presence or absence of a target compound because of the variability of response times, and the presence of interfering compounds.

8.6 GAS CHROMATOGRAPH/MASS SPECTROMETER ANALYSIS AND COMPOUND IDENTIFICATION CONFIRMATION

Fourteen of the 3-hour air toxics samples were analyzed by GC/MS for compound identification confirmation following completion of the GC/MD analyses. So that the sensitivity of the GC/MS compared favorably with that of the GC/MD, the GC/MS was operated in the multiple ion detection (MID) mode,

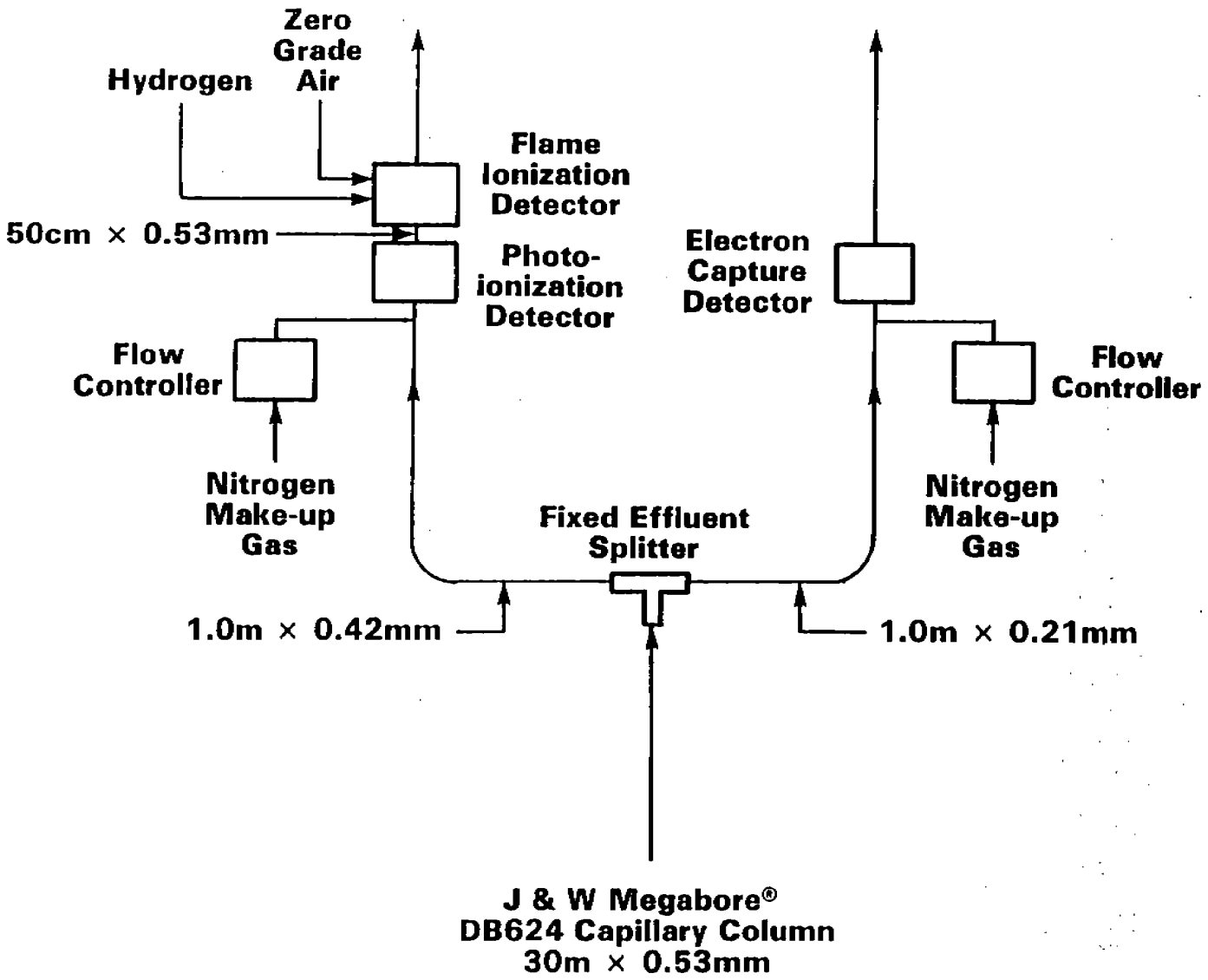


Figure 8-3. Air toxics multiple detector system.

and the sample volume was about 500-mL (compared to 250-mL for the GC/MD analyses).

No comparison of the quantitative results for GC/MS and GC/MD was made, because the purpose of the GC/MS analyses was compound identification confirmation only. This comparison is discussed below in Section 8.7.4.

8.7 QA/QC DATA

Quality assurance and quality control in the 3-hour air toxics data included a determination of method detection limits (MDL) for both the GC/MD and the GC/MS analytical methods.

One of the objectives of the UATMP was to make the MDLs as low as possible, recognizing that the lower MDLs may increase the number of false positive or false negative identifications. Other quality measures reported here involved analytical precision results from repeated analyses, and sampling and analysis precision from duplicate samples. Accuracy was assessed for both the GC/MD and GC/MS using external audits supplied by the EPA-QAD.

8.7.1 GC/MD and GC/MS Minimum Detection Limits

MDLs for the GC/MD and GC/MS analytical systems used in this study are given in Table 8-3. MDLs for the GC/MD analytical system are estimated from the minimum area count that reflects approximately three times noise for every compound and are based on a sample approximately 250-mL in volume. The sample volume for the GC/MS system was about 500-mL. The GC/MS was operated in the MID mode, which detected specific ions representative of the 38 air toxics target compounds.

8.7.2 Repeated Analyses

Repeated analyses were performed on seven site samples by GC/MD. The analyses were performed on consecutive days with at least 24 hours between removing samples from the canister. From these analyses there were 70 cases in which a concentration for a target compound was found in both replicate analyses. Statistics for these data are summarized in Table 8-4, showing the overall minima, maxima, and means of the mean concentrations, standard deviations, coefficients of variation, and absolute percent differences for the 55 replicate pairs. The absolute percent difference averages 8.542%, which is excellent agreement.

TABLE 8-3. METHOD DETECTION LIMITS FOR 3-HOUR AIR TOXICS COMPOUNDS

Compound	GC/MD MDL ppbv	GC/MS MDL ppbv
Acetylene	1.00	-*
Propylene	0.10	0.40
Chloromethane	0.20	0.56
Vinyl chloride	0.20	0.44
1,3-Butadiene	0.10	0.57
Bromomethane	0.20	0.25
Chloroethane	0.10	0.38
Methylene chloride	0.11	0.31
trans-1,2-Dichloroethylene	0.04	0.39
1,1-Dichloroethane	0.04	0.53
Chloroprene	0.06	0.57
Bromochloromethane	0.01	0.48
Chloroform	0.01	0.27
1,1,1-Trichloroethane	0.01	0.70
Carbon tetrachloride	0.01	0.37
1,2-Dichloroethane	0.04	0.59
Benzene	0.04	0.34
Trichloroethylene	0.01	0.37
1,2-Dichloropropane	0.04	0.44
Bromodichloromethane	0.01	0.22
trans-1,3-Dichloropropylene	0.04	0.50
Toluene	0.02	0.50
n-Octane	0.03	0.29
cis-1,3-Dichloropropylene	0.04	0.80
1,1,2-Trichloroethane	0.02	0.22
Tetrachloroethylene	0.07	0.32
Dibromochloromethane	0.01	0.25
Chlorobenzene	0.02	0.57
Ethylbenzene	0.02	0.72
m/p-Xylene	0.04	0.46
Styrene/o-Xylene	0.02	--
Styrene	-	0.46
o-Xylene	-	0.39
Bromoform	0.01	0.27
1,1,2,2-Tetrachloroethane	0.01	0.37
m-Dichlorobenzene	0.02	0.28
p-Dichlorobenzene	0.09	0.56
o-Dichlorobenzene	0.02	0.37

*Below mass spectrometry range.

TABLE 8-4. 3-HOUR TOXICS REPLICATE ANALYSES BY GC/MD

Statistics	Minimum	Maximum	Overall Mean
Mean Concentration, ppbv	0.050	21.055	2.445
Standard Deviation, ppbv	-0.686	0.594	-0.016
Percent Coefficient of Variation	-43.889	7.421	-0.347
Absolute Percent Difference	0.000	62.069	9.118

The percent coefficients of variation are plotted against the replicate sample means in Figure 8-4 and show that the largest contributions to the overall variance occurs in the samples having means less than 2 ppbv.

Table 8-5 lists the cases in which a target compound was found in only one of the replicate analyses. For all cases, the concentration was below 1.0 ppbv, which suggests that the variability of the analyses at the lower concentration levels may explain in part why one compound was seen in one replicate analysis, but not in the other. Although the list of single compound identifications is not long, no pattern to the behavior emerges.

8.7.3 Duplicate Sample Results

Fourteen duplicate 3-hour ambient air samples were analyzed by GC/MD for the 38 target compounds. Summary precision results are given in Table 8-6 in terms of mean concentration and concentration range in ppbv. Other precision statistics are given in terms of standard deviation, percent coefficients of variation, and absolute percent difference. The data in Table 8-6 are accumulated over all compounds and site locations.

The percent coefficients of variation ranged from -64.282% to 101.015%, averaging -0.814 percent. These data are also plotted in Figure 8-5 and show that the larger values of percent coefficient of variation are at the duplicate mean concentrations below 2 ppbv.

Table 8-7 also shows that the imprecision is also compound specific. Mean absolute percent difference for m-dichlorobenzene is 142.857%; the concentration range is 0.01 ppbv to 0.06 ppbv. For the other selected compounds in Table 8-7, the absolute percent difference means ranged from 0.433% to 57.464 percent. The precision for the 3-hour air toxics compounds is good with an overall average absolute percent difference of 12.9 percent.

Table 8-8 lists the compounds that were identified in only one of the duplicate sample analyses. Except for one case, the concentration was below 1.0 ppbv for the compound identified in only one duplicate sample analysis. It may be argued that some of the identifications were false positives, but such an hypothesis is not reasonable for cases in which the concentration was greater than 1.0 ppbv. In the case of p-dichlorobenzene, a concentration of 1.14 ppbv was verified on the chromatographic traces for one of the duplicates, and was completely absent on the traces for the other duplicate.

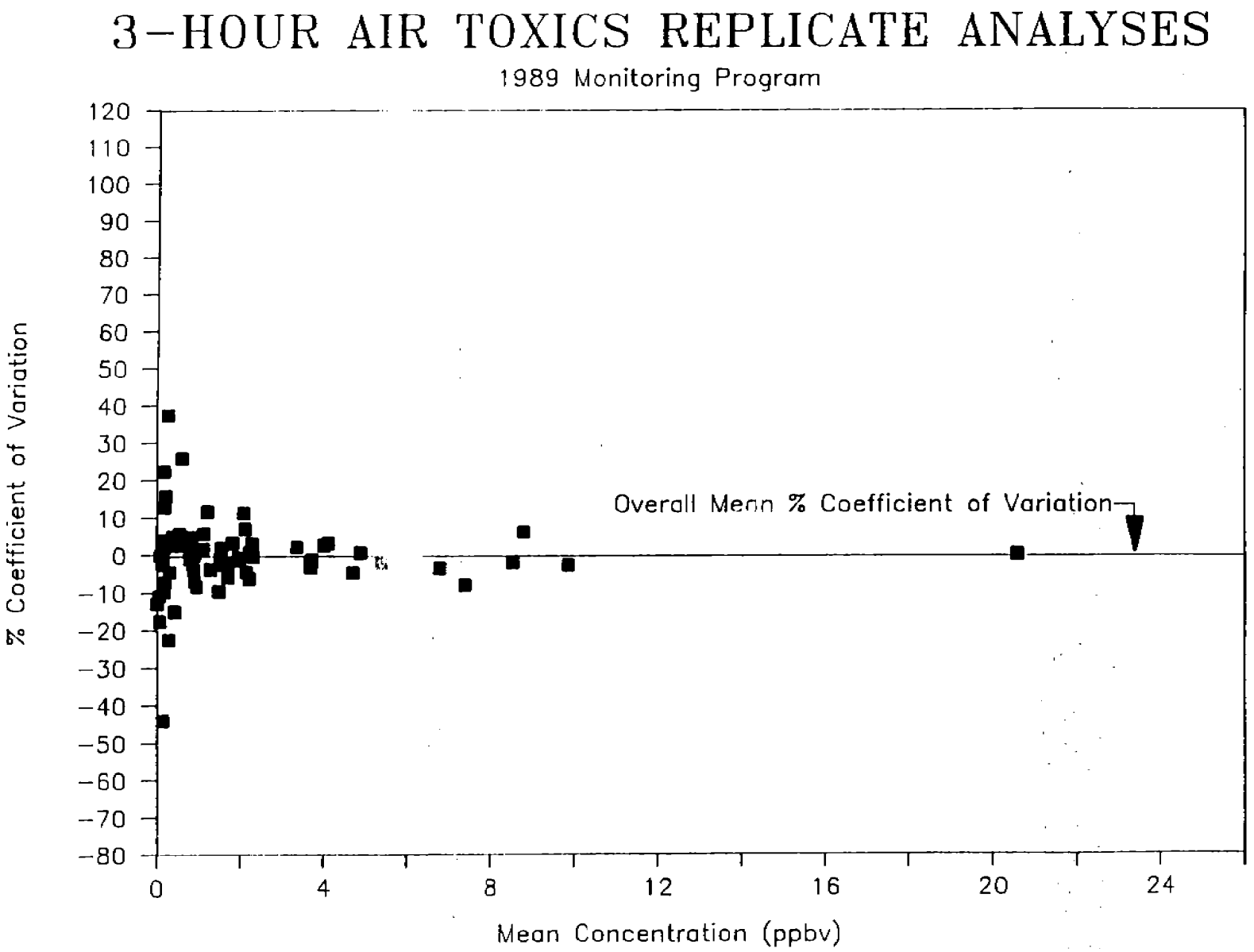


Figure 8-4. Percent coefficient of variation of 3-hour air toxics replicate analyses as a function of mean concentration.

TABLE 8-5. GC/MD COMPOUND IDENTIFICATIONS IN ONLY ONE REPLICATE ANALYSIS

Compound	Concentration ppbv	Radian ID
Chloroprene	0.05	2348 R2
Trichloroethylene	0.60	2314 R2
Trichloroethylene	0.04	2284 R2
cis-1,3-Dichloropropylene	0.25	2348 R2
1,1,2-Trichloroethane	0.06	2388 R2
Tetrachloroethylene	0.53	2093 R2
Tetrachloroethylene	0.73	2314 R2
Chlorobenzene	0.27	2284 R2
Chlorobenzene	0.04	2093 R1
Chlorobenzene	0.03	2314 R2
m-Dichlorobenzene	0.01	2169 R1
m-Dichlorobenzene	0.02	2388 R2
m-Dichlorobenzene	0.02	2348 R2
p-Dichlorobenzene	0.97	2348 R2
p-Dichlorobenzene	0.08	2169 R2
o-Dichlorobenzene	0.09	2169 R2

TABLE 8-6. THREE-HOUR AIR TOXICS DUPLICATE SAMPLE ANALYSES BY GC/MD

Statistics	Minimun	Maximum	Overall Mean
Mean Concentration, ppbv	0.035	21.380	2.370
Standard Deviation, ppbv	-0.721	0.481	-0.027
Percent Coefficient of Variation	-64.282	101.015	-0.814
Absolute Percent Difference	0.000	142.857	11.149

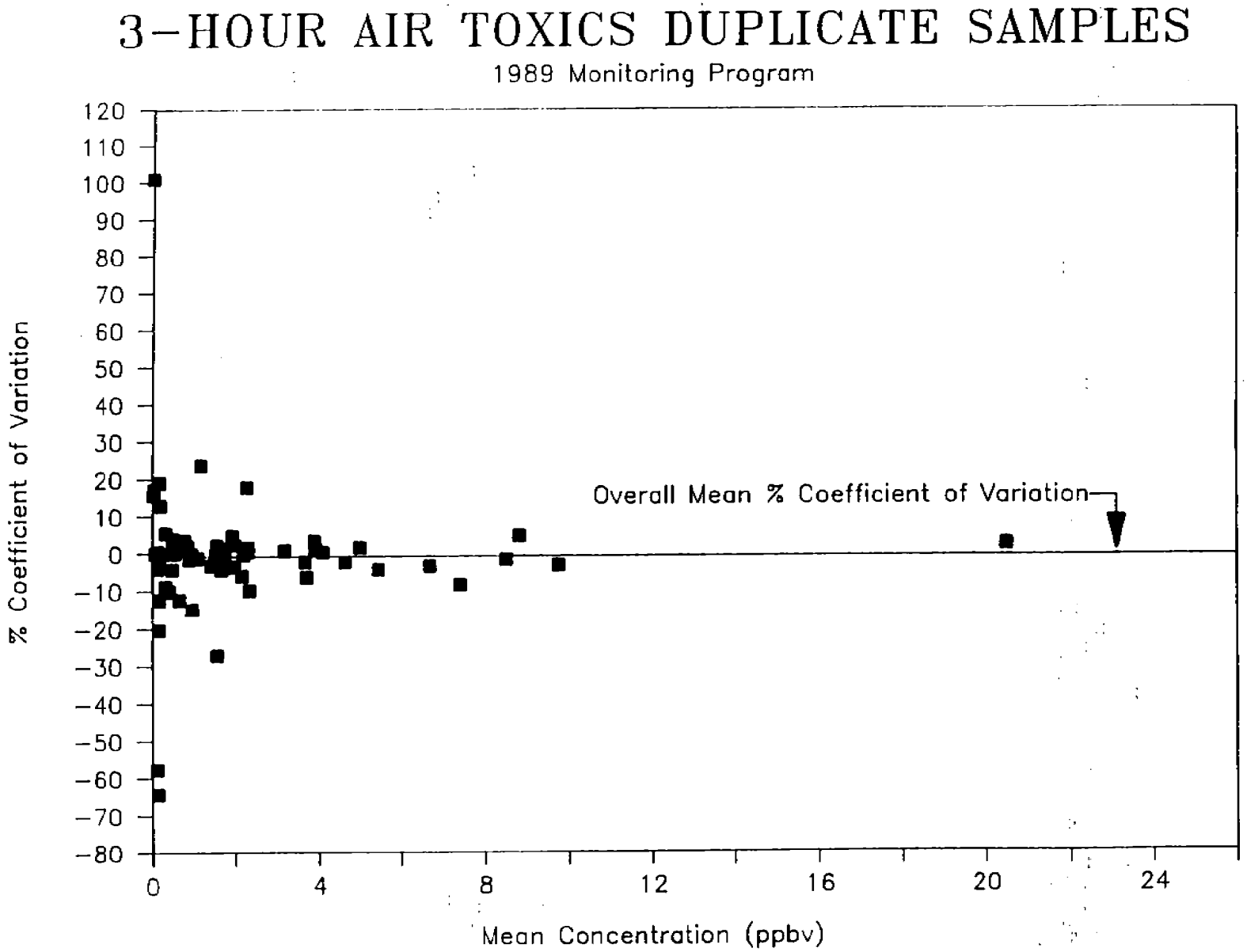


Figure 8-5. Percent coefficient of variation of 3-hour air toxics duplicate samples as a function of mean concentration.

TABLE 8-7. GC/MD 3-HOUR AIR TOXICS DUPLICATE PRECISION BY COMPOUND

Compound	Cases	Mean SD	Mean % CV	Mean Absolute % Diff
Propylene	1	0.014	0.306	0.433
1,3-Butadiene	6	-0.011	-4.854	7.470
Methylene chloride	3	0.125	0.336	3.826
Chloroprene	3	-0.061	-40.633	57.464
1,1,1-Trichloroethane	7	-0.034	-2.736	4.930
Carbon tetrachloride	7	-0.005	-3.349	4.966
Benzene	7	-0.074	-1.640	5.427
Trichloroethylene	5	0.051	6.542	21.230
Toluene	7	0.005	-0.091	3.785
Tetrachloroethylene	1	0.410	17.909	25.328
Chlorobenzene	1	0.007	15.713	22.[illegible]22
Ethylbenzene	7	-0.017	-0.271	3.[illegible]98
m/p-Xylene	7	-0.180	-1.934	3.667
Styrene/o-Xylene	7	-0.025	2.997	7.440
m-Dichlorobenzene	1	0.035	101.015	142.857
p-Dichlorobenzene	2	-0.223	-13.540	19.149

TABLE 8-8. SINGLE COMPOUND IDENTIFICATIONS OF GC/MD DUPLICATE SAMPLE ANALYSES

Compound	Concentration ppbv	Radian ID
Bromomethane	0.05	2348 D
Chloroprene	0.10	2314 D
Chloroprene	0.18	2388 D
Chloroprene	0.05	2349 D
Trichloroethylene	0.34	2315 D
cis-1,3-Dichloropropylene	0.71	2315 D
1,1,2-Trichloroethane	0.71	2315 D
1,1,2-Trichloroethane	0.05	2388 D
Tetrachloroethylene	0.22	2094 D
Tetrachloroethylene	0.78	2314 D
Chlorobenzene	0.03	2389 D
Chlorobenzene	0.13	2285 D
Chlorobenzene	0.07	2315 D
m-Dichlorobenzene	0.03	2284 D
p-Dichlorobenzene	1.14	2348 D
o-Dichlorobenzene	0.12	2389 D

8.7.4 GC/MS Confirmation Results

Based on 14 GC/MS analyses of the 3-hour air toxics samples, one from each site location, the following results were obtained. The GC/MS analyses confirmed 93.90% of the GC/MD analyses. The results are summarized in Table 8-9, showing 31.56% positive GC/MD-positive GC/MS confirmation, 2.52% positive GC/MD-negative GC/MS confirmation, 3.57% negative GC/MD-positive GC/MS comparisons, and 62.39% negative GC/MD-negative GC/MS comparisons.

8.7.5 External Audits

Bi-monthly external audits were conducted for the 3-hour air toxics and UATMP by the EPA-QAD. The results for Audit No. 3, performed prior to the 3-hour air toxics analysis period,[8] are reported in Table 8-10. The bias ranged from -32 to +18%, averaging -7.3% bias, for the GC/MD analyses. The bias ranged from -46 to -2.9%, averaging -20.5% bias, for the GC/MS analyses. These are excellent results for the GC/MD analytical procedure since that instrument was to be used for primary quantification in the UATMP. The GC/MS analyses are done primarily for compound identification confirmation of the GC/MD identification.

8.8 DATA RECORDS

Data records for the 3-hour air toxics samples include:

- NMOC concentration of the sample;
- Copies of the gas chromatographic trace for FID, PID, and ECD;
  - Response data on Bernoulli disk;
  - Retention time for each compound; and
  - Area counts for each detector.

In addition, daily calibration response factors are recorded on magnetic disk along with the retention time and area counts for each compound in the standard.

TABLE 8-9. COMPOUND IDENTIFICATION CONFIRMATION

GC/MD versus GC/MS comparison	Cases	Percentage
Positive GC/MD - Positive GC/MS	150	31.51
Positive GC/MD - Negative GC/MS	12	2.52
Negative GC/MD - Positive GC/MS	17	3.57
Negative GC/MD - Negative GC/MS	297	62.39
Total	476	99.99%

Total compound identification confirmation = 31.51% + 62.39% = 93.90%

TABLE 8-10. 3-HOUR AIR TOXICS AUDIT NO. 3 RESULTS FOR GC/MD AND GC/MS

	Spiked ppb	Reported ppb		Bias %	
		GC/MD	GC/MS	GC/MD	GC/MS
Vinyl chloride	4.1	3.5	3.4	-15	-17
Bromomethane	8.5	7.2	7.0	-15	-18
Carbon tetrachloride	3.8	3.7	3.4	-2.6	-10
Methylene chloride	3.9	4.6[1]	2.1	18	-46
Chloroform	3.4	3.4	3.3	0.0	-2.9
1,1,1-Trichloroethane	8.1	7.7	6.7	-4.9	-17
1,2-Dichloroethane	4.3	3.6	3.1	-16	-28
Benzene	4.4	3.8	2.9	-14	-34
Toluene	8.2	7.7	6.5	-6.1	-21
Tetrachloroethylene	3.8	2.6	3.1	-32	-18
Chlorobenzene	8.1	8.4	6.9	3.7	-15
o-Xylene	7.2	7.8	6.7	8.3	-6.9
Trichloroethylene	4.4	3.7	3.3	-16	-25
1,2-Dichloropropane	8.0	7.6	6.7	-5.0	-16
Ethylbenzene	7.5	5.8	5.0	-23	-33

[1]Interference reported.

$$\text{Bias, \%} = \frac{\text{reported - actual}}{\text{actual}} \times 100$$

9.0 RECOMMENDATIONS, THREE-HOUR AIR TOXICS PROGRAM

The following recommendations derive from the 3-hour Air Toxics Monitoring Program. The studies (Sections 9.1, 9.2, and 9.3) are directed toward areas in which additional information is needed to validate further the air toxics results. The final suggestion (Sections 9.4) is designed to give additional information useful to the project without increasing the overall number of analyses.

9.1 COMPOUND STABILITY STUDIES

Compound stability in this context refers to whether the apparent concentration of a compound in a sample taken from a canister is changing over time. The apparent change in concentration may result from a chemical reaction of the compound while it is in the canister, or result from a change in the gas phase concentration caused by adsorption of the compound on the interior canister surfaces.

A study needed to investigate this phenomenon would take several canisters--at least three from each initial concentration--ranging in target compound concentration from zero to 20 ppbv. The canisters would be analyzed 24 hours after mixing, 72 hours after mixing, 30 days after mixing, and 60 days after mixing to determine any concentration changes. It is also recommended that the same concentrations be mixed in canisters, but that equilibration times of 7 days and 30 days be assigned before the first samples are drawn from the canisters to determine the effect of equilibration time on the concentration samples withdrawn from the canisters.

9.2 CANISTER CLEANUP STUDIES

The present canister cleanup procedure has not been studied in sufficient detail to determine the amount of carryover for each of the air toxics compounds. Experience has shown[3,9,15] that the present cleanup procedure is satisfactory so long as a period less than a week elapses between sampling and analysis.

A study needs to be conducted to determine the effects of:

- Additional pressurization/vacuum cycles on cleanup;
- Heating the canisters during cleanup;

- Vacuum holding time during cleanup; and
- Holding time between cleanup and sampling

on the carryover for each air toxics target compound.

The present canister cleanup procedure is described in Section 3.3.2 and consists of three vacuum/pressurization cycles with cleaned, dried air that has been humidified. These cycles are followed by a final vacuum step to 5 mm Hg vacuum. Preliminary measurements[15] have indicated that after this cleaning procedure has been completed, there may be sufficient organic compounds still adsorbed on the canister interior surfaces to be desorbed and measured in the 0.05 to 0.50 ppbv range, especially for long holding times.

9.3 SAMPLER CERTIFICATION

Blank and challenge certification of all samplers used to collect ambient air samples on which GC/MD analyses are to be performed should be continued. This certification ensures that the sampler is not changing the actual organic compound concentration of the ambient air being sampled, either by adding or removing target compounds.

9.4 REPLICATE AND DUPLICATE ANALYSES

In future studies, replicate analyses on the duplicate samples are recommended. In this way it would be possible to separate sampling precision from analytical precision.

10.0 REFERENCES

1. Compendium Method TO-12, "Determination of Non-Methane Organic Compounds (NMOC) in Ambient Air Using Cryogenic Pre-Concentration and Direct Flame Ionization Detection (PDFID)," Quality Assurance Division, Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, Research Triangle Park, NC, 27711, May 1988.

2. Radian Corporation. 1989 Nonmethane Organic Compound Monitoring and Three-Hour Urban Air Toxics Monitoring Programs, Work Plan and Quality Assurance Project Plan. DCN No. 88-262-045-67. Prepared for the U.S. Environmental Protection Agency, Research Triangle Park, NC. EPA Contract No. 68D80014, August 7, 1989.

3. McAllister, Robert A., Phyllis L. O'Hara, Wendy H. Moore, Dave-Paul Dayton, Joann Rice, Robert F. Jongleux, Raymond G. Merrill, Jr., Joan T. Bursey, "1988 Nonmethane Organic Compound and Urban Air Toxics Monitoring Program. Final Report. Volume I. Nonmethane Organic Compound and Three-Hour Air Toxics Monitoring Program." Radian Corporation, DCN No. 88-262-045-25. Prepared for Dr. Harold G. Richter, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC, 27709, EPA Contract No. 68D80014, December 1988.

4. Radian Corporation. 1987 Nonmethane Organic Compound and Air Toxics Monitoring Programs. Final Report Volume 1 - Hydrocarbons, U.S. Environmental Protection Agency, Research Triangle Park, NC. EPA-450/4-88-011. August 19, 1988.

5. McAllister, R. A., R. F. Jongleux, D-P Dayton, P. L. O'Hara, and D. E. Wagoner (Radian Corporation). Nonmethane Organic Compound Monitoring. Final Report. Prepared for U.S. Environmental Protection Agency, Research Triangle Park, NC. EPA Contract No. 68-02-3889, July 1987.

6. McAllister, R. A., D-P, Dayton and D. E. Wagoner (Radian Corporation). Nonmethane Organic Compound Monitoring. Final Project Report. Prepared for U.S. Environmental Protection Agency, Research Triangle Park, NC. EPA Contract No. No. 68-02-3889, January 1986.

7. Radian Corporation. Nonmethane Organic Compounds Monitoring Assistance for Certain States in EPA Regions III, IV, V, VI, and VII, Phase II. Final Project Report. Prepared for the U.S. Environmental Protection Agency, Research Triangle Park, NC. EPA Contract No. 38-02-3513, February 1985.

8. Radian Corporation. Proposed Diurnal Nonmethane Organic Compound Sampling Plan. DCN No. 88-262-045-11. Prepared for U.S. Environmental Protection Agency, Research Triangle Park, NC. EPA Contract No. 68D80014. September 30, 1988.

9. McAllister, R. A., Radian Corporation. Letter and Proposal, entitled "Wet Zero Study", to Frank F. McElroy, Quality Assurance Division, Environmental Systems Monitoring Laboratory, U.S. Environmental Protection Agency, Research Triangle Park, NC. November 15, 1988.

10. Radian Corporation. Urban Air Toxics Monitoring Program. Third Quarterly Report. Second Quarter 1988. DCN No. 88-262-045-08. Prepared for Office of Air Quality Planning and Standards, U. S. Environmental Protection Agency, Research Triangle Park, NC. August 31, 1988.

11. McAllister, Robert A., Phyllis L. O'Hara, Denny E. Wagoner, Dave-Paul Dayton, Robert F. Jongleux, "1987 Nonmethane Organic Compound and Air Toxics Monitoring Program. Volume I, Final Report, Radian Corporation, DCN No. 88-203-080-03-05, prepared for Dr. Harold G. Richter, Office of Air Quality and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC, 27711, April 1988.

12. "1988 U.S. EPA Region III Nonmethane Organic Compound Monitoring," Maryland Department of the Environment, Air Management Administration, Baltimore, Maryland 21224.

13. "1987 U.S. EPA Region III Nonmethane Organic Compounds Monitoring," Maryland Department of the Environment, Air Management Administration, Baltimore, Maryland 21224 (November 16,1988).

14. Telecon. Erdman, Ted, U.S. EPA Region III, with McAllister, R. A., Radian Corporation, June 19, 1989. Verification of AIRS Nos. for NMOC Monitoring Sites for Region III, 1987 and 1988 Programs. Discussed apparent problems with Arlington, VA, monitoring data.

15. McAllister, Robert A., Memorandum to Vinson L. Thompson, Frank F. McElroy, U.S. Environmental Protection Agency, AREAL, "Vince Thompson Canister Cleanup Study Results," dated July 10, 1989.

16. Compendium Method TO-14, "The Determination of Volatile Organic Compounds (VOCs) in Ambient Air Using SUMMA® Passivated Canister Sampling and Gas Chromatographic Analysis," Quality Assurance Division, Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, May 1988.

450/4-90-011

APPENDICES

APPENDIX A: SAMPLING SITES FOR 1989 NMOC MONITORING PROGRAM

APPENDIX B: CRYOGENIC PRECONCENTRATION AND DIRECT FLAME IONIZATION DETECTION (PDFID) METHOD

APPENDIX C: 1989 NMOC MONITORING PROGRAM SITE DATA

APPENDIX D: 1989 NMOC MONITORING PROGRAM INVALIDATED AND MISSING SAMPLES

APPENDIX E: PDFID INTEGRATOR PROGRAMMING INSTRUCTIONS

APPENDIX F: 1989 NMOC DAILY CALIBRATION DATA

APPENDIX G: 1989 NMOC IN-HOUSE QUALITY CONTROL SAMPLES

APPENDIX H: MULTIPLE DETECTOR SPECIATED THREE-HOUR SITE DATA SUMMARIES

APPENDIX A

SAMPLING SITES FOR 1989 NMOC MONITORING PROGRAM

TABLE A-1. 1989 NMOC AND THREE-HOUR AIR TOXICS MONITORING PROGRAM SITES.

Site No.	U.S. EPA Region	City	Radian Site Code	SAROAD Number	AIRS Number	3-Hr Air Toxics
1	II	New York, NY (Mabel Dean)	MNY	33-4680-059	36-061-0010	Yes
2		New York, NY (P.S. 59)	M1NY	33-4680-056	36-061-0056	Yes
3		Newark, NJ (St. Charles St)	NWNJ	31-3480-011	34-013-0011	Yes
4		Plainfield, NJ (W 3rd and E Bergan)	PLNJ	31-4300-001	34-035-1001	Yes
5	IV	Montgomery, AL (Dickinson Dr)	MGAL		01-101-0008	No
6		Lexington, KY	LXKY	18-2300-012	21-067-0012	No
7		Raleigh, NC (E. Millbrook)	RLNC	32-4000-014	37-183-0014	No
8	V	Chicago, IL (90th Floor Sears)	C3IL	14-1220-042	17-031-0042	Yes
9		Chicago, IL (CTA Franklin)	C6IL	14-1220-063	17-031-0063	Yes
10		Grand Rapids, MI (Monroe, NW)	GRMI	23-1820-020	26-081-0020	Yes
11	VI	Dallas, TX (Hinton St)	DLTX	45-1310-069	48-113-0069	No
12		El Paso, TX (Rim Road)	ELTX	45-1700-037	48-141-0037	No
13		Beaumont, TX (Lamar U)	BMTX	45-0030-009	48-245-0009	No
14		Houston, TX (Mae Dr)	H1TX	45-2560-034	48-201-1034	No
15	VII	St. Louis, MO (Clark St Parking)	S2MO	26-4280-072	29-510-0072	No
16	IX	Alpine, CA (W. Victoria Dr)	ALCA	05-6820-006	06-073-1006	No
17		El Cajon, CA (Redwood Ave)	ELCA	05-2220-003	06-073-0003	No
18		Long Beach, CA (N L.B. Blvd)	LBCA	05-4100-002	06-037-4002	No
19		Reseda, CA (Gault St)	RSCA	05-4200-001	06-037-1201	No
20		Sacramento, CA (1309 T St)	S3CA	[a]	06-067-0010	No
21		Sacramento, CA (Sac-Del Paso)	S4CA	05-6580-006	06-067-0006	No
22		Fremont, CA (Chapel Way)	FECA	05-2780-001	06-001-1001	No
23		Bakersfield, CA (Chester Ave)	BACA	05-0520-004	06-029-0004	No

[a]SAROAD number has not been assigned to this site.

cah.158f

DATE 11/02/89
AMP380

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION: 09

STATE (06): CALIFORNIA

SITE ID : 06-001-1001 CITY (26000): FREMONT
CITY POPULATION : 131,945 COUNTY (001): ALAMEDA CO
AQCR POPULATION : 5,179,784 AQCR (0301): SAN FRANCISCO BAY AREA
DATE ESTABLISHED: / / LAND USE (1): RESIDENTIAL
DATE TERMINATED : / / LOCATION SETTING (2): SUBURBAN
SITE ADDR: 40733 CHAPEL WAY., FREMONT
URBAN AREA (7400): SAN JOSE, CA
SUPPORTING AGENCY (004): BAY AREA AIR QUALITY MANAGEMENT DISTRICT
COMMENTS: ARB CODE NO 60-336 ACTIVE 8-70
SITE-USER-INFO: NO2 DATA FROM THIS SITE BEFORE 1/1/80 HAVE A POSITIVE BIAS OF 14%.

LATITUDE : 37:32:08 N UTM EASTING : 591812
LONGITUDE: 121:57:39 W DIFF. GMT : 08
UTM ZONE : 10 ELEVATION ABOVE MSL: 24 M
UTM NORTHING: 4154589 RECORD LAST UPDATED: 89/10/26
HQ EVAL DATE: / / LAST REQ EVAL : 80/01/12
DISTANCE CITY: COMPASS SECTOR :
HC IND: MET DATA : N
MSA (5775): OAKLAND, CA

PARAMETER : 43102 ATTAIN-STATUS :
POC : 1 ANALYZ-LAB : 908
MONITOR-TYPE : 3 COLLECT-LAB : 908
MT-EFF-DATE : 88/06/10 REPORT-ORG :
REF-METHOD : RO-EFFECT-DATE : / /
REF-METH-DATE : / /
SAMPLING-BEGAN : 88/06/10
SAMPLING-ENDED : / /
AUDIT-DATE : / /
DAYS-EXCLUDED :
PROJECT-CLASS :
ACT-TAKEN/REASON: /
DOMINANT-SOURCE :
MEAS-SCALE :
MONITORING-OBJ :
SITING-CRITERIA :
SITING-CRIT-DATE : / /
PROBE-HEIGHT :
MONITOR-COMMENTS : SPECIAL STUDY OF NON-METHANE ORGANIC COMPOUND

PARAMETER : 43102 ATTAIN-STATUS :
POC : 2 ANALYZ-LAB : 908
MONITOR-TYPE : 3 COLLECT-LAB : 908
MT-EFF-DATE : 88/06/13 REPORT-ORG :
REF-METHOD : RO-EFFECT-DATE : / /
REF-METH-DATE : / /
SAMPLING-BEGAN : 88/06/13
SAMPLING-ENDED : / /
AUDIT-DATE : / /
DAYS-EXCLUDED :
PROJECT-CLASS :
ACT-TAKEN/REASON: /
DOMINANT-SOURCE :
MEAS-SCALE :
MONITORING-OBJ :
SITING-CRITERIA :
SITING-CRIT-DATE : / /
PROBE-HEIGHT :
MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY/CANISTER AS POC1

PARAMETER : 43102 ATTAIN-STATUS :
POC : 3 ANALYZ-LAB : 908
MONITOR-TYPE : 3 COLLECT-LAB : 908
MT-EFF-DATE : 88/06/23 REPORT-ORG :
REF-METHOD : RO-EFFECT-DATE : / /
REF-METH-DATE : / /
SAMPLING-BEGAN : 88/06/23
SAMPLING-ENDED : / /
AUDIT-DATE : / /
DAYS-EXCLUDED :
PROJECT-CLASS :
ACT-TAKEN/REASON: /
DOMINANT-SOURCE :
MEAS-SCALE :
MONITORING-OBJ :
SITING-CRITERIA :
SITING-CRIT-DATE : / /
PROBE-HEIGHT :
MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY DIFFERENT CANISTER AS 1

SITE ID : 06-029-0004 CITY (05526): BAKERSFIELD
CITY POPULATION : 105,735 COUNTY (029): KERN CO
AQCR POPULATION : 2,082,850 AQCR (031): SAN JOAQUIN VALLEY
DATE ESTABLISHED: / / LAND USE (1): RESIDENTIAL
DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
SITE ADDR: ROOM 309, 225 CHESTER AVE., BAKERSFIELD
URBAN AREA (0680): BAKERSFIELD, CA
SUPPORTING AGENCY (001): CALIFORNIA AIR RESOURCES BOARD
COMMENTS: ARB #1500203 ACTIVE 6-71. CONTAINS DATA FROM 003F01 PER IM & RL.
SITE-USER-INFO: NO2 DATA FROM THIS SITE BEFORE 1/1/[illegible] HAVE A POSITIVE BIAS OF 14%.

LATITUDE : 35:22:30 N UTM EASTING : 316348
LONGITUDE: 119:01:18 W DIFF. GMT : 08
UTM ZONE : 11 ELEVATION ABOVE MSL: 137 M
UTM NORTHING: 3916308 RECORD LAST UPDATED: 89/10/30
HQ EVAL DATE: / / LAST REQ EVAL : 80/07/01
DISTANCE CITY: COMPASS SECTOR :
HC IND: MET DATA :
MSA (0680): BAKERSFIELD,CA

DATE 11/02/89
AMP380

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION: 09

STATE (06): CALIFORNIA

SITE-ID: 06-029-0004

```
PARAMETER      : 43102          ATTAIN-STATUS  :                SAMPLING-BEGAN  : 87/07/17          DOMINANT-SOURCE  :
POC            : 1              ANALYZ-LAB     : 908            SAMPLING-ENDED  :   /  /            MEAS-SCALE       :
MONITOR-TYPE   : 3              COLLECT-LAB    : 908            AUDIT-DATE      :   /  /            MONITORING-OBJ   :
MT-EFF-DATE    : 87/07/17       REPORT-ORG     :                DAYS-EXCLUDED   :                   SITING-CRITERIA  :
REF-METHOD     :                RO-EFFECT-DATE :   /  /         PROJECT-CLASS   :                   SITING-CRIT-DATE :   /  /
REF-METH-DATE  :   /  /                                         ACT-TAKEN/REASON:     /             PROBE-HEIGHT     :
MONITOR-COMMENTS : SPECIAL STUDY OF NON-METHANE ORGANIC COMPOUND

PARAMETER      : 43102          ATTAIN-STATUS  :                SAMPLING-BEGAN  : 87/07/29          DOMINANT-SOURCE  :
POC            : 2              ANALYZ-LAB     : 908            SAMPLING-ENDED  :   /  /            MEAS-SCALE       :
MONITOR-TYPE   : 3              COLLECT-LAB    : 908            AUDIT-DATE      :   /  /            MONITORING-OBJ   :
MT-EFF-DATE    : 87/07/29       REPORT-ORG     :                DAYS-EXCLUDED   :                   SITING-CRITERIA  :
REF-METHOD     :                RO-EFFECT-DATE :   /  /         PROJECT-CLASS   :                   SITING-CRIT-DATE :   /  /
REF-METH-DATE  :   /  /                                         ACT-TAKEN/REASON:     /             PROBE-HEIGHT     :
MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY/CANISTER AS POC1

PARAMETER      : 43102          ATTAIN-STATUS  :                SAMPLING-BEGAN  : 87/08/13          DOMINANT-SOURCE  :
POC            : 3              ANALYZ-LAB     : 908            SAMPLING-ENDED  :   /  /            MEAS-SCALE       :
MONITOR-TYPE   : 3              COLLECT-LAB    : 908            AUDIT-DATE      :   /  /            MONITORING-OBJ   :
MT-EFF-DATE    : 87/08/13       REPORT-ORG     :                DAYS-EXCLUDED   :                   SITING-CRITERIA  :
REF-METHOD     :                RO-EFFECT-DATE :   /  /         PROJECT-CLASS   :                   SITING-CRIT-DATE :   /  /
REF-METH-DATE  :   /  /                                         ACT-TAKEN/REASON:     /             PROBE-HEIGHT     :
MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY DIFFERENT CANISTER AS 1

SITE ID          : 06-037-4002 CITY (43000): LONG BEACH          LATITUDE :  33:49:25 N  UTM EASTING        :  390002
CITY POPULATION  :    361,334  COUNTY (037): LOS ANGELES CO      LONGITUDE: 118:11:19 W  DIFF. GMT           : 08
AQCR POPULATION  : 11,201,922  AQCR   (024): METROPOLITAN LOS ANGELES  UTM ZONE : 11     ELEVATION ABOVE MSL:    6 M
DATE ESTABLISHED:   /  /       LAND USE (1): RESIDENTIAL       UTM NORTHING: 3743040   RECORD LAST UPDATED: 89/10/19
DATE TERMINATED :   /  /       LOCATION SETTING (2): SUBURBAN  MQ EVAL DATE:   /  /    LAST REQ EVAL       : 80/02/28
SITE ADDR: 3648 N. LONG BEACH BLVD., LONG BEACH                DISTANCE CITY:          COMPASS SECTOR      :
URBAN AREA (44800): LOS ANGELES-LONG BEACH, CA                 MC IND:                 MET DATA      /     : N
SUPPORTING AGENCY (061): SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  MSA (44800): LOS ANGELES-LONG BEACH, CA
COMMENTS: NFAN /EMSL TRACE METALS SITE
SITE-USER-INFO: NO2 DATA FROM THIS SITE BEFORE 1/1/80 HAVE A POSITIVE BIAS OF 14%.

PARAMETER      : 43102          ATTAIN-STATUS  :                SAMPLING-BEGAN  : 78/01/01          DOMINANT-SOURCE  :
POC            : 1              ANALYZ-LAB     :                SAMPLING-ENDED  :   /  /            MEAS-SCALE       :
MONITOR-TYPE   : 0              COLLECT-LAB    :                AUDIT-DATE      :   /  /            MONITORING-OBJ   :
MT-EFF-DATE    : 78/01/01       REPORT-ORG     :                DAYS-EXCLUDED   :                   SITING-CRITERIA  :
REF-METHOD     :                RO-EFFECT-DATE :   /  /         PROJECT-CLASS   : 01                SITING-CRIT-DATE :   /  /
REF-METH-DATE  :   /  /                                         ACT-TAKEN/REASON:     /             PROBE-HEIGHT     :   6 M
MONITOR-COMMENTS : 11
```

DATE 11/02/89
AMP380

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION: 09

STATE (06): CALIFORNIA

SITE ID : 06-073-0003 CITY (21712): EL CAJON
CITY POPULATION : 73,892 COUNTY (073): SAN DIEGO CO
AQCR POPULATION : 1,859,655 AQCR (029): SAN DIEGO
DATE ESTABLISHED: / / LAND USE (2): COMMERCIAL
DATE TERMINATED : / / LOCATION SETTING (2): SUBURBAN
SITE ADDR: 1155 REDWOOD AVE., EL CAJON
URBAN AREA (7320): SAN DIEGO, CA
SUPPORTING AGENCY (036): SAN DIEGO COUNTY AIR QUALITY MANAGEMENT DISTRICT
COMMENTS: ARB SITE NUMBER 8000131 MEM SITE 12-81

LATITUDE : 32:47:29 N UTM EASTING : 505462
LONGITUDE: 116:56:30 W DIFF. GMT : 08
UTM ZONE : 11 ELEVATION ABOVE MSL: 143 M
UTM NORTHING: 3627972 RECORD LAST UPDATED: 89/10/26
UQ EVAL DATE: / / LAST REQ EVAL : 80/01/28
DISTANCE CITY: COMPASS SECTOR :
MC IND: MET DATA : N
MSA (7320): SAN DIEGO, CA

PARAMETER	: 43102	ATTAIN-STATUS	:	SAMPLING-BEGAN	: 87/06/01	DOMINANT-SOURCE	:
POC	: 1	ANALYZ-LAB	: 908	SAMPLING-ENDED	: / /	MEAS-SCALE	:
MONITOR-TYPE	: 3	COLLECT-LAB	: 908	AUDIT-DATE	: / /	MONITORING-OBJ	:
MT-EFF-DATE	: 87/06/01	REPORT-ORG	:	DAYS-EXCLUDED	:	SITING-CRITERIA	:
REF-METHOD	:	RO-EFFECT-DATE	: / /	PROJECT-CLASS	:	SITING-CRIT-DATE	: / /
REF-METH-DATE	: / /			ACT-TAKEN/REASON	: /	PROBE-HEIGHT	:

MONITOR-COMMENTS : SPECIAL STUDY OF NON-METHANE ORGANIC COMPOUND

PARAMETER	: 43102	ATTAIN-STATUS	:	SAMPLING-BEGAN	: 87/06/03	DOMINANT-SOURCE	:
POC	: 2	ANALYZ-LAB	: 908	SAMPLING-ENDED	: / /	MEAS-SCALE	:
MONITOR-TYPE	: 3	COLLECT-LAB	: 908	AUDIT-DATE	: / /	MONITORING-OBJ	:
MT-EFF-DATE	: 87/06/03	REPORT-ORG	:	DAYS-EXCLUDED	:	SITING-CRITERIA	:
REF-METHOD	:	RO-EFFECT-DATE	: / /	PROJECT-CLASS	:	SITING-CRIT-DATE	: / /
REF-METH-DATE	: / /			ACT-TAKEN/REASON	: /	PROBE-HEIGHT	:

MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY/CANISTER AS POC1

PARAMETER	: 43102	ATTAIN-STATUS	:	SAMPLING-BEGAN	: 87/06/11	DOMINANT-SOURCE	:
POC	: 3	ANALYZ-LAB	: 908	SAMPLING-ENDED	: / /	MEAS-SCALE	:
MONITOR-TYPE	: 3	COLLECT-LAB	: 908	AUDIT-DATE	: / /	MONITORING-OBJ	:
MT-EFF-DATE	: 87/06/11	REPORT-ORG	:	DAYS-EXCLUDED	:	SITING-CRITERIA	:
REF-METHOD	:	RO-EFFECT-DATE	: / /	PROJECT-CLASS	:	SITING-CRIT-DATE	: / /
REF-METH-DATE	: / /			ACT-TAKEN/REASON	: /	PROBE-HEIGHT	: /

MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY DIFFERENT CANISTER AS 1

DATE 11/03/89
AMP380

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION: 09

STATE (06): CALIFORNIA

SITE ID : 06-037-1201 CITY (00000): NOT IN A CITY
CITY POPULATION : 1 COUNTY (037): LOS ANGELES CO
AQCR POPULATION : 11,201,922 AQCR (024): METROPOLITAN LOS ANGELES
DATE ESTABLISHED: / / LAND USE (2): COMMERCIAL
DATE TERMINATED : / / LOCATION SETTING (2): SUBURBAN
SITE ADDR: 18330 GAULT ST., RESEDA
URBAN AREA (0000): NOT IN AN URBAN AREA
SUPPORTING AGENCY (000): ********** DESCRIPTION UNKNOWN **********
COMMENTS: ARB SITE NUMBER 7000074) EMERGENCY EPISODE MONITOR
SITE-USER-INFO: NO2 DATA FROM THIS SITE BEFORE 1/1/80 HAVE A POSITIVE BIAS OF 14%.

LATITUDE : 34:11:58 N UTM EASTING : 358722
LONGITUDE: 118:32:00 W DIFF. GMT : 08
UTM ZONE : 11 ELEVATION ABOVE MSL: 226 M
UTM NORTHING: 3785137 RECORD LAST UPDATED: 88/07/28
MQ EVAL DATE: / / LAST REQ EVAL : / /
DISTANCE CITY: COMPASS SECTOR :
MC IND: MET DATA :
MSA (4480): LOS ANGELES-LONG BEACH, CA

SITE ID : 06-067-0006 CITY (64000): SACRAMENTO
CITY POPULATION : 275,741 COUNTY (067): SACRAMENTO CO
AQCR POPULATION : 1,598,583 AQCR (028): SACRAMENTO VALLEY
DATE ESTABLISHED: / / LAND USE (1): RESIDENTIAL
DATE TERMINATED : / / LOCATION SETTING (2): SUBURBAN
SITE ADDR: 2701 AVALON DR., SACRAMENTO
URBAN AREA (6920): SACRAMENTO, CA
SUPPORTING AGENCY (000): ********** DESCRIPTION UNKNOWN **********
COMMENTS: ARB SITE NUMBER 3400295 COMMENCED OPERATOIN 12-20-79 IN LITTLE
SITE-USER-INFO: LEAGUE SNACK SHACK

LATITUDE : 38:36:50 N UTM EASTING : 642206
LONGITUDE: 121:22:00 W DIFF. GMT : 08
UTM ZONE : 10 ELEVATION ABOVE MSL: 8 M
UTM NORTHING: 4274988 RECORD LAST UPDATED: 89/10/05
MQ EVAL DATE: / / LAST REQ EVAL : / /
DISTANCE CITY: COMPASS SECTOR :
MC IND: MET DATA :
MSA (6920): SACRAMENTO, CA

SITE ID : 06-073-1006 CITY (00000): NOT IN A CITY
CITY POPULATION : 1 COUNTY (073): SAN DIEGO CO
AQCR POPULATION : 1,859,655 AQCR (029): SAN DIEGO
DATE ESTABLISHED: / / LAND USE (1): RESIDENTIAL
DATE TERMINATED : / / LOCATION SETTING (3): RURAL
SITE ADDR: 2300 VICTORIA DR., ALPINE
URBAN AREA (0000): NOT IN AN URBAN AREA
SUPPORTING AGENCY (000): ********** DESCRIPTION UNKNOWN **********
COMMENTS: ARB SITE NUMBER 8000128 - START 1-77.

LATITUDE : 32:50:00 N UTM EASTING : 523398
LONGITUDE: 116:45:00 W DIFF. GMT : 08
UTM ZONE : 11 ELEVATION ABOVE MSL: 603 M
UTM NORTHING: 3632647 RECORD LAST UPDATED: 87/10/01
MQ EVAL DATE: / / LAST REQ EVAL : / /
DISTANCE CITY: COMPASS SECTOR :
MC IND: MET DATA :
MSA (7320): SAN DIEGO, CA

DATE 11/03/89
ANP380

EPA AERONETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION:

STATE (17): ILLINOIS

SITE ID : 17-031-0063 CITY (14000)
CITY POPULATION : 3,005,072 COUNTY (031)
AQCR POPULATION : 7,917,109 AQCR (067) ...POLITAN CHICAGO
DATE ESTABLISHED: 88/06/24 LAND USE (7): MOBILE
DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
SITE ADDR: CTA BUILDING, 320 S. MICHIGAN
URBAN AREA (1601): CHICAGO, IL-NORTHWESTERN IN
SUPPORTING AGENCY (001): ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
COMMENTS:

LATITUDE : 41:52:38 N
LONGITUDE: 87:38:04 W
UTM ZONE : 16
UTM NORTHING: 4636096
MQ EVAL DATE: / /
DISTANCE CITY:
MC IND: Y
MSA (1600): CHICAGO, IL

UTM EASTING : 447365
DIFF. GMT :
ELEVATION ABOVE MSL: 181 M
RECORD LAST UPDATED: 89/08/10
LAST REQ EVAL : / /
COMPASS SECTOR :
MET DATA :

DATE 11/02/09
AMP300

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION: 05

STATE (17): ILLINOIS

SITE ID : 17-031-0042 CITY (14000): CHICAGO
CITY POPULATION : 3,005,072 COUNTY (031): COOK CO
AQCR POPULATION : 7,917,109 AQCR (067): METROPOLITAN CHICAGO
DATE ESTABLISHED: / / LAND USE (2): COMMERCIAL
DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
SITE ADDR: MACKER AT ADAMS, SEARS TOWER
URBAN AREA (1601): CHICAGO, IL-NORTHWESTERN IN
SUPPORTING AGENCY (001): ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
COMMENTS:

LATITUDE : 41:52:43 N UTM EASTING : 447200
LONGITUDE: 87:38:11 W DIFF. GMT : 06
UTM ZONE : 16 ELEVATION ABOVE MSL:
UTM NORTHING: 4636300 RECORD LAST UPDATED: 89/10/26
MQ EVAL DATE: / / LAST REQ EVAL : / /
DISTANCE CITY: COMPASS SECTOR :
MC IND: MET DATA :
MSA (1600): CHICAGO, IL

PARAMETER : 43102 ATTAIN-STATUS : SAMPLING-BEGAN : 87/06/01 DOMINANT-SOURCE :
POC : 1 ANALYZ-LAB : 908 SAMPLING-ENDED : / / MEAS-SCALE :
MONITOR-TYPE : 3 COLLECT-LAB : 908 AUDIT-DATE : / / MONITORING-OBJ :
MT-EFF-DATE : 87/06/01 REPORT-ORG : DAYS-EXCLUDED : SITING-CRITERIA :
REF-METHOD : RO-EFFECT-DATE : / / PROJECT-CLASS : SITING-CRIT-DATE : / /
REF-METH-DATE : / / ACT-TAKEN/REASON: / PROBE-HEIGHT :
MONITOR-COMMENTS : SPECIAL STUDY OF NON-METHANE ORGANIC COMPOUND

PARAMETER : 43102 ATTAIN-STATUS : SAMPLING-BEGAN : 87/06/04 DOMINANT-SOURCE :
POC : 2 ANALYZ-LAB : 908 SAMPLING-ENDED : / / MEAS-SCALE :
MONITOR-TYPE : 3 COLLECT-LAB : 908 AUDIT-DATE : / / MONITORING-OBJ :
MT-EFF-DATE : 87/06/04 REPORT-ORG : DAYS-EXCLUDED : SITING-CRITERIA :
REF-METHOD : RO-EFFECT-DATE : / / PROJECT-CLASS : SITING-CRIT-DATE : / /
REF-METH-DATE : / / ACT-TAKEN/REASON: / PROBE-HEIGHT :
MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY/CANISTER AS POC1

PARAMETER : 43102 ATTAIN-STATUS : SAMPLING-BEGAN : 87/06/16 DOMINANT-SOURCE :
POC : 3 ANALYZ-LAB : 908 SAMPLING-ENDED : / / MEAS-SCALE :
MONITOR-TYPE : 3 COLLECT-LAB : 908 AUDIT-DATE : / / MONITORING-OBJ :
MT-EFF-DATE : 87/06/16 REPORT-ORG : DAYS-EXCLUDED : SITING-CRITERIA :
REF-METHOD : RO-EFFECT-DATE : / / PROJECT-CLASS : SITING-CRIT-DATE : / /
REF-METH-DATE : / / ACT-TAKEN/REASON: / PROBE-HEIGHT :
MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY DIFFERENT CANISTER AS 1

DATE 11/02/89
AMP380

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA REGION: 05

STATE (26): MICHIGAN

SITE ID : 26 081-0020 CITY (34000): GRAND RAPIDS
CITY POPULATION : 181,843 COUNTY (081): KENT CO
AQCR POPULATION : 2,448,634 AQCR (122): CENTRAL MICHIGAN
DATE ESTABLISHED: 80/04/24 LAND USE (3): INDUSTRIAL
DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
SITE ADDR: 1179 MONROE NW
URBAN AREA (3000): GRAND RAPIDS, MI
SUPPORTING AGENCY (006): GRAND RAPIDS DEPARTMENT OF AIR POLLUTION
COMMENTS: STARTED 4/80. NO2 DISCONTINUED 12/80.
SITE-USER-INFO: CONTINUOUS MONITOR INLETS AT 15 FT.

LATITUDE : 42:59:05 N UTM EASTING : 608300
LONGITUDE: 85:40:18 W DIFF. GMT : 05
UTM ZONE : 16 ELEVATION ABOVE MSL: 186 M
UTM NORTHING: 4759750 RECORD LAST UPDATED: 89/11/02
MQ EVAL DATE: / / LAST REQ EVAL : / /
DISTANCE CITY: COMPASS SECTOR :
MC IND: MET DATA :
MSA (3000): GRAND RAPIDS, MI

PARAMETER : 43102
POC : 1
MONITOR-TYPE : 3
MT-EFF-DATE : 89/06/05
REF-METHOD :
REF-METH-DATE : / /
MAIN-ST :
ANLYZ-LAB : 908
COLLECT-LAB : 006
REPORT-ORG : 908
RO-EFFECT-DATE : 89/06/05
SAMPLING-BEGAN : 89/06/05
SAMPLING-ENDED : 89/09/30
AUDIT-DATE : /
DAYS-EXCLUDED :
PROJECT-CLASS :
ACT-TAKEN/REASON: /
DOMINANT-SOURCE :
MEAS-SCALE :
MONITORING-OBJ : 2
SITING-CRITERIA :
SITING-CRIT-DATE : / /
PROBE-HEIGHT : 5 M
MONITOR-COMMENTS : OPERATED SUMMER '89 FOR O3 STUDY

DATE 11/02/89
AMP300

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION: 02

STATE (34): NEW JERSEY

SITE ID : 34-013-0011 CITY (51000): NEWARK
CITY POPULATION : 329,248 COUNTY (013): ESSEX CO
AQCR POPULATION : 16,525,701 AQCR (043): NEW JERSEY-NEW YORK-CONNECTICU
DATE ESTABLISHED: 85/01/01 LAND USE (3): INDUSTRIAL
DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
SITE ADDR: ST. CHARLES BETWEEN KOSSUTH & KAMERON ST
URBAN AREA (5601): NEW YORK, NY-NORTHEASTERN NJ
SUPPORTING AGENCY (001): NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTEC
COMMENTS: NJ #07142,START 1/1/85,RELOC.FROM 340130008, SITTING CRITERIA?
SITE-USER-INFO: PM10,DICHOT,START 3/15/86,ELEV.16';03 DOWN 5/16/86-3/25/87

LATITUDE : 40:43:37 N
LONGITUDE: 74:08:39 W
UTM ZONE : 18
UTM NORTHING: 4508570
MQ EVAL DATE: / /
DISTANCE CITY: 015
NC IND: Y
UTM EASTING : 572280
DIFF. GMT : 05
ELEVATION ABOVE MSL: 3 M
RECORD LAST UPDATED: 89/10/26
LAST REQ EVAL : 86/05/06
COMPASS SECTOR : SW
MET DATA : N
MSA (5640): NEWARK, NJ

PARAMETER : 43102
POC : 1
MONITOR-TYPE : 3
MT-EFF-DATE : 86/06/02
REF-METHOD :
REF-METH-DATE : / /
ATTAIN-STATUS :
ANALYZ-LAB : 908
COLLECT-LAB : 908
REPORT-ORG :
RO-EFFECT-DATE : / /
SAMPLING-BEGAN : 86/06/02
SAMPLING-ENDED : / /
AUDIT-DATE : / /
DAYS-EXCLUDED :
PROJECT-CLASS :
ACT-TAKEN/REASON: /
DOMINANT-SOURCE :
MEAS-SCALE :
MONITORING-OBJ :
SITING-CRITERIA :
SITING-CRIT-DATE : / /
PROBE-HEIGHT :
MONITOR-COMMENTS : SPECIAL STUDY OF NON-METHANE ORGANIC COMPOUND

PARAMETER : 43102
POC : 2
MONITOR-TYPE : 3
MT-EFF-DATE : 86/06/19
REF-METHOD :
REF-METH-DATE : / /
ATTAIN-STATUS :
ANALYZ-LAB : 908
COLLECT-LAB : 908
REPORT-ORG :
RO-EFFECT-DATE : / /
SAMPLING-BEGAN : 86/06/19
SAMPLING-ENDED : / /
AUDIT-DATE : / /
DAYS-EXCLUDED :
PROJECT-CLASS :
ACT-TAKEN/REASON: /
DOMINANT-SOURCE :
MEAS-SCALE :
MONITORING-OBJ :
SITING-CRITERIA :
SITING-CRIT-DATE : / /
PROBE-HEIGHT :
MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY/CANISTER AS POC1

PARAMETER : 43102
POC : 3
MONITOR-TYPE : 3
MT-EFF-DATE : 86/06/06
REF-METHOD :
REF-METH-DATE : / /
ATTAIN-STATUS :
ANALYZ-LAB : 908
COLLECT-LAB : 908
REPORT-ORG :
RO-EFFECT-DATE : / /
SAMPLING-BEGAN : 86/06/06
SAMPLING-ENDED : / /
AUDIT-DATE : / /
DAYS-EXCLUDED :
PROJECT-CLASS :
ACT-TAKEN/REASON: /
DOMINANT-SOURCE :
MEAS-SCALE :
MONITORING-OBJ :
SITING-CRITERIA :
SITING-CRIT-DATE : / /
PROBE-HEIGHT :

SITE ID : 34-035-1001 CITY (59190): PLAINFIELD
CITY POPULATION : 45,555 COUNTY (035): SOMERSET CO
AQCR POPULATION : 16,525,701 AQCR (043): NEW JERSEY-NEW YORK-CONNECTICU
DATE ESTABLISHED: / / LAND USE (1): RESIDENTIAL
DATE TERMINATED : / / LOCATION SETTING (2): SUBURBAN
SITE ADDR: WEST THIRD AND BERGEN STREETS
URBAN AREA (0000): NOT IN AN URBAN AREA
SUPPORTING AGENCY (000): ********** DESCRIPTION UNKNOWN **********
COMMENTS: NJ #20121,START 5/80; 1980 NE OXIDANT STUDY,03,NOX;SO2 DISC.5/2/83
SITE-USER-INFO: 03 AS A SLAMS 10/01/84, MEETS SITING

LATITUDE : 40:36:04 N
LONGITUDE: 74:26:31 W
UTM ZONE : 18
UTM NORTHING: 4494399
MQ EVAL DATE: / /
DISTANCE CITY:
NC IND:
UTM EASTING : 547218
DIFF. GMT : 05
ELEVATION ABOVE MSL: 18 M
RECORD LAST UPDATED: 89/10/26
LAST REQ EVAL : / /
COMPASS SECTOR :
MET DATA :
MSA (5015): MIDDLESEX-SOMERSET-HUNTERDON, NJ

DATE 11/02/89
AMP380

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION: 02

STATE (36): NEW YORK

SITE ID : 36-061-0010 CITY (51000): NEW YORK CITY
CITY POPULATION : 7,071,639 COUNTY (061): NEW YORK CO
AQCR POPULATION : 16,525,701 AQCR (043): NEW JERSEY-NEW YORK-CONNECTICU
DATE ESTABLISHED: / / LAND USE (1): RESIDENTIAL
DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
SITE ADDR: MABEL DEAN HIGH SCH.ANNEX, 240 2ND AVE.
URBAN AREA (5601): NEW YORK, NY-NORTHEASTERN NJ
SUPPORTING AGENCY (001): NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVA MSA (5600): NEW YORK, NY
COMMENTS: NYS#7093-05,START NO2,03 11/10/76,TSP 10[illegible],CO 10/3/77,SO2 2/5/78
SITE-USER-INFO: 1980 NECRMP,DISC.CO,03 5/25,RESTART 03 9/24/82,ELEV.TSP 102'

LATITUDE : 40:44:22 N UTM EASTING : 585607
LONGITUDE: 7[illegible] H DIFF. GMT : 05
UTM ZONE : 18 ELEVATION ABOVE MSL: 38 M
UTM NORTHING: 4510116 RECORD LAST UPDATED: 89/10/26
NQ EVAL DATE: 80/09/23 LAST REQ EVAL : 80/09/22
DISTANCE CITY: 003 COMPASS SECTOR : S
NC IND: Y MET DATA : Y

PARAMETER : 43102 ATTAIN-STATUS : SAMPLING-BEGAN : 86/06/02 DOMINANT-SOURCE :
POC : 1 ANALYZ-LAB : [illegible] SAMPLING-ENDED : / / MEAS-SCALE :
MONITOR-TYPE : 3 COLLECT-LAB : [illegible] AUDIT-DATE : / / MONITORING-OBJ :
MT-EFF-DATE : 86/06/02 REPORT-ORG : DAYS-EXCLUDED : SITING-CRITERIA :
REF-METHOD : RO-EFFECT-DATE : / / PROJECT-CLASS : SITING-CRIT-DATE : / /
REF-METH-DATE : / / ACT-TAKEN/REASON: / PROBE-HEIGHT :
MONITOR-COMMENTS : SPECIAL STUDY OF NON-METHANE ORGANIC COMPOUND

PARAMETER : 43102 ATTAIN-STATUS : SAMPLING-BEGAN : 86/06/05 DOMINANT-SOURCE :
POC : 2 ANALYZ-LAB : 908 SAMPLING-ENDED : / / MEAS-SCALE :
MONITOR-TYPE : 3 COLLECT-LAB : 908 AUDIT-DATE : / / MONITORING-OBJ :
MT-EFF-DATE : 86/06/05 REPORT-ORG : DAYS-EXCLUDED : SITING-CRITERIA :
REF-METHOD : RO-EFFECT-DATE : / / PROJECT-CLASS : SITING-CRIT-DATE : / /
REF-METH-DATE : / / ACT-TAKEN/REASON: / PROBE-HEIGHT :
MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAM[illegible] CANISTER AS POC1

PARAMETER : 43102 ATTAIN-STATUS : SAMPLING-BEGAN : 86/06/05 DOMINANT-SOURCE :
POC : 3 ANALYZ-LAB : 908 SAMPLING-ENDED : / / MEAS-SCALE :
MONITOR-TYPE : 3 COLLECT-LAB : 908 AUDIT-DATE : / / MONITORING-OBJ :
MT-EFF-DATE : 86/06/05 REPORT-ORG : DAYS-EXCLUDED : SITING-CRITERIA :
REF-METHOD : RO-EFFECT-DATE : / / PROJECT-CLASS : SITING-CRIT-DATE : / /
REF-METH-DATE : / / ACT-TAKEN/REASON: / PROBE-HEIGHT :
MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SA[illegible] DAY DIFFERENT CANISTER AS 1

SITE ID : 36-061-0056 CITY (51000): NEW YORK CITY
CITY POPULATION : 7,071,639 COUNTY (061): NEW YORK CO
AQCR POPULATION : 16,525,701 AQCR (043): NEW JERSEY-NEW YORK-CONNECTICU
DATE ESTABLISHED: 85/07/06 LAND USE (2): COMMERCIAL
DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
SITE ADDR: PS 59, 200 E. 57TH STREET, MANHATTAN
URBAN AREA (5601): NEW YORK, NY-NORTHEASTERN NJ
SUPPORTING AGENCY (001): NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVA MSA (5600): NEW YORK, NY
COMMENTS: NYS #7093-10, TSP, PM10 (DICHOT), SO2, NO2 MONITORING
SITE-USER-INFO: SITE TEMPORARILY DISC. 870622, ROOF REPAIRS, NO2 TO UPPER ROOF

LATITUDE : 40:45:33 N UTM EASTING : 587250
LONGITUDE: 73:57:59 H DIFF. GMT : 05
UTM ZONE : 18 ELEVATION ABOVE MSL: 15 M
UTM NORTHING: 4512310 RECORD LAST UPDATED: 89/10/26
NQ EVAL DATE: / / LAST REQ EVAL : 86/04/25
DISTANCE CITY: 001 COMPASS SECTOR : NE
NC IND: Y MET DATA : N

DATE 11/02/89
AMP380

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION: 06

STATE (48): TEXAS

SITE ID : 48-113-0069 CITY (19000): DALLAS
CITY POPULATION : 904,078 COUNTY (113): DALLAS CO
AQCR POPULATION : 3,257,903 AQCR (215): METROPOLITAN DALLAS-FORT WORTH
DATE ESTABLISHED: / / LAND USE (2): COMMERCIAL
DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
SITE ADDR: 1415 MINTON ST.
URBAN AREA (1920): DALLAS-FORT WORTH, TX
SUPPORTING AGENCY (000): ********** DESCRIPTION UNKNOWN **********
COMMENTS: FORMERLY MOCKINGBIRD SITE 451310044HD1
SITE-USER-INFO: OFFICES MOVED, NEW SITE NEEDED

LATITUDE : 32:49:34 N UTM EASTING : 699960
LONGITUDE: 96:51:50 W DIFF. GMT : 06
UTM ZONE : 14 ELEVATION ABOVE MSL: 125 M
UTM NORTHING: 3633840 RECORD LAST UPDATED: 89/10/26
HQ EVAL DATE: / / LAST REQ EVAL : 86/12/11
DISTANCE CITY: COMPASS SECTOR :
MC IND: Y MET DATA :
MSA (1920): DALLAS, TX

PARAMETER : 43102 ATTAIN-STATUS : SAMPLING-BEGAN : 86/07/14 DOMINANT-SOURCE :
POC : 1 ANALYZ-LAB : 908 SAMPLING-ENDED : / / MEAS-SCALE :
MONITOR-TYPE : 3 COLLECT-LAB : 908 AUDIT-DATE : / / MONITORING-OBJ :
MT-EFF-DATE : 86/07/14 REPORT-ORG : DAYS-EXCLUDED : SITING-CRITERIA :
REF-METHOD : RO-EFFECT-DATE : / / PROJECT-CLASS : SITING-CRIT-DATE : / /
REF-METH-DATE : / / ACT-TAKEN/REASON: / PROBE-HEIGHT :
MONITOR-COMMENTS : SPECIAL STUDY OF NON-METHANE ORGANIC COMPOUND

PARAMETER : 43102 ATTAIN-STATUS : SAMPLING-BEGAN : 86/07/30 DOMINANT-SOURCE :
POC : 2 ANALYZ-LAB : 908 SAMPLING-ENDED : / / MEAS-SCALE :
MONITOR-TYPE : 3 COLLECT-LAB : 908 AUDIT-DATE : / / MONITORING-OBJ :
MT-EFF-DATE : 86/07/30 REPORT-ORG : DAYS-EXCLUDED : SITING-CRITERIA :
REF-METHOD : RO-EFFECT-DATE : / / PROJECT-CLASS : SITING-CRIT-DATE : / /
REF-METH-DATE : / / ACT-TAKEN/REASON: / PROBE-HEIGHT :
MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY/CANISTER AS POC1

PARAMETER : 43102 ATTAIN-STATUS : SAMPLING-BEGAN : 86/07/17 DOMINANT-SOURCE :
POC : 3 ANALYZ-LAB : 908 SAMPLING-ENDED : / / MEAS-SCALE :
MONITOR-TYPE : 3 COLLECT-LAB : 908 AUDIT-DATE : / / MONITORING-OBJ :
MT-EFF-DATE : 86/07/17 REPORT-ORG : DAYS-EXCLUDED : SITING-CRITERIA :
REF-METHOD : RO-EFFECT-DATE : / / PROJECT-CLASS : SITING-CRIT-DATE : / /
REF-METH-DATE : / / ACT-TAKEN/REASON: / PROBE-HEIGHT :
MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY DIFFERENT CANISTER AS 1

SITE ID : 48-141-0037 CITY (24000): EL PASO
CITY POPULATION : 425,259 COUNTY (141): EL PASO CO
AQCR POPULATION : 660,806 AQCR (153): EL PASO-LAS CRUCES-ALAMOGORDO
DATE ESTABLISHED: / / LAND USE (2): COMMERCIAL
DATE TERMINATED : / / LOCATION SETTING ( ):
SITE ADDR: RIM RD. NEAR HAWTHORNE NEXT TO UT POLICE
URBAN AREA (2320): EL PASO, TX
SUPPORTING AGENCY (001): TEXAS AIR CONTROL BOARD
COMMENTS: CAMS 30

LATITUDE : 31:46:06 N UTM EASTING : 357899
LONGITUDE: 106:30:02 W DIFF. GMT : 07
UTM ZONE : 13 ELEVATION ABOVE MSL: 1143 M
UTM NORTHING: 3515551 RECORD LAST UPDATED: 89/10/26
HQ EVAL DATE: / / LAST REQ EVAL : 81/06/15
DISTANCE CITY: COMPASS SECTOR :
MC IND: Y MET DATA : Y
MSA (2320): EL PASO, TX

DATE 11/02/89
AMP380

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION: 06

STATE (48): TEXAS

SITE-ID: 48-141-0037

PARAMETER	: 43102	ATTAIN-STATUS	:	SAMPLING-BEGAN	: 86/06/02	DOMINANT-SOURCE	:	
POC	: 1	ANALYZ-LAB	: 908	SAMPLING-ENDED	: / /	MEAS-SCALE	:	
MONITOR-TYPE	: 3	COLLECT-LAB	: 908	AUDIT-DATE	: / /	MONITORING-OBJ	:	
MT-EFF-DATE	: 86/06/02	REPORT-ORG	:	DAYS-EXCLUDED	:	SITING-CRITERIA	:	
REF-METHOD	:	RO-EFFECT-DATE	: / /	PROJECT-CLASS	:	SITING-CRIT-DATE	: / /	
REF-METH-DATE	: / /			ACT-TAKEN/REASON	: /	PROBE-HEIGHT	:	

MONITOR-COMMENTS : SPECIAL STUDY OF NON-METHANE ORGANIC COMPOUND

PARAMETER	: 43102	ATTAIN-STATUS	:	SAMPLING-BEGAN	: 86/06/11	DOMINANT-SOURCE	:	
POC	: 2	ANALYZ-LAB	: 908	SAMPLING-ENDED	: / /	MEAS-SCALE	:	
MONITOR-TYPE	: 3	COLLECT-LAB	: 908	AUDIT-DATE	: / /	MONITORING-OBJ	:	
MT-EFF-DATE	: 86/06/11	REPORT-ORG	:	DAYS-EXCLUDED	:	SITING-CRITERIA	:	
REF-METHOD	:	RO-EFFECT-DATE	: / /	PROJECT-CLASS	:	SITING-CRIT-DATE	: / /	
REF-METH-DATE	: / /			ACT-TAKEN/REASON	: /	PROBE-HEIGHT	:	

MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY/CANISTER AS POC1

PARAMETER	: 43102	ATTAIN-STATUS	:	SAMPLING-BEGAN	: 86/06/09	DOMINANT-SOURCE	:	
POC	: 3	ANALYZ-LAB	: 908	SAMPLING-ENDED	: / /	MEAS-SCALE	:	
MONITOR-TYPE	: 3	COLLECT-LAB	: 908	AUDIT-DATE	: / /	MONITORING-OBJ	:	
MT-EFF-DATE	: 86/06/09	REPORT-ORG	:	DAYS-EXCLUDED	:	SITING-CRITERIA	:	
REF-METHOD	:	RO-EFFECT-DATE	: / /	PROJECT-CLASS	:	SITING-CRIT-DATE	: / /	
REF-METH-DATE	: / /			ACT-TAKEN/REASON	: /	PROBE-HEIGHT	:	

MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY DIFFERENT CANISTER AS 1

SITE ID	: 48-201-1034	CITY (35000): HOUSTON	
CITY POPULATION	: 1,595,138	COUNTY (201): HARRIS CO	
AQCR POPULATION	: 3,276,239	AQCR (216): METROPOLITAN HOUSTON-GALVESTON	
DATE ESTABLISHED	: / /	LAND USE (1): RESIDENTIAL	
DATE TERMINATED	: / /	LOCATION SETTING (2): SUBURBAN	

SITE ADDR: HARRIS ELEM SCH 1262 MAE DRIVE
URBAN AREA (3360): HOUSTON, TX
SUPPORTING AGENCY (001): TEXAS AIR CONTROL BOARD
COMMENTS: EMSL TRACE METALS SAMPLING SITE

LATITUDE	: 29:46:17 N	UTM EASTING	: 285150
LONGITUDE	: 95:13:20 W	DIFF. GMT	: 06
UTM ZONE	: 15	ELEVATION ABOVE MSL	: 14 M
UTM NORTHING	: 3295344	RECORD LAST UPDATED	: 89/10/26
NQ EVAL DATE	: / /	LAST REQ EVAL	: 83/03/03
DISTANCE CITY	:	COMPASS SECTOR	:
NC IND	: Y	MET DATA	: Y
MSA (3360): HOUSTON, TX			

PARAMETER	: 43102	ATTAIN-STATUS	:	SAMPLING-BEGAN	: 73/01/01	DOMINANT-SOURCE	:	
POC	: 1	ANALYZ-LAB	:	SAMPLING-ENDED	: / /	MEAS-SCALE	:	
MONITOR-TYPE	: 0	COLLECT-LAB	:	AUDIT-DATE	: / /	MONITORING-OBJ	:	
MT-EFF-DATE	: 73/01/01	REPORT-ORG	:	DAYS-EXCLUDED	:	SITING-CRITERIA	:	
REF-METHOD	:	RO-EFFECT-DATE	: / /	PROJECT-CLASS	: 01	SITING-CRIT-DATE	: / /	
REF-METH-DATE	: / /			ACT-TAKEN/REASON	: /	PROBE-HEIGHT	: 6 M	

MONITOR-COMMENTS : 11

DATE 11/02/89
AMP380

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION: 06 STATE (48): TEXAS

SITE-ID: 48-201-1034

PARAMETER	: 43102	ATTAIN-STATUS	:	SAMPLING-BEGAN	: 85/06/14	DOMINANT-SOURCE	:
POC	: 2	ANALYZ-LAB	: 908	SAMPLING-ENDED	: / /	MEAS-SCALE	:
MONITOR-TYPE	: 3	COLLECT-LAB	: 908	AUDIT-DATE	: / /	MONITORING-OBJ	:
MT-EFF-DATE	: 85/06/14	REPORT-ORG	:	DAYS-EXCLUDED	:	SITING-CRITERIA	:
REF-METHOD	:	RO-EFFECT-DATE	: / /	PROJECT-CLASS	:	SITING-CRIT-DATE	: / /
REF-METH-DATE	: / /			ACT-TAKEN/REASON	: /	PROBE-HEIGHT	:

MONITOR-COMMENTS : SPECIAL STUDY OF NON-METHANE ORGANIC COMPOUND

PARAMETER	: 43102	ATTAIN-STATUS	:	SAMPLING-BEGAN	: 85/06/20	DOMINANT-SOURCE	:
POC	: 3	ANALYZ-LAB	: 908	SAMPLING-ENDED	: / /	MEAS-SCALE	:
MONITOR-TYPE	: 3	COLLECT-LAB	: 908	AUDIT-DATE	: / /	MONITORING-OBJ	:
MT-EFF-DATE	: 85/06/20	REPORT-ORG	:	DAYS-EXCLUDED	:	SITING-CRITERIA	:
REF-METHOD	:	RO-EFFECT-DATE	: / /	PROJECT-CLASS	:	SITING-CRIT-DATE	: / /
REF-METH-DATE	: / /			ACT-TAKEN/REASON	: /	PROBE-HEIGHT	:

MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY/CANISTER AS POC 2

PARAMETER	: 43102	ATTAIN-STATUS	:	SAMPLING-BEGAN	: 85/06/18	DOMINANT-SOURCE	:
POC	: 4	ANALYZ-LAB	: 908	SAMPLING-ENDED	: / /	MEAS-SCALE	:
MONITOR-TYPE	: 3	COLLECT-LAB	: 908	AUDIT-DATE	: / /	MONITORING-OBJ	:
MT-EFF-DATE	: 85/06/18	REPORT-ORG	:	DAYS-EXCLUDED	:	SITING-CRITERIA	:
REF-METHOD	:	RO-EFFECT-DATE	: / /	PROJECT-CLASS	:	SITING-CRIT-DATE	: / /
REF-METH-DATE	: / /			ACT-TAKEN/REASON	: /	PROBE-HEIGHT	:

MONITOR-COMMENTS : NON-METHANE ORGANIC COMPOUND SAME DAY DIFFERENT CANISTER AS 2

SITE ID	: 48-245-0009	CITY (07000): BEAUMONT	
CITY POPULATION	: 118,102	COUNTY (245): JEFFERSON CO	
AQCR POPULATION	: 3,921,588	AQCR (106): SOUTHERN LOUISIANA-SOUTHEAST T	
DATE ESTABLISHED	: / /	LAND USE (1): RESIDENTIAL	
DATE TERMINATED	: / /	LOCATION SETTING (2): SUBURBAN	
LATITUDE	: 30:02:22 N	UTM EASTING	: 396381
LONGITUDE	: 94:04:29 W	DIFF. GMT	: 06
UTM ZONE	: 15	ELEVATION ABOVE MSL	: 13 M
UTM NORTHING	: 3323462	RECORD LAST UPDATED	: 89/10/26
NO EVAL DATE	: / /	LAST REQ EVAL	: / /
DISTANCE CITY	:	COMPASS SECTOR	:
MC IND	:	MET DATA	:

SITE ADDR: GEORGIA AT CUNNINGHAM, BEAUMONT, TX
URBAN AREA (0839): BEAUMONT, TX
SUPPORTING AGENCY (001): TEXAS AIR CONTROL BOARD
COMMENTS: MOVED FROM VIRGINIA ST
SITE-USER-INFO: LAMAR UNIVERSITY CAMPUS
MSA (0840): BEAUMONT-PORT ARTHUR, TX

PARAMETER	: 43102	ATTAIN-STATUS	:	SAMPLING-BEGAN	: 88/06/06	DOMINANT-SOURCE	:
POC	: 1	ANALYZ-LAB	: 908	SAMPLING-ENDED	: / /	MEAS-SCALE	:
MONITOR-TYPE	: 3	COLLECT-LAB	: 908	AUDIT-DATE	: / /	MONITORING-OBJ	:
MT-EFF-DATE	: 88/06/06	REPORT-ORG	:	DAYS-EXCLUDED	:	SITING-CRITERIA	:
REF-METHOD	:	RO-EFFECT-DATE	: / /	PROJECT-CLASS	:	SITING-CRIT-DATE	: / /
REF-METH-DATE	: / /			ACT-TAKEN/REASON	: /	PROBE-HEIGHT	:

MONITOR-COMMENTS : SPECIAL STUDY OF NON-METHANE ORGANIC COMPOUND

DATE 11/03/89
AMP300

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION: 04

STATE (01): ALABAMA

SITE ID : 01-101-0008 CITY (51000): MONTGOMERY
CITY POPULATION : 177,857 COUNTY (101): MONTGOMERY CO
AQCR POPULATION : 792,096 AQCR (002): COLUMBUS-PHENIX CITY
DATE ESTABLISHED: / / LAND USE (3): INDUSTRIAL
DATE TERMINATED : / / LOCATION SETTING (2): SUBURBAN
SITE ADDR: 1765 N. DECATUR ST.
URBAN AREA (0000): NOT IN AN URBAN AREA
SUPPORTING AGENCY (000): ********** DESCRIPTION UNKNOWN **********
COMMENTS: LOCATED ON ROOF OF COMMUNITY CENTER

LATITUDE : 32:23:47 N
LONGITUDE: 86:17:43 W
UTM ZONE : 16
UTM NORTHING: 3584396
MQ EVAL DATE: / /
DISTANCE CITY:
MC IND:
MSA 1520(): MONTGOMERY, AL

UTM EASTING : 566275
DIFF. GMT : 06
ELEVATION ABOVE MSL: 50 M
RECORD LAST UPDATED: 78/05/15
LAST REQ EVAL : / /
COMPASS SECTOR :
MET DATA :

DATE 11/03/09
AMP380

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION: 04

STATE (21): KENTUCKY

SITE ID : 21-067-0012 CITY (46027): LEXINGTON-FAYETTE
CITY POPULATION : 204,165 COUNTY (067): FAYETTE CO
AQCR POPULATION : 547,199 AQCR (102): BLUEGRASS
DATE ESTABLISHED: / / LAND USE (3): INDUSTRIAL
DATE TERMINATED : / / LOCATION SETTING (2): SUBURBAN
SITE ADDR: 650 NEWTOWN PIKE
URBAN AREA (00000): NOT IN AN URBAN AREA
SUPPORTING AGENCY (0000): ********** DESCRIPTION UNKNOWN **********
COMMENTS: KY. 2263
SITE-USER-INFO: SLAMS SO2,OX,NO2

LATITUDE : 38:03:47 N UTM EASTING : 719700
LONGITUDE: 84:29:45 W DIFF. GMT : 05
UTM ZONE : 16 ELEVATION ABOVE MSL: 30 M
UTM NORTHING: 4215600 RECORD LAST UPDATED: 88/09/09
NO EVAL DATE: / / LAST REQ EVAL : / /
DISTANCE CITY: COMPASS SECTOR :
MC IND: MET DATA :
MSA (4200): LEXINGTON-FAYETTE, KY

DATE 11/03/89
AMP300

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

STATE (29): MISSOURI

EPA-REGION: 07

SITE ID : 29-510-0072 CITY (65000): ST LOUIS
CITY POPULATION : 453,085 COUNTY (510): ST LOUIS
AQCR POPULATION : 2,423,778 AQCR (1070): METROPOLITAN ST. LOUIS
DATE ESTABLISHED: / / LAND USE (2): COMMERCIAL
DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
SITE ADDR: 1122 CLARK
URBAN AREA (7040): ST. LOUIS, MO-IL
SUPPORTING AGENCY (003): ST LOUIS CITY DIVISION OF AIR POLLUTION CONTROL
COMMENTS: START-END OF 74

LATITUDE : 38:37:20 N UTM EASTING : 743882
LONGITUDE: 90:11:55 W DIFF. GMT : 06
UTM ZONE : 15 ELEVATION ABOVE MSL: 154 M
UTM NORTHING: 4270610 RECORD LAST UPDATED: 89/08/10
MQ EVAL DATE: / / LAST REQ EVAL : / /
DISTANCE CITY: 001 COMPASS SECTOR : W
MC IND: Y MET DATA :
MSA (7040): ST. LOUIS, MO-IL

DATE 11/03/89
AMP380

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

EPA-REGION: 04 STATE (37): NORTH CAROLINA

SITE ID : 37-183-0014 CITY (55000): RALEIGH
CITY POPULATION : 150,255 COUNTY (183): WAKE CO
AQCR POPULATION : 1,082,284 AQCR (166): EASTERN PIEDMONT
DATE ESTABLISHED: 88/09/01 LAND USE (1): RESIDENTIAL
DATE TERMINATED : / / LOCATION SETTING (2): SUBURBAN
SITE ADDR: E MILLBROOK JR HI 3801 SPRING FOREST RD
URBAN AREA (66391): RALEIGH, NC
SUPPORTING AGENCY (001): NORTH CAROLINA DEPT NATURAL RESOURCES&COMMUNITY DE
COMMENTS:

LATITUDE : 35:51:22 N
LONGITUDE: 78:40:30 W
UTM ZONE : 17
UTM NORTHING: 3970205
MQ EVAL DATE: / /
DISTANCE CITY:
MC IND: Y

UTM EASTING : 709950
DIFF. GMT : 05
ELEVATION ABOVE MSL:
RECORD LAST UPDATED: 89/08/31
LAST REQ EVAL : / /
COMPASS SECTOR : SW
MET DATA : Y

APPENDIX B

CRYOGENIC PRECONCENTRATION AND DIRECT FLAME IONIZATION DETECTION (PDFID) METHOD

COMPENDIUM METHOD T0-12

DETERMINATION OF NON-METHANE ORGANIC COMPOUNDS (NMOC) IN AMBIENT AIR USING CRYOGENIC PRE-CONCENTRATION AND DIRECT FLAME IONIZATION DETECTION (PDFID)

QUALITY ASSURANCE DIVISION
ENVIRONMENTAL MONITORING SYSTEMS LABORATORY
U.S. ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NORTH CAROLINA 27711

MAY, 1988

METHOD TO12

METHOD FOR THE DETERMINATION OF NON-METHANE ORGANIC COMPOUNDS (NMOC) IN AMBIENT AIR USING CRYOGENIC PRECONCENTRATION AND DIRECT FLAME IONIZATION DETECTION (PDFID)

1. Scope

1.1 In recent years, the relationship between ambient concentrations of precursor organic compounds and subsequent downwind concentrations of ozone has been described by a variety of photochemical dispersion models. The most important application of such models is to determine the degree of control of precursor organic compounds that is necessary in an urban area to achieve compliance with applicable ambient air quality standards for ozone (1,2).

1.2 The more elaborate theoretical models generally require detailed organic species data obtained by multicomponent gas chromatography (3) The Empirical Kinetic Modeling Approach (EKMA), however, requires only the total non-methane organic compound (NMOC) concentration data; specifically, the average total NMOC concentration from 6 a.m. to 9 a.m. daily at the sampling location. The use of total NMOC concentration data in the EKMA substantially reduces the cost and complexity of the sampling and analysis system by not requiring qualitative and quantitative species identification.

1.3 Method TO1, "Method for The Determination of Volatile Organic Compounds in Ambient Air Using Tenax® Adsorption and Gas Chromatography/Mass Spectrometry (GC/MS)", employs collection of certain volatile organic compounds on Tenax® GC with subsequent analysis by thermal desorption/cryogenic preconcentration and GC/MS identification. This method (TO12) combines the same type of cryogenic concentration technique used in Method TO1 for high sensitivity with the simple flame ionization detector (FID) of the GC for total NMOC measurements, without the GC columns and complex procedures necessary for species separation.

1.4 In a flame ionization detector, the sample is injected into a hydrogen-rich flame where the organic vapors burn producing ionized molecular fragments. The resulting ion fragments are then collected and detected. The FID is nearly a universal detector. However, the detector response varies with the species of [functional group in] the organic compound in an oxygen atmosphere. Because this method employs a helium or argon carrier gas, the detector response is nearly one for all compounds. Thus, the historical short-coming of the FID involving varying detector response to different organic functional groups is minimized.

1.5 The method can be used either for direct, in situ ambient measurements or (more commonly) for analysis of integrated samples collected in specially treated stainless steel canisters. EKMA models generally require 3-hour integrated NMOC measurements over the 6 a.m. to 9 a.m. period and are used by State or local agencies to prepare State Implementation Plans (SIPs) for ozone control to achieve compliance with the National Ambient Air Quality Standards (NAAQS) for ozone. For direct, in situ ambient measurements, the analyst must be present during the 6 a.m. to 9 a.m. period, and repeat measurements (approximately six per hour) must be taken to obtain the 6 a.m. to 9 a.m. average NMOC concentration. The use of sample canisters allows the collection of integrated air samples over the 6 a.m. to 9 a.m. period by unattended, automated samplers. This method has incorporated both sampling approaches.

2. Applicable Documents

2.1 ASTM Standards

D1356 - Definition of Terms Related to Atmospheric Sampling and Analysis

E260 - Recommended Practice for General Gas Chromatography Procedures

E355 - Practice for Gas Chromatography Terms and Relationships

2.2 Other Documents

U. S. Environmental Protection Agency Technical Assistance Documents (4,5)
Laboratory and Ambient Air Studies (6-10)

3. Summary of Method

3.1 A whole air sample is either extracted directly from the ambient air and analyzed on site by the GC system or collected into a precleaned sample canister and analyzed off site.

3.2 The analysis requires drawing a fixed-volume portion of the sample air at a low flow rate through a glass-bead filled trap that is cooled to approximately -186°C with liquid argon. The cryogenic trap simultaneously collects and concentrates the NMOC (either via condensation or adsorption) while allowing the methane, nitrogen, oxygen, etc. to pass through the trap without retention. The system is dynamically calibrated so that the volume of sample passing through the trap does not have to be quantitatively measured, but must be precisely repeatable between the calibration and the analytical phases.

3.3 After the fixed-volume air sample has been drawn through the trap, a helium carrier gas flow is diverted to pass through the trap, in the opposite direction to the sample flow, and into an FID. When the residual air and methane have been flushed from the trap and the FID baseline restabilizes, the cryogen is removed and the temperature of the trap is raised to approximately 90°C.

3.4 The organic compounds previously collected in the trap revolatilize due to the increase in temperature and are carried into the FID, resulting in a response peak or peaks from the FID. The area of the peak or peaks is integrated, and the integrated value is translated to concentration units via a previously-obtained calibration curve relating integrated peak areas with known concentrations of propane.

3.5 By convention, concentrations of NMOC are reported in units of parts per million carbon (ppmC), which, for a specific compound, is the concentration by volume (ppmV) multiplied by the number of carbon atoms in the compound.

3.6 The cryogenic trap simultaneously concentrates the NMOC while separating and removing the methane from air samples. The technique is thus direct reading for NMOC and, because of the concentration step, is more sensitive than conventional continuous NMOC analyzers.

4. Significance

4.1 Accurate measurements of ambient concentrations of NMOC are important for the control of photochemical smog because these organic compounds are primary precursors of atmospheric ozone and other oxidants. Achieving and maintaining compliance with the NAAQS for ozone thus depends largely on control of ambient levels of NMOC.

4.2 The NMOC concentrations typically found at urban sites may range up to 5-7 ppmC or higher. In order to determine transport of precursors into an area, measurement of NMOC upwind of the area may be necessary. Upwind NMOC concentrations are likely to be less than a few tenths of 1 ppm.

4.3 Conventional methods that depend on gas chromatography and qualitative and quantitative species evaluation are excessively difficult and expensive to operate and maintain when speciated measurements are not needed. The method described here involves a simple, cryogenic preconcentration procedure with subsequent, direct, flame ionization detection. The method is sensitive and provides accurate measurements of ambient NMOC concentrations where speciated data are not required as applicable to the EKMA.

5. Definitions

[Note: Definitions used in this document and in any user-prepared Standard Operating Procedures (SOPs) should be consistent with ASTM Methods D1356 and E355. All abbreviations and symbols are defined within this document at point of use.]

5.1 Absolute pressure - Pressure measured with reference to absolute zero pressure (as opposed to atmospheric pressure), usually expressed as pounds-force per square inch absolute (psia).

5.2 Cryogen - A substance used to obtain very low trap temperatures in the NMOC analysis system. Typical cryogens are liquid argon (bp -185.7) and liquid oxygen (bp-183.0).

5.3 Dynamic calibration - Calibration of an analytical system with pollutant concentrations that are generated in a dynamic, flowing system, such as by quantitative, flow-rate dilution of a high concentration gas standard with zero gas.

5.4 EKMA - Empirical Kinetics Modeling Approach; an empirical model that attempts to relate morning ambient concentrations of nonmethane organic compounds (NMOC) and NO_x with subsequent peak, downwind ambient ozone concentrations; used by pollution control agencies to estimate the degree of hydrocarbon emission reduction needed to achieve compliance with national ambient air quality standards for ozone.

5.5 Gauge pressure - Pressure measured with reference to atmospheric pressure (as opposed to absolute pressure). Zero gauge pressure (0 psig) is equal to atmospheric pressure, or 14.7 psia (101 kPa).

5.6 *In situ* - In place; *In situ* measurements are obtained by direct, on-the-spot analysis, as opposed to subsequent, remote analysis of a collected sample.

5.7 Integrated sample - A sample obtained uniformly over a specified time period and representative of the average levels of pollutants during the time period.

5.8 NMOC - Nonmethane organic compounds; total organic compounds as measured by a flame ionization detector, excluding methane.

5.9 ppmC - Concentration unit of parts per million carbon; for a specific compound, ppmC is equivalent to parts per million by volume (ppmv) multiplied by the number of carbon atoms in the compound.

5.10 Sampling - The process of withdrawing or isolating a representative portion of an ambient atmosphere, with or without the simultaneous isolation of selected components for subsequent analysis.

6. Interferences

6.1 In field and laboratory evaluation, water was found to cause a positive shift in the FID baseline. The effect of this shift is minimized by carefully selecting the integration termination point and adjusted baseline used for calculating the area of the NMOC peak(s).

6.2 When using helium as a carrier gas, FID response is quite uniform for most hydrocarbon compounds, but the response can vary considerably for other types of organic compounds.

7. Apparatus

7.1 Direct Air Sampling (Figure 1)

7.1.1 Sample manifold or sample inlet li - to bring sample air into the analytical system.

7.1.2 Vacuum pump or blower - to draw sample air through a sample manifold or long inlet line to reduce inlet residence time. Maximum residence time should be no greater than 1 minute.

7.2 Remote Sample Collection in Pressurized Canisters (Figure 2)

7.2.1 Sample canister(s) - stainless steel, Summa®-polished vessel(s) of 4-6 L capacity (Scientific Instrumentation Specialists, Inc., P.O. Box 8941, Moscow, ID 83843), used for automatic collection of 3-hour integrated field air samples. Each canister should have a unique identification number stamped on its frame.

7.2.2 Sample pump - stainless steel, metal bellows type (Model MB-151, Met Bellows Corp., 1075 Providence Highway, Sharon, 02067) capable of 2 atmospheres minimum output pressure. Pump must be free of leaks, clean, and uncontaminated by oil or organic compounds.

7.2.3 Pressure gauge - 0-30 psig (0-240 kPa).

7.2.4 Solenoid valve - special electrically-operated, bistable solenoid valve (Skinner Magnelatch Valve, New Britain,

CT), to control sample flow to the canister with negligible temperature rise (Figure 3). The use of the Skinner Magnelatch valve avoids any substantial temperature rise that would occur with a conventional, normally closed solenoid valve, which would have to be energized during the entire sample period. This temperature rise in the valve could cause outgasing of organics from the Viton valve seat material. The Skinner Magnelatch valve requires only a brief electrical pulse to open or close at the appropriate start and stop times and therefore experiences no temperature increase. The pulses may be obtained with an electronic timer that can be programmed for short (5 to 60 seconds) ON periods or with a conventional mechanical timer and a special pulse circuit. Figure 3 [a] illustrates a simple electrical pulse circuit for operating the Skinner Magnelatch solenoid valve with a conventional mechanical timer. However, with this simple circuit, the valve may operate unpredictably during brief power interruptions or if the timer is manually switched on and off too fast. A better circuit incorporating a time-delay relay to provide more reliable valve operation is shown in Figure 3[b].

7.2.5 Stainless steel orifice (or short capillary) - capable of maintaining a substantially constant flow over the sampling period (see Figure 4).

7.2.6 Particulate matter filter - 2 micron stainless steel sintered in-line type (see Figure 4).

7.2.7 Timer - used for unattended sample collection. Capable of controlling pump(s) and solenoid valve.

7.3 Sample Canister Cleaning (Figure 5)

7.3.1 Vacuum pump - capable of evacuating sample canister(s) to an absolute pressure of <5 mm Hg.

7.3.2 Manifold - stainless steel manifold with connections for simultaneously cleaning several canisters.

7.3.3 Shut off valve(s) - seven required.

7.3.4 Vacuum gauge - capable of measuring vacuum in the manifold to an absolute pressure of 5 mm Hg or less.

7.3.5 Cryogenic trap (2 required) - U-shaped open tubular trap cooled with liquid nitrogen or argon used to prevent contamination from back diffusion of oil from vacuum pump, and to provide clean, zero air to sample canister(s).

7.3.6 Pressure gauge - 0-50 psig (0-345 kPa), to monitor zero air pressure.

7.3.7 Flow control valve - to regulate flow of zero air into canister(s).

7.3.8 Humidifier - water bubbler or other system capable of providing moisture to the zero air supply.

7.4 Analytical System (Figure 1)

7.4.1 FID detector system - including flow controls for the FID fuel and air, temperature control for the FID, and signal processing electronics. The FID burner air, hydrogen, and helium carrier flow rates should be set according to the manufacturer's instructions to obtain an adequate FID response while maintaining as stable a flame as possible throughout all phases of the analytical cycle.

7.4.2 Chart recorder - compatible with the FID output signal, to record FID response.

7.4.3 Electronic integrator - capable of integrating the area of one or more FID response peaks and calculating peak area corrected for baseline drift. If a separate integrator and chart recorder are used, care must be exercised to be sure that these components do not interfere with each other electrically. Range selector controls on both the integrator and the FID analyzer may not provide accurate range ratios, so individual calibration curves should be prepared for each range to be used. The integrator should be capable of marking the beginning and ending of peaks, constructing the appropriate baseline between the start and end of the integration period, and calculating the peak area.

Note: The FID (7.4.1), chart recorder (7.4.2), integrator (7.4.3), valve heater (7.4.5), and a trap heating system are conveniently provided by a standard laboratory chromatograph and associated integrator. EPA has adapted two such systems for the PDFID method: a Hewlett-Packard model 5880 (Hewlett-Packard Corp., Avondale, PA) and a Shimadzu model GC8APF (Shimadzu Scientific Instruments Inc., Columbia, MD; see Reference 5). Other similar systems may also be applicable.

7.4.4 Trap - the trap should be carefully constructed from a single piece of chromatographic-grade stainless steel tubing (0.32 cm O.D, 0.21 cm I.D.) as shown in Figure 6. The central portion of the trap (7-10 cm) is packed with 60/80 mesh glass beads, with small glass wool (dimethyldichlorosilane-treated) plugs to retain the beads. The trap must fit conveniently into the Dewar flask (7.4.9), and the arms must be of an appropriate length to allow the beaded portion of the trap to be submerged below the level of liquid cryogen in the Dewar. The trap should connect directly to the six-port valve, if possible, to minimize line length between the trap and the FID. The trap must be mounted to allow the Dewar to be slipped conveniently on and off the trap and also to facilitate heating of the trap (see 7.4.13).

7.4.5 Six-port chromatographic valve - Seiscor Model VIII (Seismograph Service Corp., Tulsa, OK), Valco Model 9110 (Valco Instruments Co., Houston, TX), or equivalent. The six-port valve and as much of the interconnecting tubing as practical should be located inside an oven or otherwise heated to 80 - 90°C to minimize wall losses or adsorption/desorption in the connecting tubing. All lines should be as short as practical.

7.4.6 Multistage pressure regulators - standard two-stage, stainless steel diaphram regulators with pressure gauges, for helium, air, and hydrogen cylinders.

7.4.7 Pressure regulators - optional single stage, stainless steel, with pressure gauge, if needed, to maintain constant helium carrier and hydrogen flow rates.

7.4.8 Fine needle valve - to adjust sample flow rate through trap.

7.4.9 Dewar flask - to hold liquid cryogen to cool the trap, sized to contain submerged portion of trap.

7.4.10 Absolute pressure gauge - 0-450 mm Hg,(2 mm Hg [scale divisions indicating units]), to monitor repeatable volumes of sample air through cryogenic trap (Wallace and Tiernan, Model 61C-ID-0410, 25 Main Street, Belleville, NJ).

7.4.11 Vacuum reservoir - 1-2 L capacity, typically 1 L.

7.4.12 Gas purifiers - gas scrubbers containing Drierite® or silica gel and 5A molecular sieve to remove moisture and organic impurities in the helium, air, and hydrogen gas flows (Alltech Associates, Deerfield, IL). Note: Check purity of gas purifiers prior to use by passing zero-air through the unit and analyzing according to Section 11.4. Gas purifiers are clean if produce [contain] less than 0.02 ppmC hydrocarbons.

7.4.13 Trap heating system - chromatographic oven, hot water, or other means to heat the trap to 80° to 90°C. A simple heating source for the trap is a beaker or Dewar filled with water maintained at 80-90°C. More repeatable types of heat sources are recommended, including a temperature-programmed chromatograph oven, electrical heating of the trap itself, or any type of heater that brings the temperature of the trap up to 80-90°C in 1-2 minutes.

7.4.14 Toggle shut-off valves (2) - leak free, for vacuum valve and sample valve.

7.4.15 Vacuum pump - general purpose laboratory pump capable of evacuating the vacuum reservoir to an appropriate vacuum that allows the desired sample volume to be drawn through the trap.

7.4.16 Vent - to keep the trap at atmospheric pressure during trapping when using pressurized canisters.

7.4.17 Rotameter - to verify vent flow.

7.4.18 Fine needle valve (optional) - to adjust flow rate of sample from canister during analysis.

7.4.19 Chromatographic-grade stainless steel tubing (Alltech Applied Science, 2051 Waukegan Road, Deerfield, IL, 60015, (312) 948-8600) and stainless steel plumbing fittings - for interconnections. All such materials in contact with the sample, analyte, or support gases prior to analysis should be stainless steel or other inert metal. Do not use plastic or Teflon® tubing or fittings.

7.5 Commercially Available PDFID System (5)

7.5.1 A convenient and cost-effective modular PDFID system suitable for use with a conventional laboratory chromatograph is commercially available (NuTech Corporation, Model 8548, 2806 Cheek Road, Durham, NC, 27704, (919) 682-0402).

7.5.2 This modular system contains almost all of the apparatus items needed to convert the chromatograph into a PDFID analytical system and has been designed to be readily available and easy to assemble.

8. Reagents and Materials

8.1 Gas cylinders of helium and hydrogen - ultrahigh purity grade.

8.2 Combustion air - cylinder containing less than 0.02 ppm hydrocarbons, or equivalent air source.

8.3 Propane calibration standard - cylinder containing 1-100 ppm (3-300 ppmC) propane in air. The cylinder assay should be traceable to a National Bureau of Standards (NBS) Standard Reference Material (SRM) or to a NBS/EPA-approved Certified Reference Material (CRM).

8.4 Zero air - cylinder containing less than 0.02 ppmC hydrocarbons. Zero air may be obtained from a cylinder of zero-grade compressed air scrubbed with Drierite® or silica gel and 5A molecular sieve or activated charcoal, or by catalytic cleanup

of ambient air. All zero air should be passed through a liquid argon cold trap for final cleanup, then passed through a hyrdocarbon-free water bubbler (or other device) for humidification.

8.5 Liquid cryogen - liquid argon (bp -185.7°C) or liquid oxygen, (bp -183°C) may be used as the cryogen. Experiments have shown no differences in trapping efficiency between liquid argon and liquid oxygen. However, appropriate safety precautions must be taken if liquid oxygen is used. Liquid nitrogen (bp -195°C) should not be used because it causes condensation of oxygen and methane in the trap.

9. Direct Sampling

9.1 For direct ambient air sampling, the cryogenic trapping system draws the air sample directly from a pump-ventilated distribution manifold or sample line (see Figure 1). The connecting line should be of small diameter (1/8" O.D.) stainless steel tubing and as short as possible to minimize its dead volume.

9.2 Multiple analyses over the sampling period must be made to establish hourly or 3-hour NMOC concentration averages.

10. Sample collection in Pressurized Canister(s)

For integrated pressurized canister sampling, ambient air is sampled by a metal bellows pump through a critical orifice (to maintain constant flow), and pressurized into a clean, evacuated, Summa®-polished sample canister. The critical orifice size is chosen so that the canister is pressurized to approximately one atmosphere above ambient pressure, at a constant flow rate over the desired sample period. Two canisters are connected in parallel for duplicate samples. The canister(s) are then returned to the laboratory for analysis, using the PDFID analytical system. Collection of ambient air samples in pressurized canisters provides the following advantages:

- o Convenient integration of ambient samples over a specific time period
- o Capability of remote sampling with subsequent central laboratory analysis
- o Ability to ship and store samples, if necessary

- o Unattended sample collection
- o Analysis of samples from multiple sites with one analytical system
- o Collection of replicate samples for assessment of measurement precision

With canister sampling, however, great care must be exercised in selecting, cleaning, and handling the sample canister(s) and sampling apparatus to avoid losses or contamination of the samples.

10.1 Canister Cleanup and Preparation

10.1.1 All canisters must be clean and free of any contaminants before sample collection.

10.1.2 Leak test all canisters by pressurizing them to approximately 30 psig [200 kPa (gauge)] with zero air. The use of the canister cleaning system (see Figure 5) may be adequate for this task. Measure the final pressure - close the canister valve, then check the pressure after 24 hours. If leak tight, the pressure should not vary more than $\pm$ 2 psig over the 24-hour period. Note leak check result on sampling data sheet, Figure 7.

10.1.3 Assemble a canister cleaning system, as illustrated in Figure 5. Add cryogen to both the vacuum pump and zero air supply traps. Connect the canister(s) to the manifold. Open the vent shut off valve and the canister valve(s) to release any remaining pressure in the canister. Now close the vent shut off valve and open the vacuum shut off valve. Start the vacuum pump and evacuate the canister(s) to $\leq$ 5.0 mm Hg (for at least one hour). [Note: On a daily basis or more often if necessary, blow-out the cryogenic traps with zero air to remove any trapped water from previous canister cleaning cycles.]

10.1.4 Close the vacuum and vacuum gauge shut off valves and open the zero air shut off valve to pressurize the canister(s) with moist zero air to approximately 30 psig [200 kPa (gauge)]. If a zero gas generator system is used,

the flow rate may need to be limited to maintain the zero air quality.

10.1.5 Close the zero shut off valve and allow canister(s) to vent down to atmospheric pressure through the vent shut off valve. Close the vent shut off valve. Repeat steps 10.1.3 through 10.1.5 two additional times for a total of three (3) evacuation/pressurization cycles for each set of canisters.

10.1.6 As a "blank" check of the canister(s) and cleanup procedure, analyze the final zero-air fill of 100% of the canisters until the cleanup system and canisters are proven reliable. The check can then be reduced to a lower percentage of canisters. Any canister that does not test clean (compared to direct analysis of humidified zero air of less than 0.02 ppmC) should not be utilized.

10.1.7 The canister is then re-evacuated to $\leq$ 5.0 mm Hg, using the canister cleaning system, and remains in this condition until use. Close the canister valve, remove the canister from the canister cleaning system and cap canister connection with a stainless steel fitting. The canister is now ready for collection of an air sample. Attach an identification tag to the neck of each canister for field notes and chain-of-custody purposes.

10.2 Collection of Integrated Whole-Air Samples

10.2.1 Assemble the sampling apparatus as shown in Figure 2. The connecting lines between the sample pump and the canister(s) should be as short as possible to minimize their volume. A second canister is used when a duplicate sample is desired for quality assurance (QA) purposes (see Section 12.2.4). The small auxiliary vacuum pump purges the inlet manifold or lines with a flow of several L/min to minimize the sample residence time. The larger metal bellows pump takes a small portion of this sample to fill and pressurize the sample canister(s). Both pumps should be shock-mounted to minimize vibration. Prior to field use, each sampling system should be leak

tested. The outlet side of the metal bellows pump can be checked for leaks by attaching the 0-30 psig pressure gauge to the canister(s) inlet via connecting tubing and pressurizing to 2 atmospheres or approximately 29.4 psig. If pump and connecting lines are leak free pressure should remain at ±2 psig for 15 minutes. To check the inlet side, plug the sample inlet and insure that there is no flow at the outlet of the pump.

10.2.2 Calculate the flow rate needed so that the canister(s) are pressurized to approximately one atmosphere above ambient pressure (2 atmospheres absolute pressure) over the desired sample period, utilizing the following equation:

$$F = \frac{(P)(V)(N)}{(T)(60)}$$

where:

F = flow rate (cm^3/min)
P = final canister pressure (atmospheres absolute)
= $(P_g/P_a) + 1$
V = volume of the canister (cm^3)
N = number of canisters connected together for simultaneous sample collection
T = sample period (hours)
P_g = gauge pressure in canister, psig (kPa)
Pa = standard atmospheric pressure, 14.7 psig (101 kPa)

For example, if one 6-L canister is to be filled to 2 atmospheres absolute pressure (14.7 psig) in 3 hours, the flow rate would be calculated as follows:

$$F = \frac{2 \times 6000 \times 1}{3 \times 60} = 67 \text{ cm}^3/\text{min}$$

10.2.3 Select a critical orifice or hypodermic needle suitable to maintain a substantially constant flow at the calculated flow rate into the canister(s) over the desired sample period. A 30-gauge hypodermic needle, 2.5 cm

long, provides a flow of approximately 65 cm^3/min with the Metal Bellows Model MBV-151 pump (see Figure 4). Such a needle will maintain approximately constant flow up to a canister pressure of about 10 psig (71 kPa), after which the flow drops with increasing pressure. At 14.7 psig (2 atmospheres absolute pressure), the flow is about 10% below the original flow.

10.2.4 Assemble the 2.0 micron stainless steel in-line particulate filter and position it in front of the critical orifice. A suggested filter-hypodermic needle assembly can be fabricated as illustrated in Figure 4.

10.2.5 Check the sampling system for contamination by filling two evacuated, cleaned canister(s) (See Section 10.1) with humidified zero air through the sampling system. Analyze the canisters according to Section 11.4. The sampling system is free of contamination if the canisters contain less than 0.02 ppmC hydrocarbons, similar to that of humidified zero air.

10.2.6 During the system contamination check procedure, check the critical orifice flow rate on the sampling system to insure that sample flow rate remains relatively constant (±10%) up to about 2 atmospheres absolute pressure (101 kPa). Note: A drop in the flow rate may occur near the end of the sampling period as the canister pressure approaches two atmospheres.

10.2.7 Reassemble the sampling system. If the inlet sample line is longer than 3 meters, install an auxiliary pump to ventilate the sample line, as illustrated in Figure 2.

10.2.8 Verify that the timer, pump(s) and solenoid valve are connected and operating properly.

10.2.9 Verify that the timer is correctly set for the desired sample period, and that the solenoid valve is closed.

10.2.10 Connect a cleaned, evacuated canister(s) (Section 10.1) to the non-contaminated sampling system, by way of the solenoid valve, for sample collection.

10.2.11 Make sure the solenoid valve is closed. Open the canister valve(s). Temporarily connect a small rotameter to the sample inlet to verify that there is no flow. Note: Flow detection would indicate a leaking (or open) solenoid valve. Remove the rotameter after leak detection procedure.

10.2.12 Fill out the necessary information on the Field Data Sheet (Figure 7).

10.2.13 Set the automatic timer to start and stop the pump or pumps to open and close the solenoid valve at the appropriate time for the intended sample period. Sampling will begin at the pre-determined time.

10.2.14 After the sample period, close the canister valve(s) and disconnect the canister(s) from the sampling system. Connect a pressure gauge to the canister(s) and briefly open and close the canister valve. Note the canister pressure on the Field Data Sheet (see Figure 7). The canister pressure should be approximately 2 atmospheres absolute [1 atmosphere or 101 kPa (gauge)]. Note: If the canister pressure is not approximately 2 atmospheres absolute (14.7 psig), determine and correct the cause before next sample. Re-cap canister valve.

10.2.15 Fill out the identification tag on the sample canister(s) and complete the Field Data Sheet as necessary. Note any activities or special conditions in the area (rain, smoke, etc.) that may affect the sample contents on the sampling data sheet.

10.2.16 Return the canister(s) to the analytical system for analysis.

11. Sample Analysis

11.1 Analytical System Leak Check

11.1.1 Before sample analysis, the analytical system is assembled (see Figure 1) and leak checked.

11.1.2 To leak check the analytical system, place the six-port gas valve in the trapping position. Disconnect and cap the absolute pressure gauge. Insert a pressure gauge capable of recording up to 60 psig at the vacuum valve outlet.

11.1.3 Attach a valve and a zero air supply to the sample inlet port. Pressurize the system to about 50 psig (350 kPa) and close the valve.

11.1.4 Wait approximately 3 hrs. and re-check pressure. If the pressure did not vary more than ± 2 psig, the system is considered leak tight.

11.1.5 If the system is leak free, de-pressurize and reconnect absolute pressure gauge.

11.1.6 The analytical system leak check procedure needs to be performed during the system checkout, during a series of analysis or if leaks are suspected. This should be part of the user-prepared SOP manual (see Section 12.1).

11.2 Sample Volume Determination

11.2.1 The vacuum reservoir and absolute pressure gauge are used to meter a precisely repeatable volume of sample air through the cryogenically-cooled trap, as follows: With the sample valve closed and the vacuum valve open, the reservoir is first evacuated with the vacuum pump to a predetermined pressure (e.g., 100 mm Hg). Then the vacuum valve is closed and the sample valve is opened to allow sample air to be drawn through the cryogenic trap and into the evacuated reservoir until a second predetermined reservoir pressure is reached (e.g., 300 mm Hg). The (fixed) volume of air thus sampled is determined by the pressure rise in the vacuum reservoir (difference between the predetermined pressures) as measured by the absolute pressure gauge (see Section 12.2.1).

11.2.2 The sample volume can be calculated by:

$$V_s = \frac{(\Delta P)(V_r)}{(P_s)}$$

where:

V_s = volume of air sampled (standard cm^3)
ΔP = pressure difference measured by gauge (mm Hg)
V_r = volume of vacuum reservoir (cm^3) usually 1 L
P_s = standard pressure (760 mm Hg)

For example, with a vacuum reservoir of 1000 cm^3 and a pressure change of 200 mm Hg (100 to 300 mm Hg), the volume sampled would be 263 cm^3. [Note: Typical sample volume using this procedure is between 200-300 cm^3.]

11.2.3 The sample volume determination need only be performed once during the system check-out and shall be part of the user-prepared SOP Manual (see Section 12.1).

11.3 Analytical System Dynamic Calibration

11.3.1 Before sample analysis, a complete dynamic calibration of the analytical system should be carried out at five or more concentrations on each range to define the calibration curve. This should be carried out initially and periodically thereafter [may be done only once during a series of analyses]. This should be part of the user-prepared SOP Manual (See Section 12.1). The calibration should be verified with two or three-point calibration checks (including zero) each day the analytical system is used to analyze samples.

11.3.2 Concentration standards of propane are used to calibrate the analytical system. Propane calibration standards may be obtained directly from low concentration cylinder standards or by dilution of high concentration cylinder

standards with zero air (see Section 8.3). Dilution flow rates must be measured accurately, and the combined gas stream must be mixed thoroughly for successful calibration of the analyzer. Calibration standards should be sampled directly from a vented manifold or tee. Note: Remember that a propane NMOC concentration in ppmC is three times the volumetric concentration in ppm.

11.3.3 Select one or more combinations of the following parameters to provide the desired range or ranges (e.g., 0-1.0 ppmC or 0-5.0 ppmC): FID attenuator setting, output voltage setting, integrator resolution (if applicable), and sample volume. Each individual range should be calibrated separately and should have a separate calibration curve. Note: Modern GC integrators may provide automatic ranging such that several decades of concentration may be covered in a single range. The user-prepared SOP manual should address variations applicable to a specific system design (see Section 12.1).

11.3.4 Analyze each calibration standard three times according to the procedure in Section 11.4. Insure that flow rates, pressure gauge start and stop readings, initial cryogen liquid level in the dewar, timing, heating, integrator settings, and other variables are the same as those that will be used during analysis of ambient samples. Typical flow rates for the gases are: hydrogen, 30 cm^3/minute; helium carrier, 30 cm^3/minute; burner air, 400 cm^3/minute.

11.3.5 Average the three analyses for each concentration standard and plot the calibration curve(s) as average integrated peak area reading versus concentration in ppmC. The relative standard deviation for the three analyses should be less

than 3% (except for zero concentration). Linearity should be expected; points that appear to deviate abnormally should be repeated. Response has been shown to be linear over a wide range (0-10,000 ppbC). If nonlinearity is observed, an effort should be made to identify and correct the problem. If the problem cannot be corrected, additional points in the nonlinear region may be needed to define the calibration curve adequately.

11.4 Analysis Procedure

11.4.1 Insure the analytical system has been assembled properly, leaked checked, and properly calibrated through a dynamic standard calibration. Light the FID detector and allow to stabilize.

11.4.2 Check and adjust the helium carrier pressure to provide the correct carrier flow rate for the system. Helium is used to purge residual air and methane from the trap at the end of the sampling phase and to carry the re-volatilized NMOC from the trap into the FID. A single-stage auxiliary regulator between the cylinder and the analyzer may not be necessary, but is recommended to regulate the helium pressure better than the multistage cylinder regulator. When an auxiliary regulator is used, the secondary stage of the two-stage regulator must be set at a pressure higher than the pressure setting of the single-stage regulator. Also check the FID hydrogen and burner air flow rates (see 11.3.4).

11.4.3 Close the sample valve and open the vacuum valve to evacuate the vacuum reservoir to a specific predetermined value (e.g., 100 mm Hg).

11.4.4 With the trap at room temperature, place the six-port valve in the inject position.

11.4.5 Open the sample valve and adjust the sample flow rate needle valve for an appropriate trap flow of 50-100 cm^3/min. Note: The flow will be lower later, when the trap is cold.

11.4.6 Check the sample canister pressure before attaching it to the analytical system and record on Field Data Sheet (see Figure 7). Connect the sample canister or direct sample inlet to the six-port valve, as shown in Figure 1. For a canister, either the canister valve or an optional fine needle valve installed between the canister and the vent is used to adjust the canister flow rate to a value slightly higher than the trap flow rate set by the sample flow rate needle valve. The excess flow exhausts through the vent, which assures that the sample air flowing through the trap is at atmospheric pressure. The vent is connected to a flow indicator such as a rotameter as an indication of vent flow to assist in adjusting the flow control valve. Open the canister valve and adjust the canister valve or the sample flow needle valve to obtain a moderate vent flow as indicated by the rotameter. The sample flow rate will be lower (and hence the vent flow rate will be higher) when the the trap is cold.

11.4.7 Close the sample valve and open the vacuum valve (if not already open) to evacuate the vacuum reservoir. With the six-port valve in the inject position and the vacuum valve open, open the sample valve for 2-3 minutes [with both valves open, the pressure reading won't change] to flush and condition the inlet lines.

11.4.8 Close the sample valve and evacuate the reservoir to the predetermined sample starting pressure (typically 100 mm Hg) as indicated by the absolute pressure gauge.

11.4.9 Switch the six-port valve to the sample position.

11.4.10 Submerge the trap in the cryogen. Allow a few minutes for the trap to cool completely (indicated when the cryogen stops boiling). Add cryogen to the initial level used during system dynamic calibration. The level of the cryogenic liquid should remain constant with respect to the trap and should completely cover the beaded portion of the trap.

11.4.11 Open the sample valve and observe the increasing pressure on the pressure gauge. When it reaches the specific predetermined pressure (typically 300 mm Hg) representative of the desired sample volume (Section 11.2), close the sample valve.

11.4.12 Add a little cryogen or elevate the Dewar to raise the liquid level to a point slightly higher (3-15 mm) than the initial level at the beginning of the trapping.
Note: This insures that organics do not bleed from the trap and are counted as part of the NMOC peak(s).

11.4.13 Switch the 6-port valve to the inject position, keeping the cryogenic liquid on the trap until the methane and upset peaks have deminished (10-20 seconds). Now close the canister valve to conserve the remaining sample in the canister.

11.4.14 Start the integrator and remove the Dewar flask containing the cryogenic liquid from the trap.

11.4.15 Close the GC oven door and allow the GC oven (or alternate trap heating system) to heat the trap at a predetermined rate (typically, 30°C/min) to 90°. Heating the trap volatilizes the concentrated NMOC such that the FID produces integrated peaks. A uniform trap temperature rise rate (above 0°C) helps to reduce variability and facilitates more accurate correction for the moisture-shifted baseline. With a chromatograph oven to heat the trap, the following parameters have been found to be acceptable: initial temperature, 30°C; initial time, 0.20 minutes (following start of the integrator); heat rate, 30°/minute; final temperature, 90°C.

11.4.16 Use the same heating process and temperatures for both calibration and sample analysis. Heating the trap too quickly may cause an initial negative response that could hamper accurate integration. Some initial experimentation may be necessary to determine the optimal heating procedure for each system. Once established, the procedure should be consistent for each analysis as outlined in the user-prepared SOP Manual.

11.4.17 Continue the integration (generally, in the range of 1-2 minutes is adequate) only long enough to include all of the organic compound peaks and to establish the end point FID baseline, as illustrated in Figure 8. The integrator should be capable of marking the beginning and ending of peaks, constructing the appropriate operational baseline between the start and end of the integration period, and calculating the resulting corrected peak area. This ability is necessary because the moisture in the sample, which is also concentrated in the trap, will cause a slight positive baseline shift. This baseline shift starts as the trap warms and continues until all of the moisture is swept from the trap, at which time the baseline returns to its normal level. The shift always continues longer than the ambient organic peak(s). The integrator should be programmed to correct for this shifted baseline by ending the integration at a point after the last NMOC peak and prior to the return of the shifted baseline to normal (see Figure 8) so that the calculated operational baseline effectively compensates for the water-shifted baseline. Electronic integrators either do this automatically or they should be programmed to make this correction. Alternatively, analyses of humidified zero air prior to sample analyses should be performed to determine the water envelope and the proper blank value for correcting the ambient air concentration measurements accordingly. Heating and flushing of the trap should continue after the integration period has ended to insure all water has been removed to prevent buildup of water in the trap. Therefore, be sure that the 6-port valve remains in the inject position until all moisture has purged from the trap (3 minutes or longer).

11.4.18 Use the dynamic calibration curve (see Section 11.3) to convert the integrated peak area reading into concentration units (ppmC). Note that the NMOC peak shape may not be precisely reproducible due to variations in heating the trap, but the total NMOC peak area should be reproducible.

11.4.19 Analyze each canister sample at least twice and report the average NMOC concentration. Problems during an analysis occasionally will cause erratic or inconsistent results. If the first two analyses do not agree within ± 5% relative standard deviation (RSD), additional analyses should be made to identify inaccurate measurements and produce a more accurate average (see also Section 12.2.).

12. Performance Criteria and Quality Assurance

This section summarizes required quality assurance measures and provides guidance concerning performance criteria that should be achieved within each laboratory.

12.1 Standard Operating Procedures (SOPs)

12.1.1 Users should generate SOPs describing and documenting the following activities in their laboratory: (1) assembly, calibration, leak check, and operation of the specific sampling system and equipment used; (2) preparation, storage, shipment, and handling of samples; (3) assembly, leak-check, calibration, and operation of the analytical system, addressing the specific equipment used; (4) canister storage and cleaning; and (5) all aspects of of data recording and processing, including lists of computer hardware and software used.

12.1.2 SOPs should provide specific stepwise instructions and should be readily available to, and understood by, the laboratory personnel conducting the work.

12.2 Method Sensitivity, Accuracy, Precision and Linearity

12.2.1 The sensitivity and precision of the method is proportional to the sample volume. However, ice formation in the trap may reduce or stop the sample flow during trapping if the sample volume exceeds 500 cm^3. Sample volumes below about 100-150 cm^3 may cause increased measurement variability due to dead volume in lines and valves. For most typical ambient NMOC concentrations, sample volumes in the range of 200-400 cm^3 appear to be appropriate. If a response peak obtained with a 400 cm^3 sample is off scale or exceeds the calibration range, a second analysis can be carried out with a smaller volume. The actual sample volume used need not be accurately known if it is precisely repeatable during both calibration and analysis. Similarly, the actual volume of the vacuum reservoir need not be accurately known. But the reservoir volume should be matched to the pressure range and resolution of the absolute pressure gauge so that the measurement of the pressure change in the reservoir, hence the sample volume, is repeatable within 1%. A 1000 cm^3 vacuum reservoir and a pressure change of 200 mm Hg, measured with the specified pressure gauge, have provided a sampling precision of $\pm$ 1.31 cm^3. A smaller volume reservoir may be used with a greater pressure change to accommodate absolute pressure gauges with lower resolution, and vice versa.

12.2.2 Some FID detector systems associated with laboratory chromatographs may have autoranging. Others may provide attenuator control and internal full-scale output voltage selectors. An appropriate combination should be chosen so that an adequate output level for accurate integration is obtained down to the detection limit; however, the electrometer or integrator must not be driven into saturation at the upper end of the calibration. Saturation of the electrometer may be indicated by flattening of the calibration curve at

high concentrations. Additional adjustments of range and sensitivity can be provided by adjusting the sample volume used, as discussed in Section 12.2.1.

12.2.3 System linearity has been documented (6) from 0 to 10,000 ppbC.

12.2.4 Some organic compounds contained in ambient air are "sticky" and may require repeated analyses before they fully appear in the FID output. Also, some adjustment may have to be made in the integrator off time setting to accommodate compounds that reach the FID late in the analysis cycle. Similarly, "sticky" compounds from ambient samples or from contaminated propane standards may temporarily contaminate the analytical system and can affect subsequent analyses. Such temporary contamination can usually be removed by repeated analyses of humidified zero air.

12.2.5 Simultaneous collection of duplicate samples decreases the possibility of lost measurement data from samples lost due to leakage or contamination in either of the canisters. Two (or more) canisters can be filled simultaneously by connecting them in parallel (see Figure 2(a)) and selecting an appropriate flow rate to accommodate the number of canisters (Section 10.2.2). Duplicate (or replicate) samples also allow assessment of measurement precision based on the differences between duplicate samples (or the standard deviations among replicate samples).

13. Method Modification

13.1 Sample Metering System

13.1.1 Although the vacuum reservoir and absolute pressure gauge technique for metering the sample volume during analysis is efficient and convenient, other techniques should work also.

13.1.2 A constant sample flow could be established with a vacuum pump and a critical orifice, with the six-port valve being switched to the sample position for a measured time period.

A gas volume meter, such as a wet test meter, could also be used to measure the total volume of sample air drawn through the trap. These alternative techniques should be tested and evaluated as part of a user-prepared SOP manual.

13.2 FID Detector System

13.2.1 A variety of FID detector systems should be adaptable to the method.

13.2.2 The specific flow rates and necessary modifications for the helium carrier for any alternative FID instrument should be evaluated prior to use as part of the user-prepared SOP manual.

13.3 Range

13.3.1 It may be possible to increase the sensitivity of the method by increasing the sample volume. However, limitations may arise such as plugging of the trap by ice.

13.3.2 Any attempt to increase sensitivity should be evaluated as part of the user-prepared SOP manual.

13.4 Sub-Atmospheric Pressure Canister Sampling

13.4.1 Collection and analysis of canister air samples at sub-atmospheric pressure is also possible with minor modifications to the sampling and analytical procedures.

13.4.2 Method TO-14, "Integrated Canister Sampling for Selective Organics: Pressurized and Sub-atmospheric Collection Mechanism," addresses sub-atmospheric pressure canister sampling. Additional information can be found in the literature (11-17).

1. Uses, Limitations, and Technical Basis of Procedures for Quantifying Relationships Between Photochemical Oxidants and Precursors, EPA-450/2-77-21a, U.S. Environmental Protection Agency, Research Triangle Park, NC, November 1977.

2. Guidance for Collection of Ambient Non-Methane Organic Compound (NMOC) Data for Use in 1982 Ozone SIP Development, EPA-450/4-80-011, U.S. Environmental Protection Agency, Research Triangle Park, NC, June 1980.

3. H. B. Singh, Guidance for the Collection and Use of Ambient Hydrocarbons Species Data in Development of Ozone Control Strategies, EPA-450/480-008, U.S. Environmental Protection Agency, Research Triangle Park, NC, April 1980.

4. R. M. Riggin, Technical Assistance Document for Sampling and Analysis of Toxic Organic Compounds in Ambient Air, EPA-600/483-027, U.S. Environmental Protection Agency, Research Triangle Park, NC, 1983.

5. M. J. Jackson, et al., Technical Assistance Document for Assembly and Operation of the Suggested Preconcentration Direct Flame Ionization Detection (PDFID) Analytical System, publication scheduled for late 1987; currently available in draft form from the Quality Assurance Division, MD-77, U.S. Environmental Protection Agency, Research Triangle Park, NC 27711.

6. R. K. M. Jayanty, et al., Laboratory Evaluation of Non-Methane Organic Carbon Determination in Ambient Air by Cryogenic Preconcentration and Flame Ionization Detection, EPA-600/54-82-019, U.S. Evironmental Protection Agency, Research Triangle Park, NC, July 1982.

7. R. D. Cox, et al., "Determination of Low Levels of Total Non-Methane Hydrocarbon Content in Ambient Air", Environ. Sci. Technol., 16 (1):57, 1982.

8. F. F. McElroy, et al., A Cryogenic Preconcentration - Direct FID (PDFID) Method for Measurement of NMOC in the Ambient Air, EPA-600/4-85-063, U.S. Environmental Protection Agency, Research Triangle Park, NC, August 1985.

9. F. W. Sexton, et al., A Comparative Evaluation of Seven Automated Ambient Non-Methane Organic Compound Analyzers, EPA-600/5482-046, U.S. Environmental Protection Agency, Research Triangle Park, NC, August 1982.

10. H. G. Richter, Analysis of Organic Compound Data Gathered During 1980 in Northeast Corridor Cities, EPA-450/4-83-017, U.S. Environmental Protection Agency, Research Triangle Park, NC, April 1983.

11. Cox, R. D. "Sample Collection and Analytical Techniques for Volatile Organics in Air," presented at APCA Speciality Conference, Chicago, Il, March 22-24, 1983.

12. Rasmussen, R. A. and Khalil, M.A.K. " Atmospheric Halocarbons: Measurements and Analyses of Selected Trace Gases," Proc. NATO ASI on Atmospheric Ozone, 1980, 209-231.

13. Oliver, K. D., Pleil J.D. and McClenny, W.A. "Sample Intergrity of Trace Level Volatile Organic Compounds in Ambient Air Stored in "SUMMA®" Polished Canisters," accepted for publication in Atmospheric Environment as of January 1986. Draft available from W. A. McClenny, MD-44, EMSL, EPA, Research Triangle Park, NC 27711.

14. McClenny, W. A. Pleil J.D. Holdren, J.W.; and Smith, R.N.; 1984. " Automated Cryogenic Preconcentration and Gas Chromatographic Determination of Volatile Organic Compounds," Anal. Chem. 56:2947.

15. Pleil, J. D. and Oliver, K. D., 1985, "Evaluation of Various Configurations of Nafion Dryers: Water Removal from Air Samples Prior to Gas Chromatographic Analysis". EPA Contract No. 68-02-4035.

16. Oliver, K. D.; Pleil, and McClenny, W. A.; 1986. "Sample Integrity of Trace Level Volatile Organic Compounds in Ambient Air Stored in Summa® Polished Canisters," Atmospheric Environ. 20:1403.

17. Oliver, K. D. Pleil, J. D., 1985, "Automated Cryogenic Sampling and Gas Chromatographic Analysis of Ambient Vapor-Phase Organic Compounds: Procedures and Comparison Tests," EPA Contract No. 68-02-4035, Research Triangle Park, NC, Northrop Services, Inc. - Environmental Sciences.

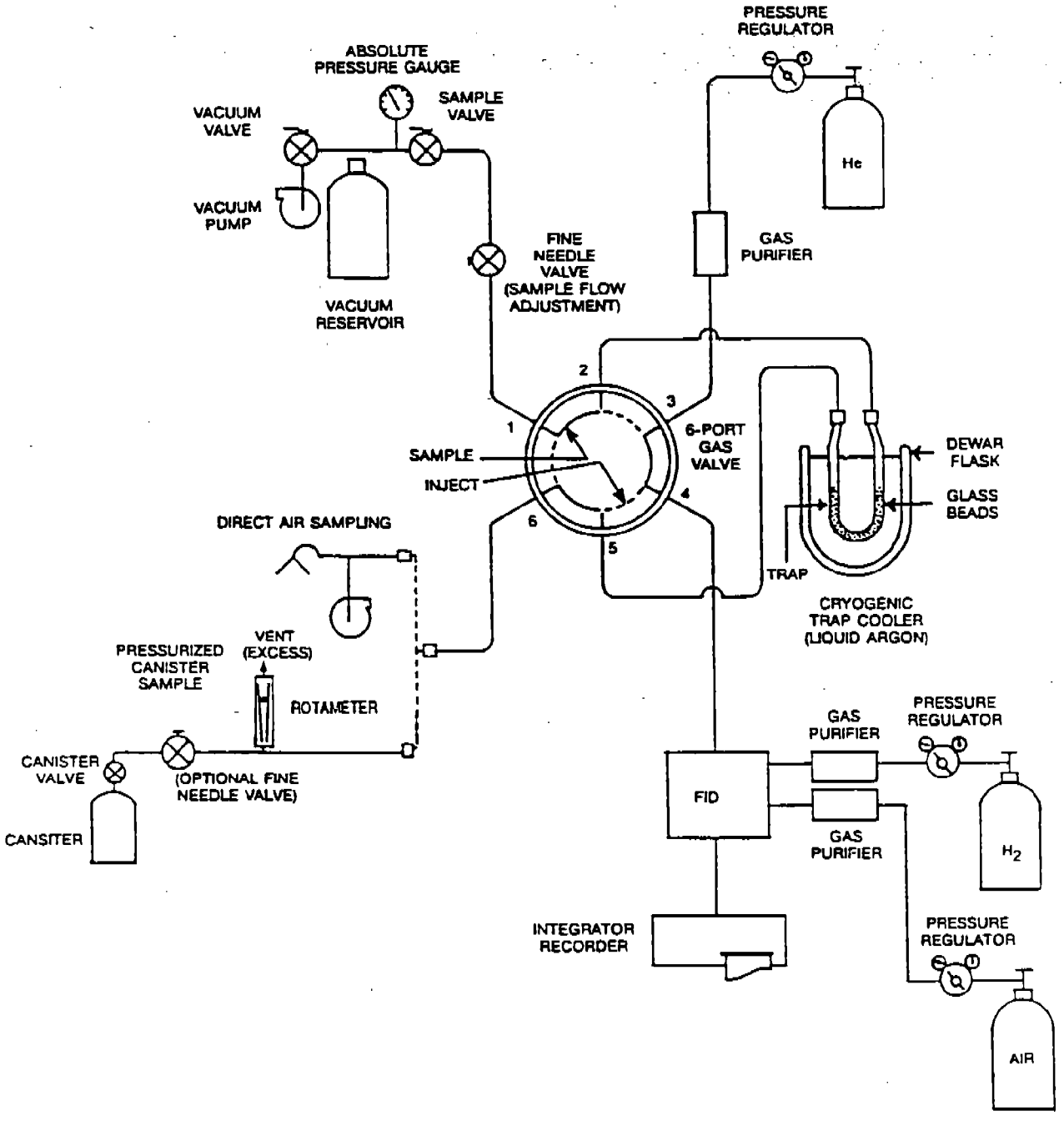


FIGURE 1. SCHEMATIC OF ANALYTICAL SYSTEM FOR NMOC—TWO SAMPLING MODES

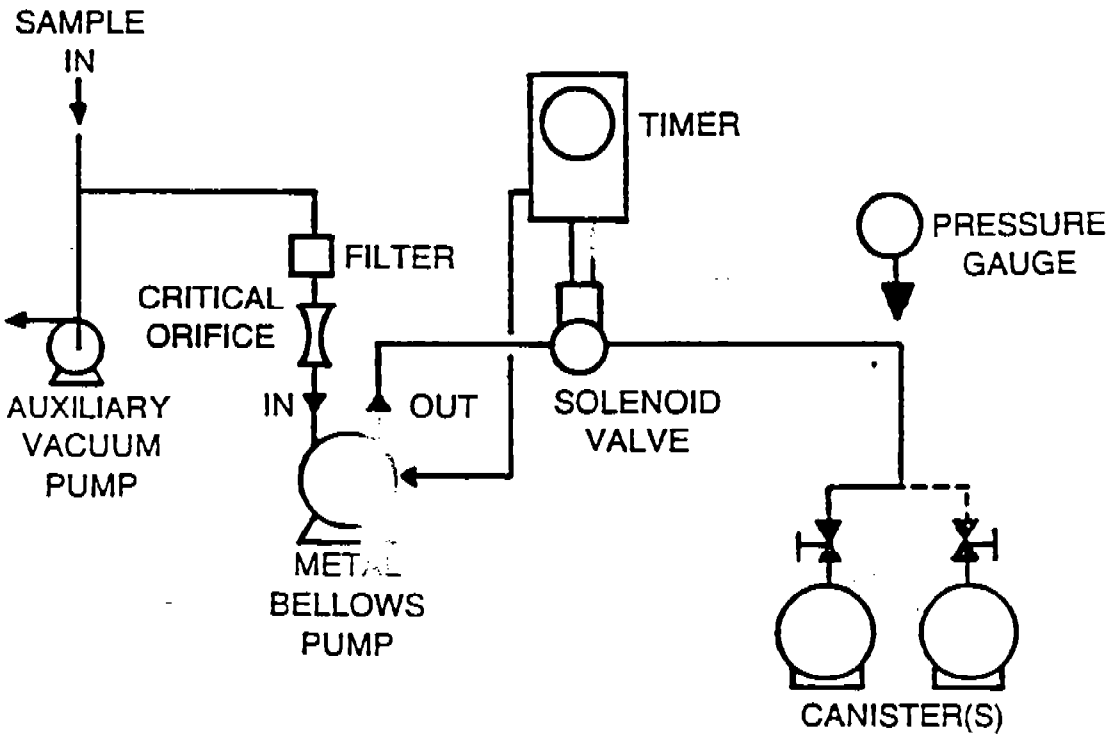
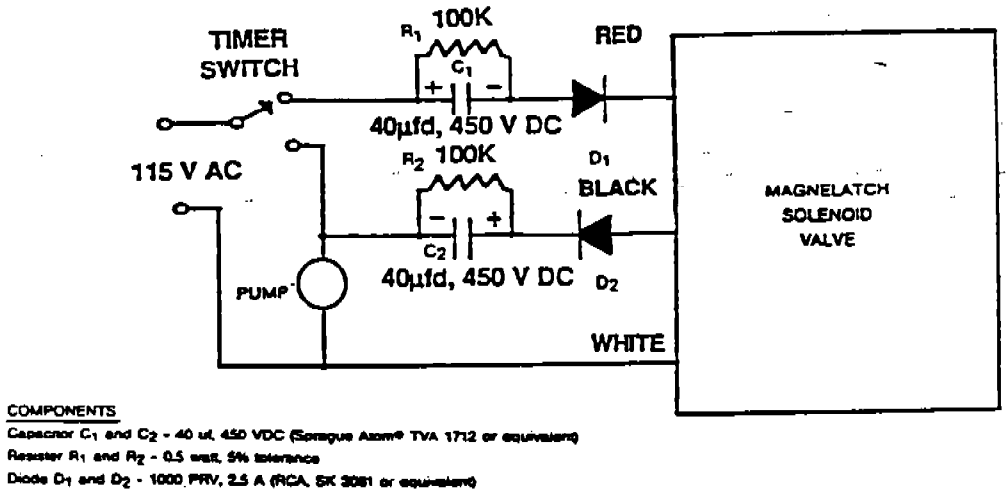


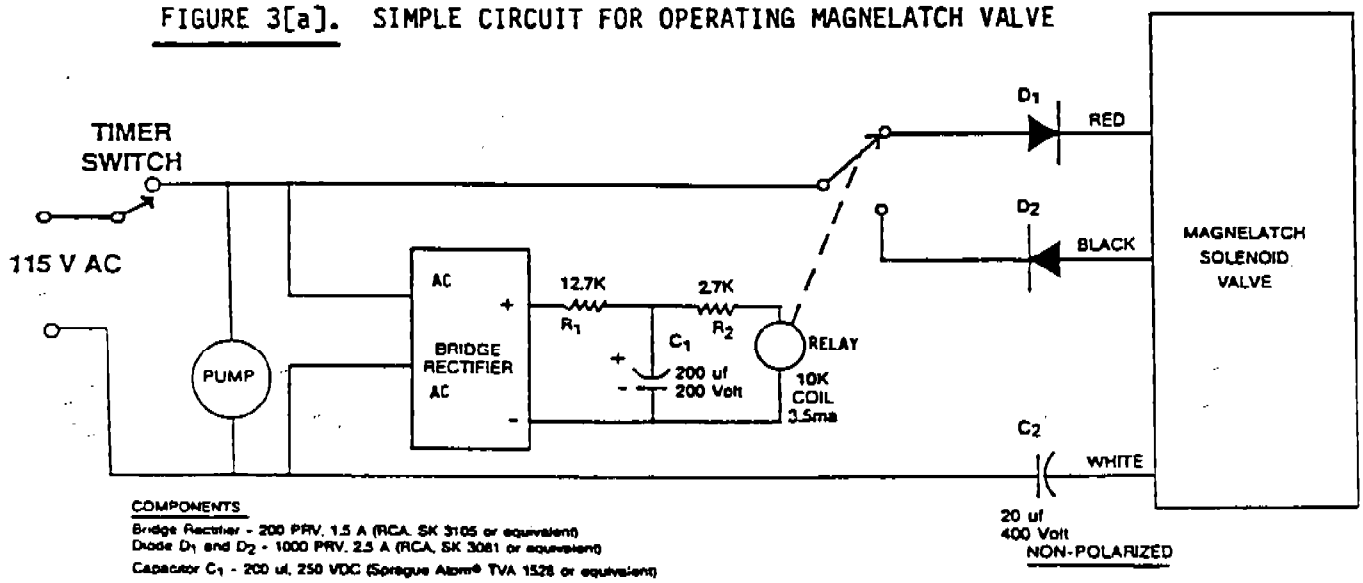
FIGURE 2. SAMPLE SYSTEM FOR AUTOMATIC COLLECTION OF 3-HOUR INTEGRATED AIR SAMPLES



COMPONENTS

Capacitor C_1 and C_2 - 40 ufd, 450 VDC (Sprague Atom® TVA 1712 or equivalent)
Resistor R_1 and R_2 - 0.5 watt, 5% tolerance
Diode D_1 and D_2 - 1000 PRV, 2.5 A (RCA, SK 3081 or equivalent)

FIGURE 3[a]. SIMPLE CIRCUIT FOR OPERATING MAGNELATCH VALVE



COMPONENTS

Bridge Rectifier - 200 PRV, 1.5 A (RCA, SK 3105 or equivalent)
Diode D_1 and D_2 - 1000 PRV, 2.5 A (RCA, SK 3081 or equivalent)
Capacitor C_1 - 200 ufd, 250 VDC (Sprague Atom® TVA 1528 or equivalent)
Capacitor C_2 - 20 ufd, 400 VDC Non-Polarized (Sprague Atom® TVAN 1652 or equivalent)
Relay - 10,000 ohm coil, 3.5 ma (AMF Potter and Brumfield, KCP 5, or equivalent)
Resistor R_1 and R_2 - 0.5 watt, 5% tolerance

FIGURE 3[b]. IMPROVED CIRCUIT DESIGNED TO HANDLE POWER INTERRUPTIONS

FIGURE 3. ELECTRICAL PULSE CIRCUITS FOR DRIVING SKINNER MAGNELATCH SOLENOID VALVE WITH A MECHANICAL TIMER

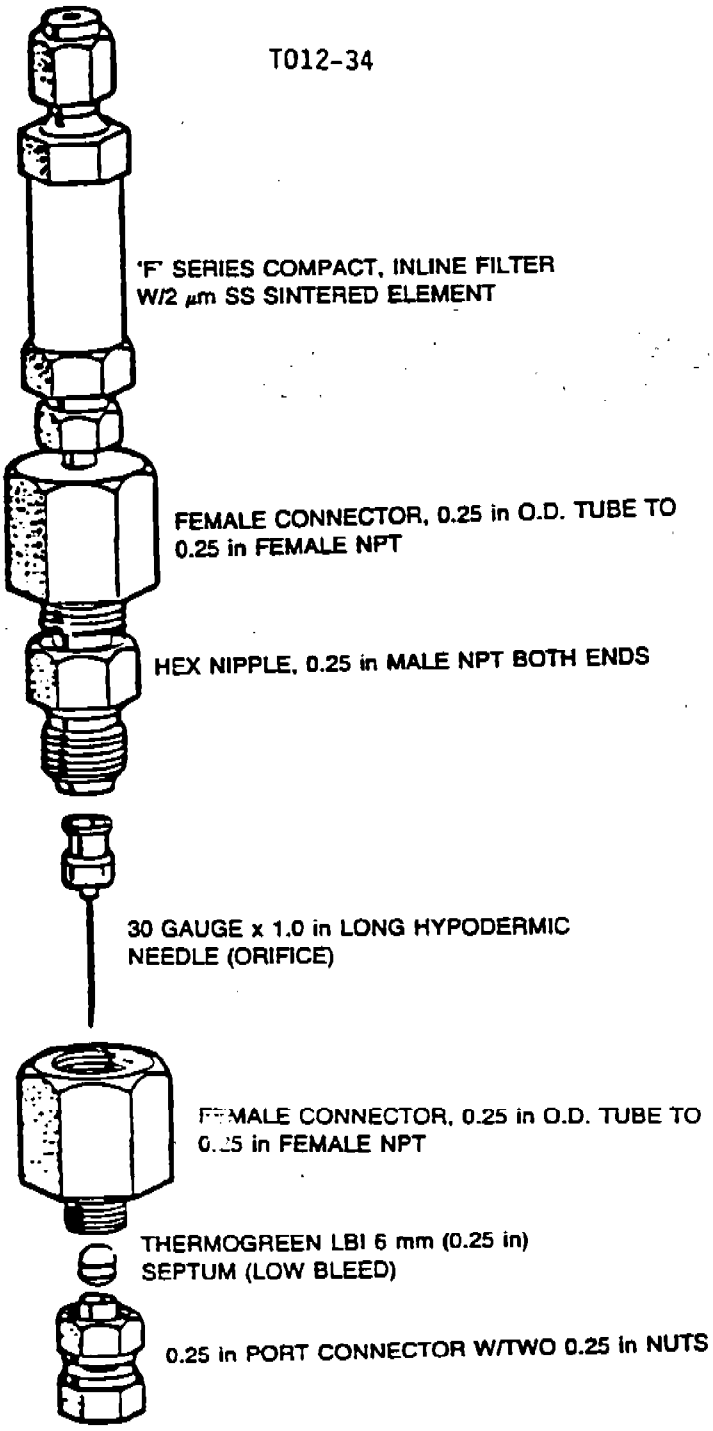


FIGURE 4. FILTER AND HYPODERMIC NEEDLE ASSEMBLY FOR SAMPLE INLET FLOW CONTROL

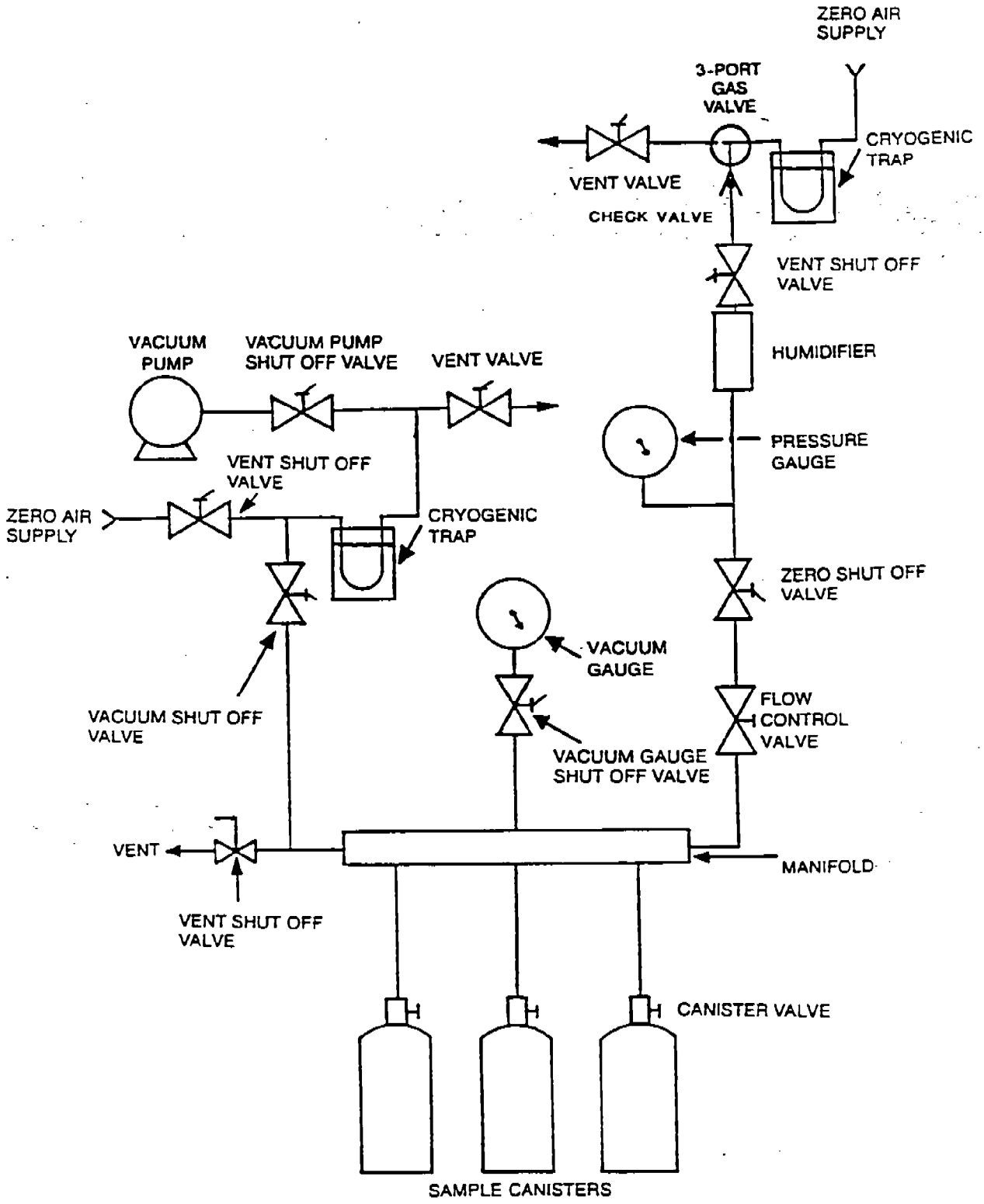


FIGURE 5. CANISTER CLEANING SYSTEM

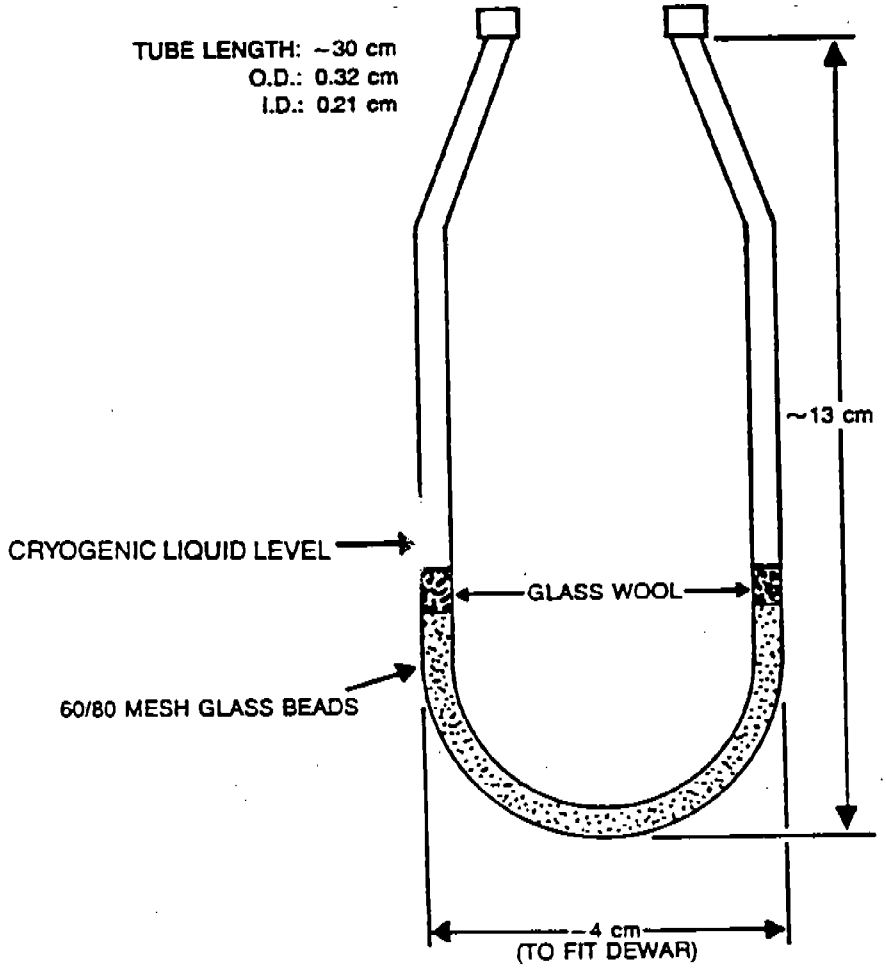


FIGURE 6. CRYOGENIC SAMPLE TRAP DIMENSIONS

PRESSURIZED CANISTER SAMPLING DATA SHEET

GENERAL INFORMATION:

PROJECT: _____
SITE: _____
LOCATION: _____
MONITOR STATION NUMBER: _____
PUMP SERIAL NUMBER: _____

OPERATOR: _____
ORIFICE IDENTIFICATION: _____
FLOW RATE: _____
CALIBRATED BY: _____
LEAK CHECK _____ Pass _____ Fail

FIELD DATA:

Date	Canister Serial Number	Sample Number	Sample Time		Average Atmospheric Conditions			Canister pressure Final, Laboratory		Comments
			Start	Stop	Temperature	Pressure	Relative Humidity			

Date _____ Title _____ Signature _____

T012-37

FIGURE 7. EXAMPLE SAMPLING DATA SHEET

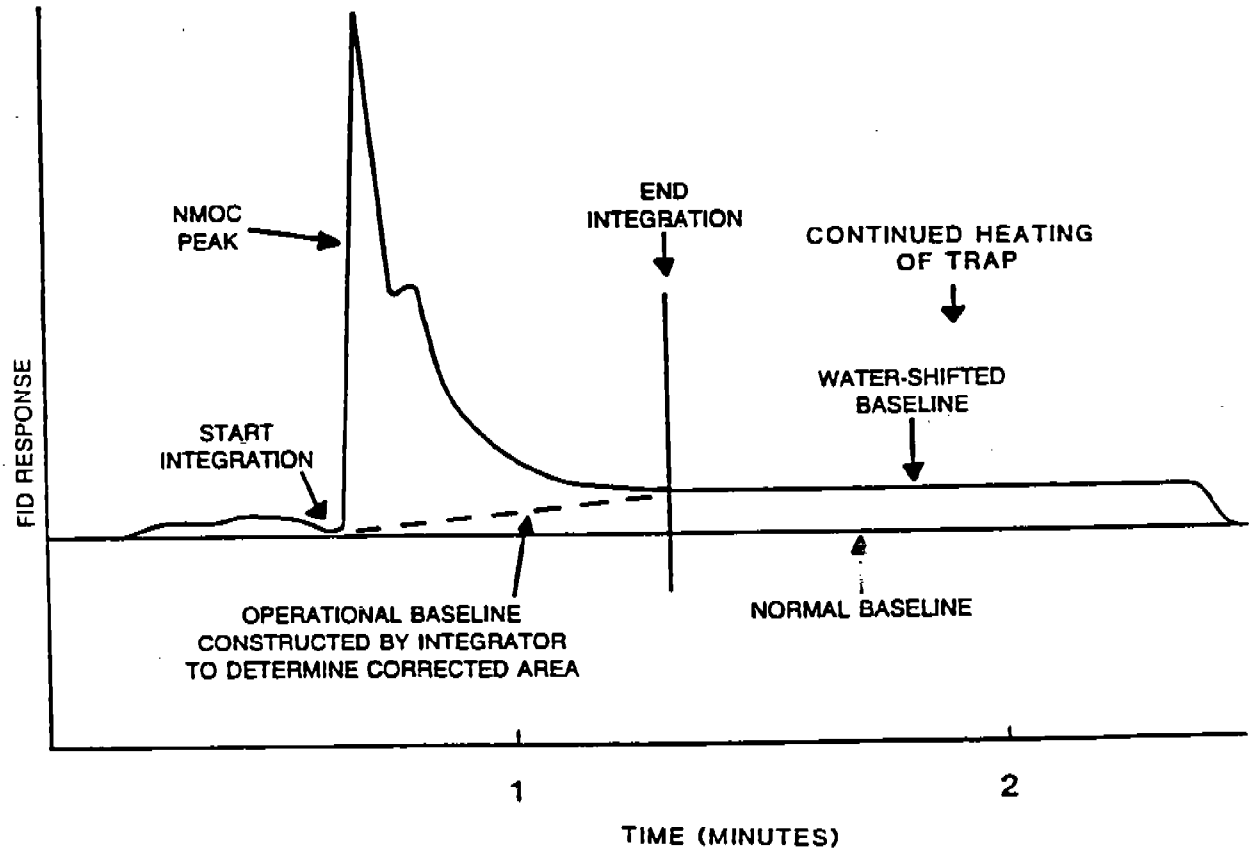


FIGURE 8. CONSTRUCTION OF OPERATIONAL BASELINE AND CORRESPONDING CORRECTION OF PEAK AREA

APPENDIX C

1989 NMOC MONITORING PROGRAM SITE DATA

APPENDIX C -- LIST OF FIGURES

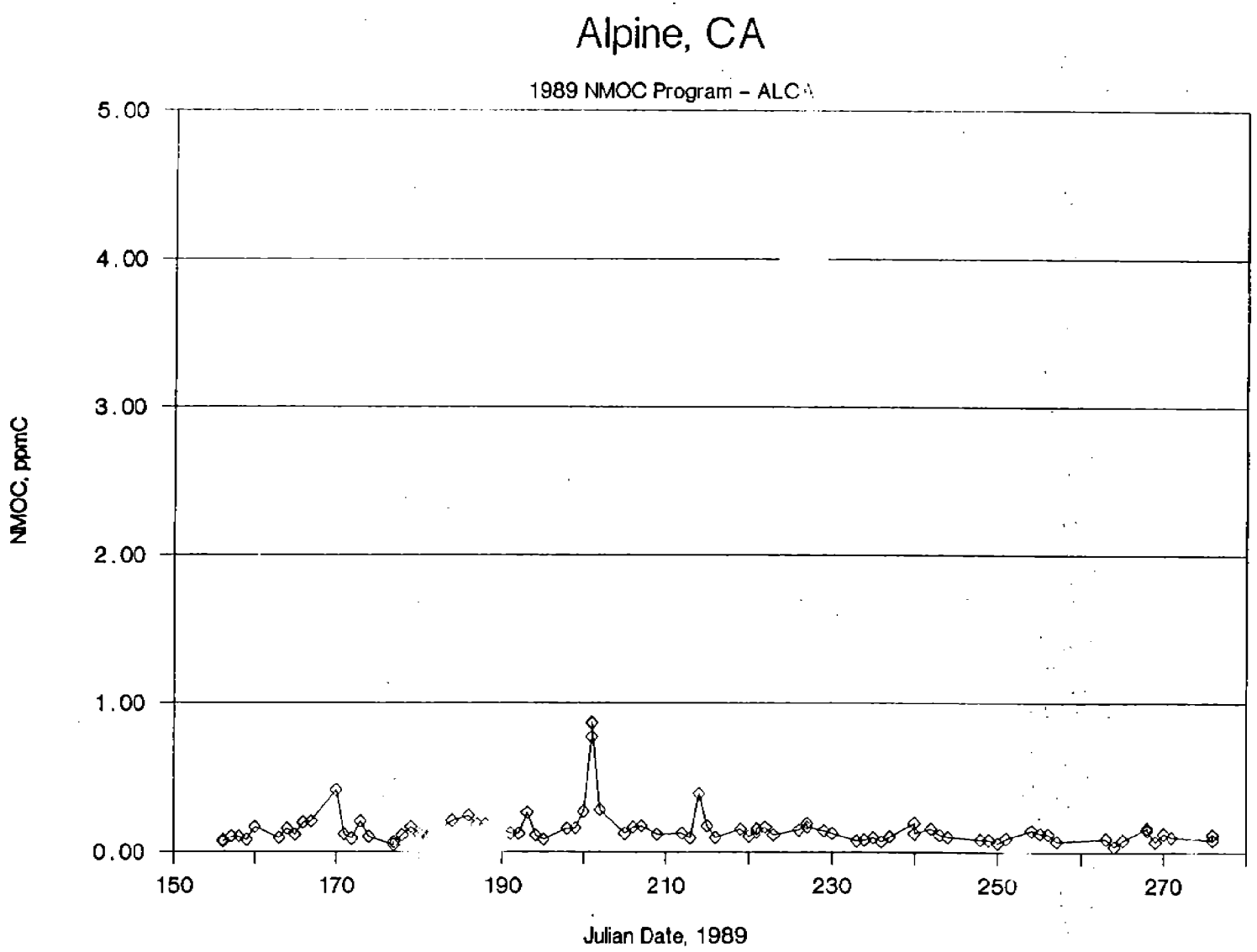


Figure C-1. Plot of NMOC concentration for Alpine, CA.

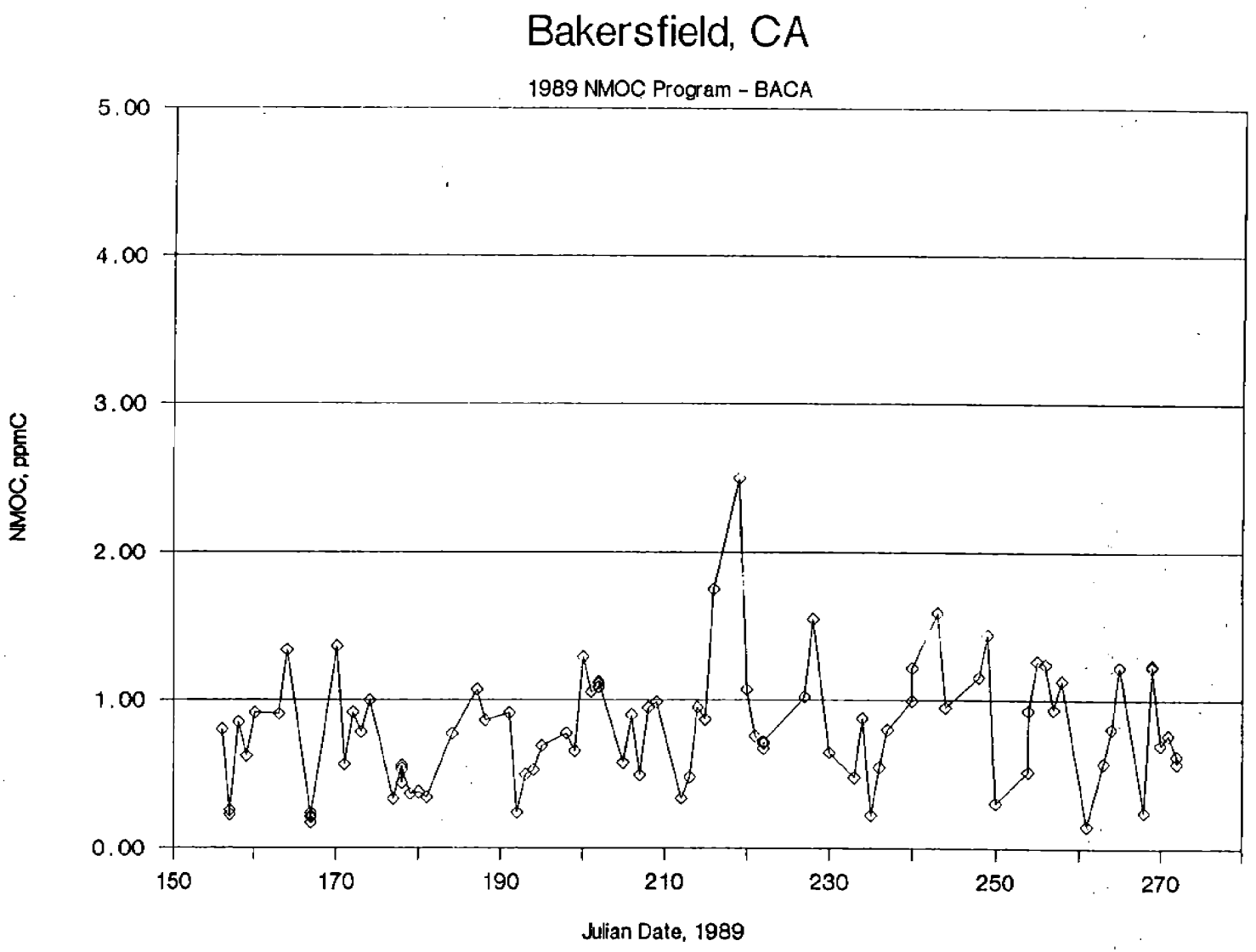


Figure C-2. Plot of NMOC concentration for Bakersfield, CA.

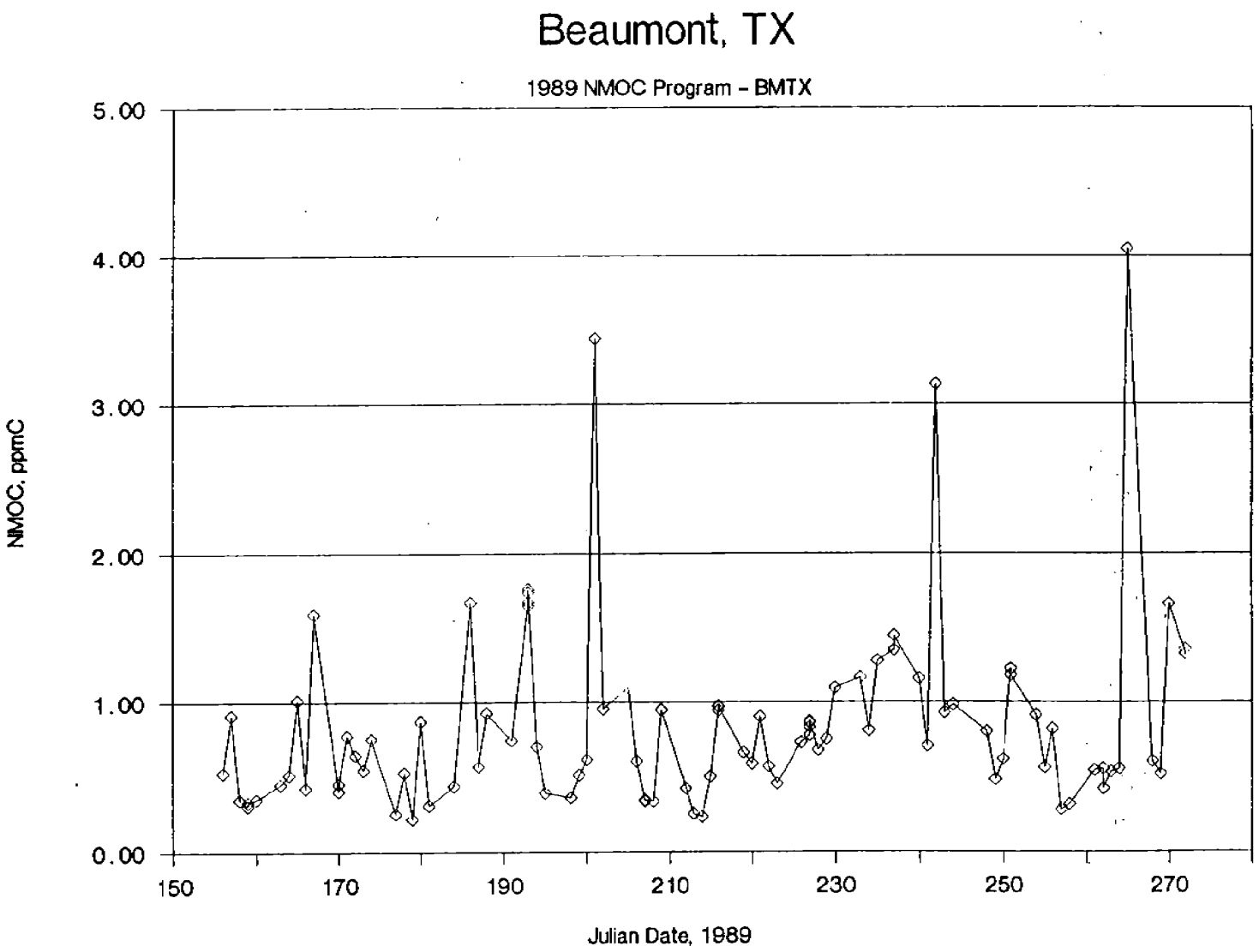


Figure C-3. Plot of NMOC concentration for Beaumont, TX.

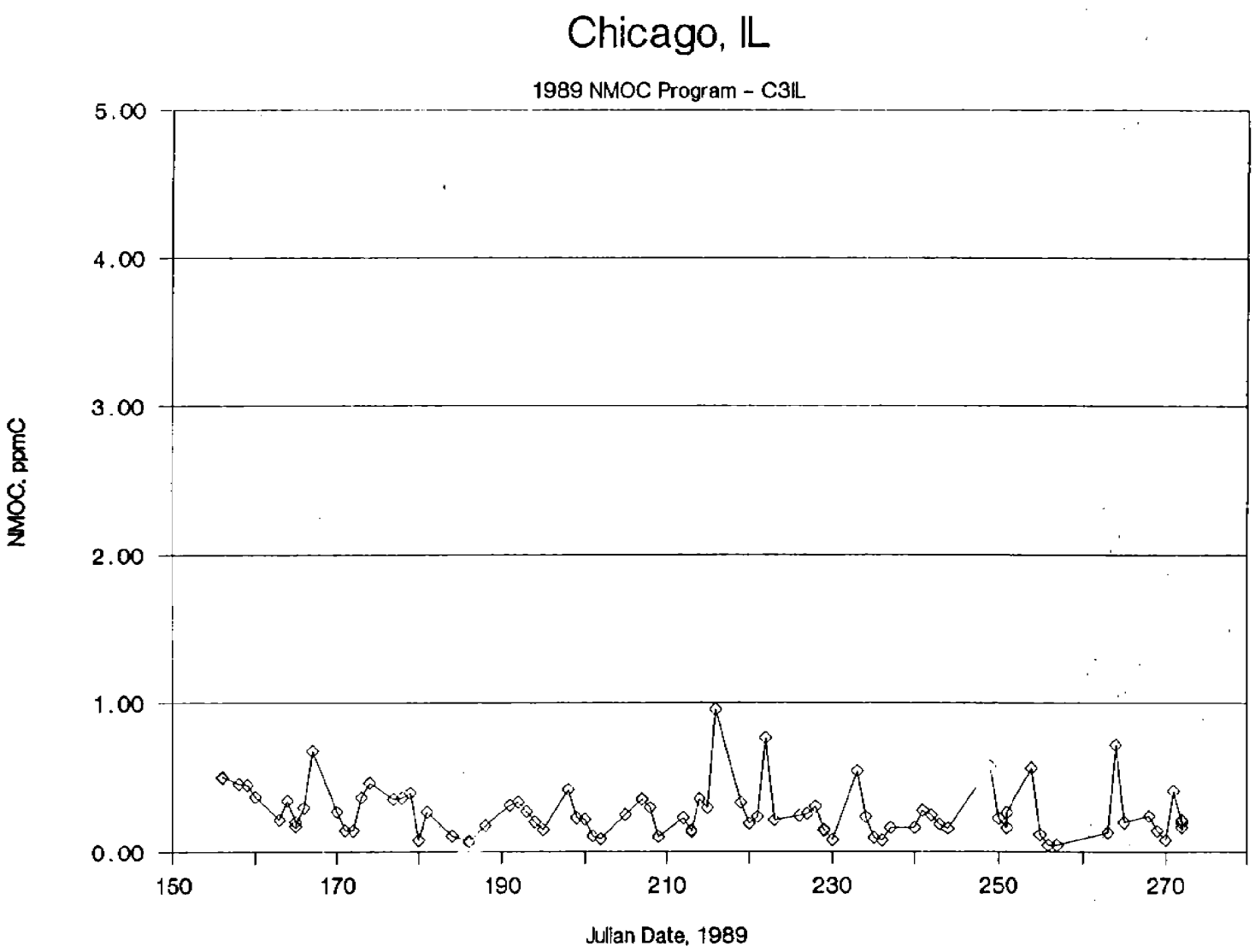


Figure C-4. Plot of NMOC concentration for Chicago, IL (Sears Tower).

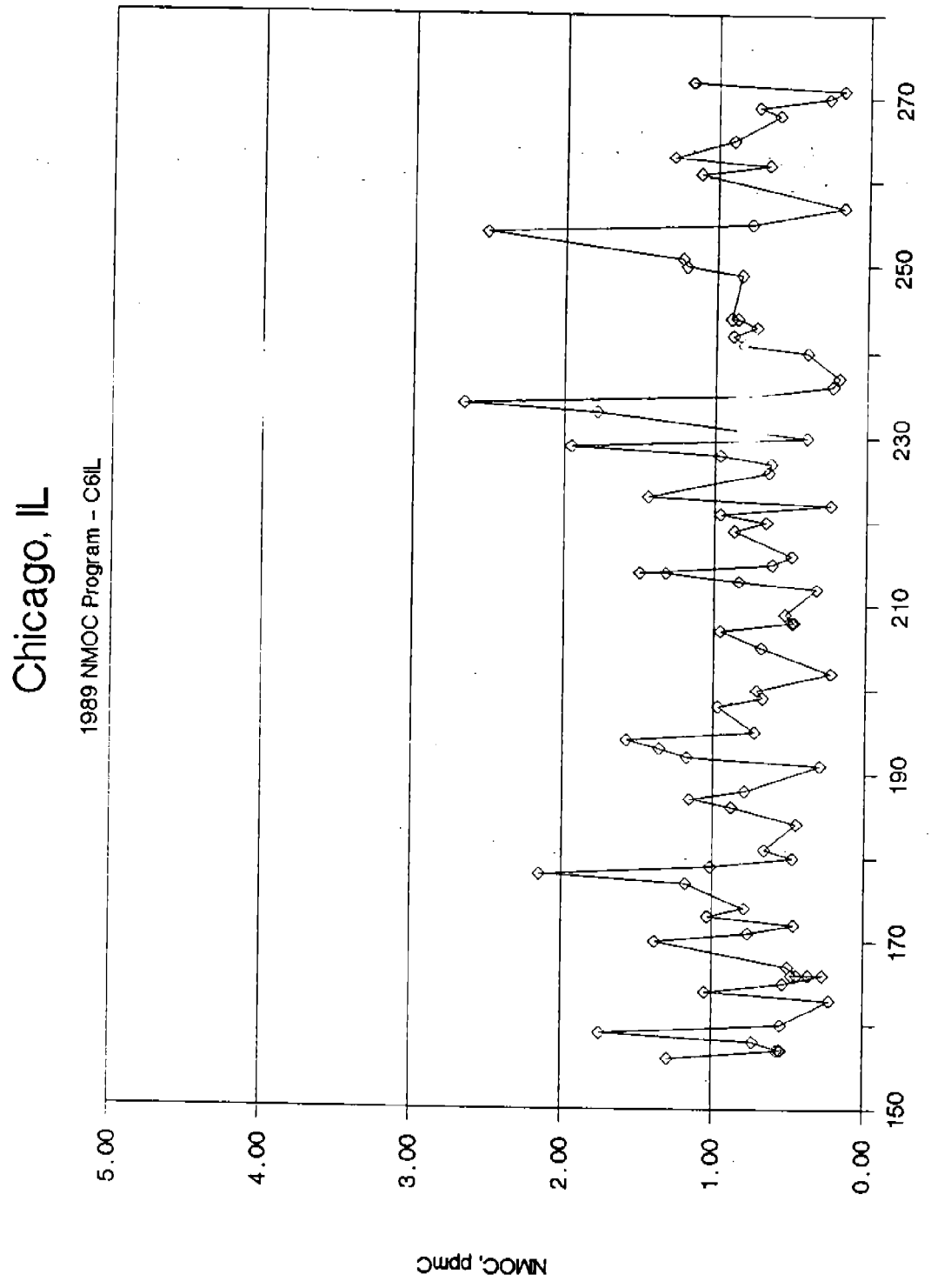


Figure C-5. Plot of NMOC concentration for Chicago, IL (CTA).

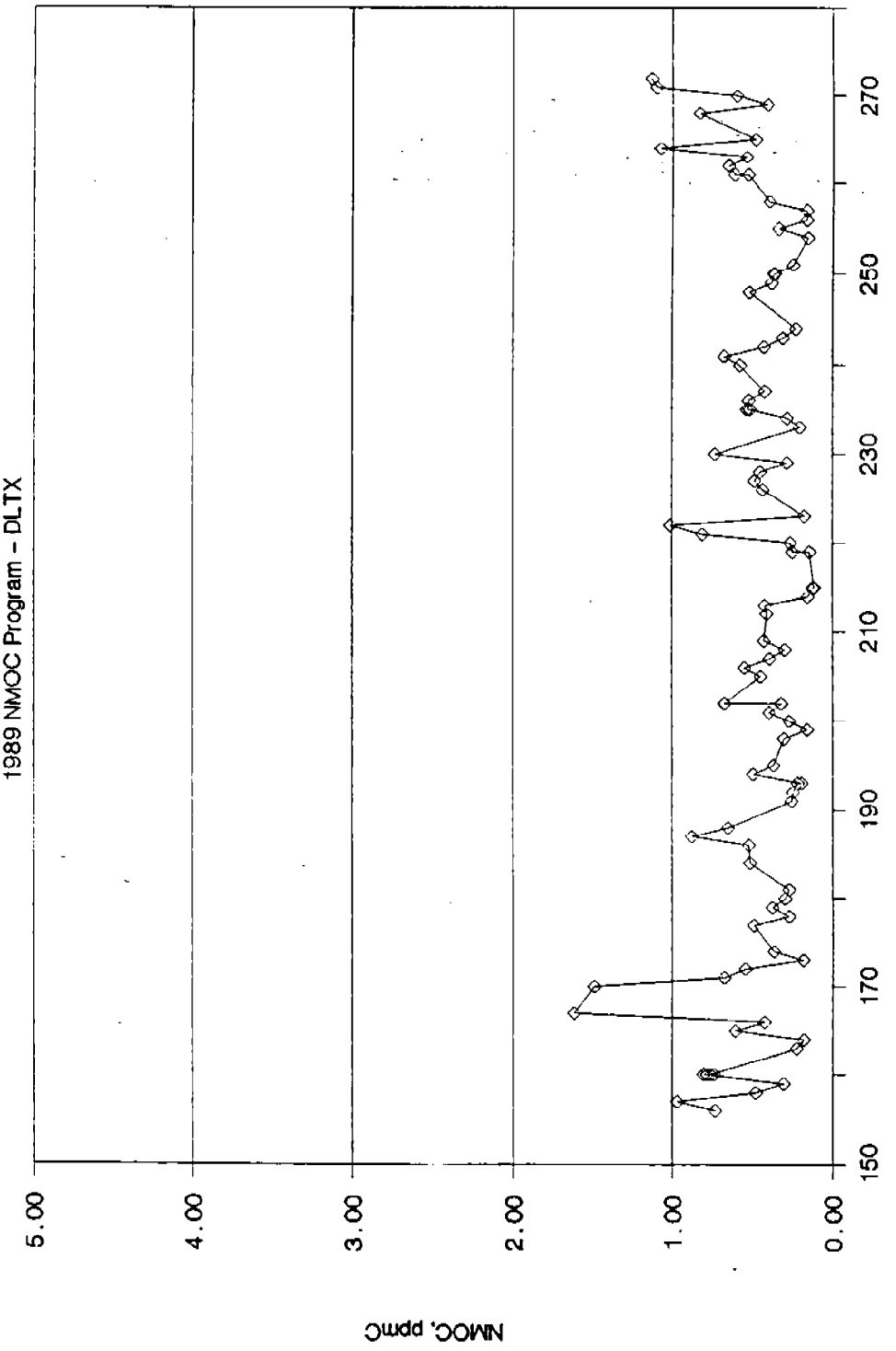


Figure C-6. Plot of NMOC concentration for Dallas, TX.

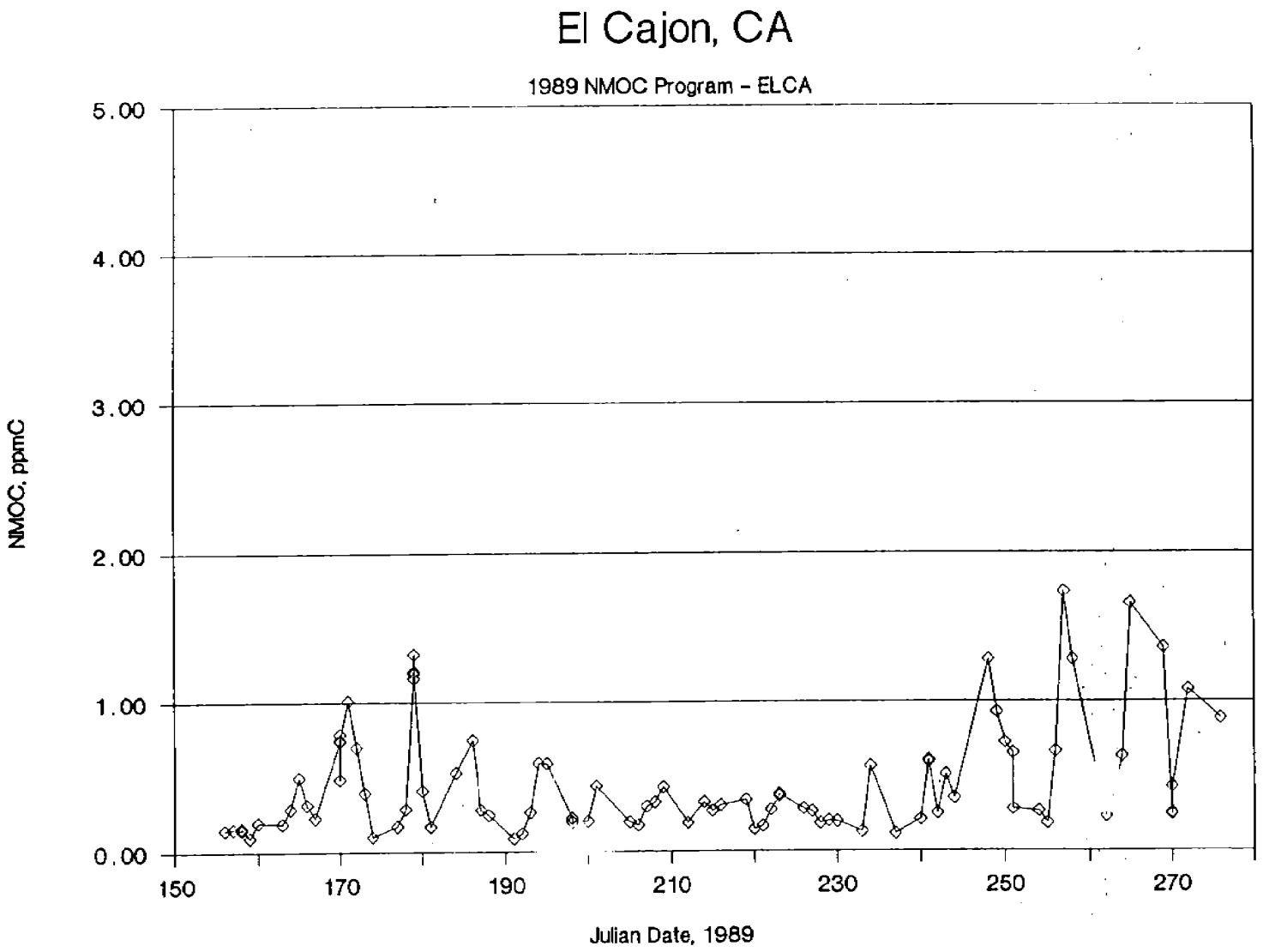


Figure C-7. Plot of NMOC concentration for El Cajon, CA.

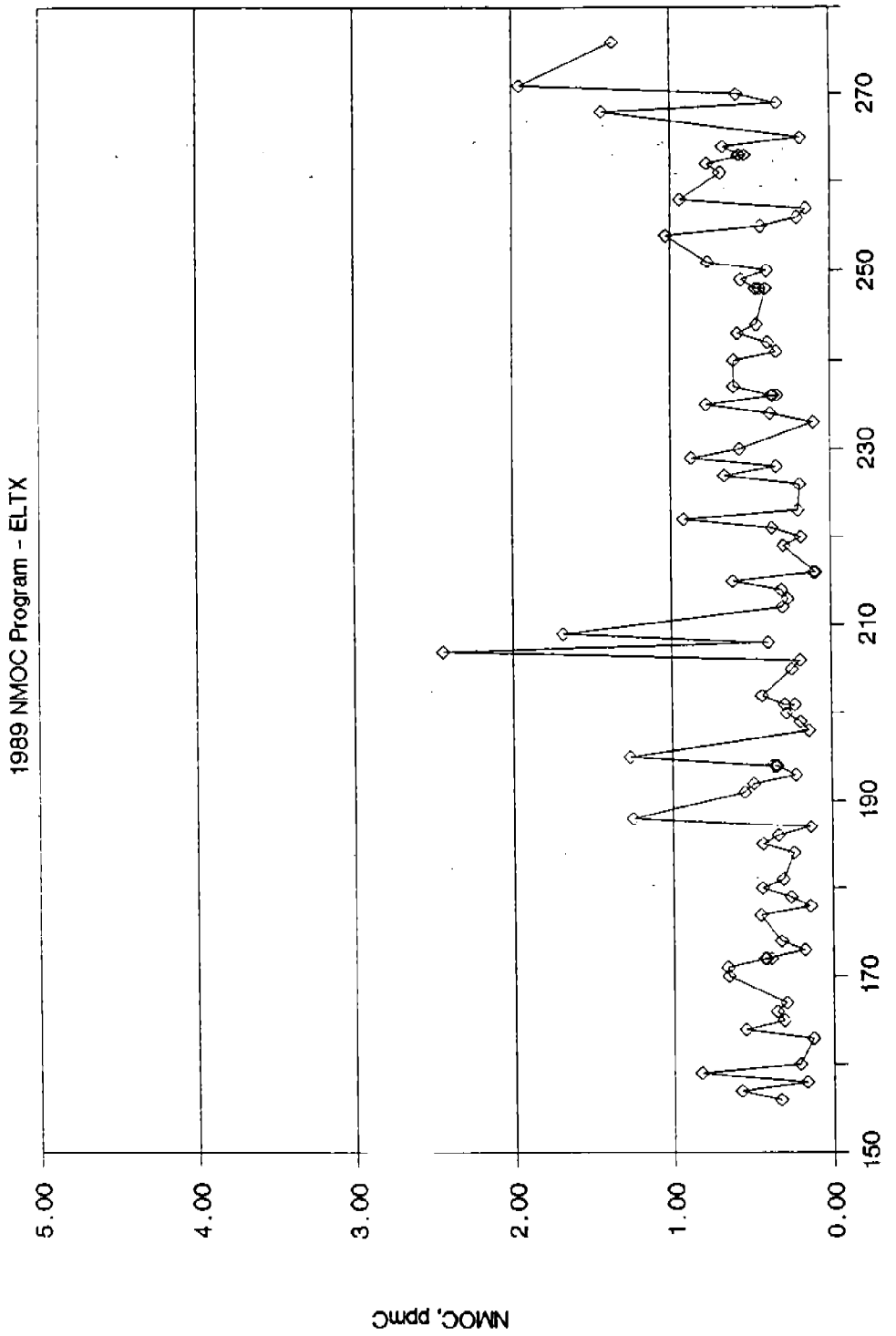


Figure C-8. Plot of NMOC concentration for El Paso, TX.

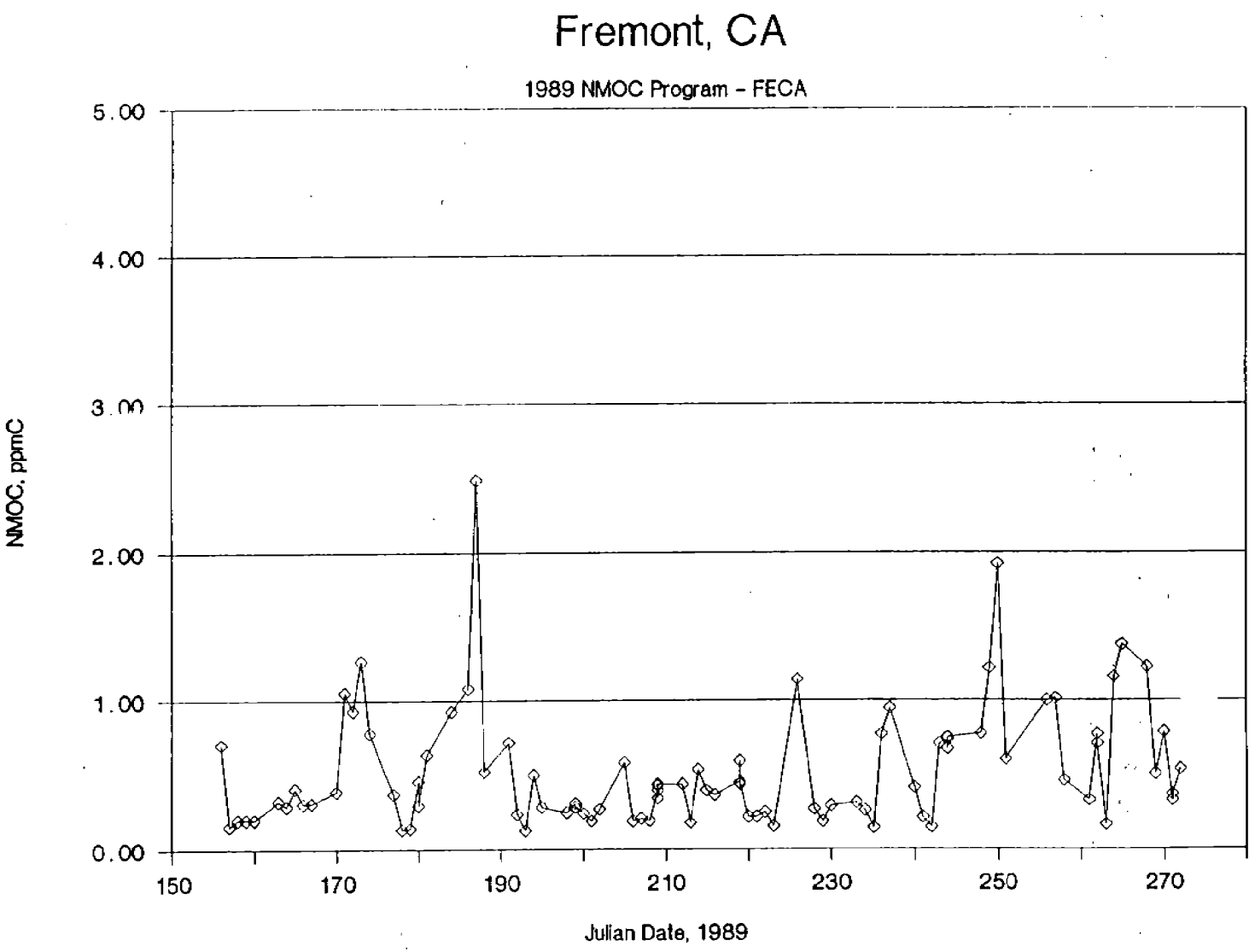


Figure C-9. Plot of NMOC concentration for Fremont, CA.

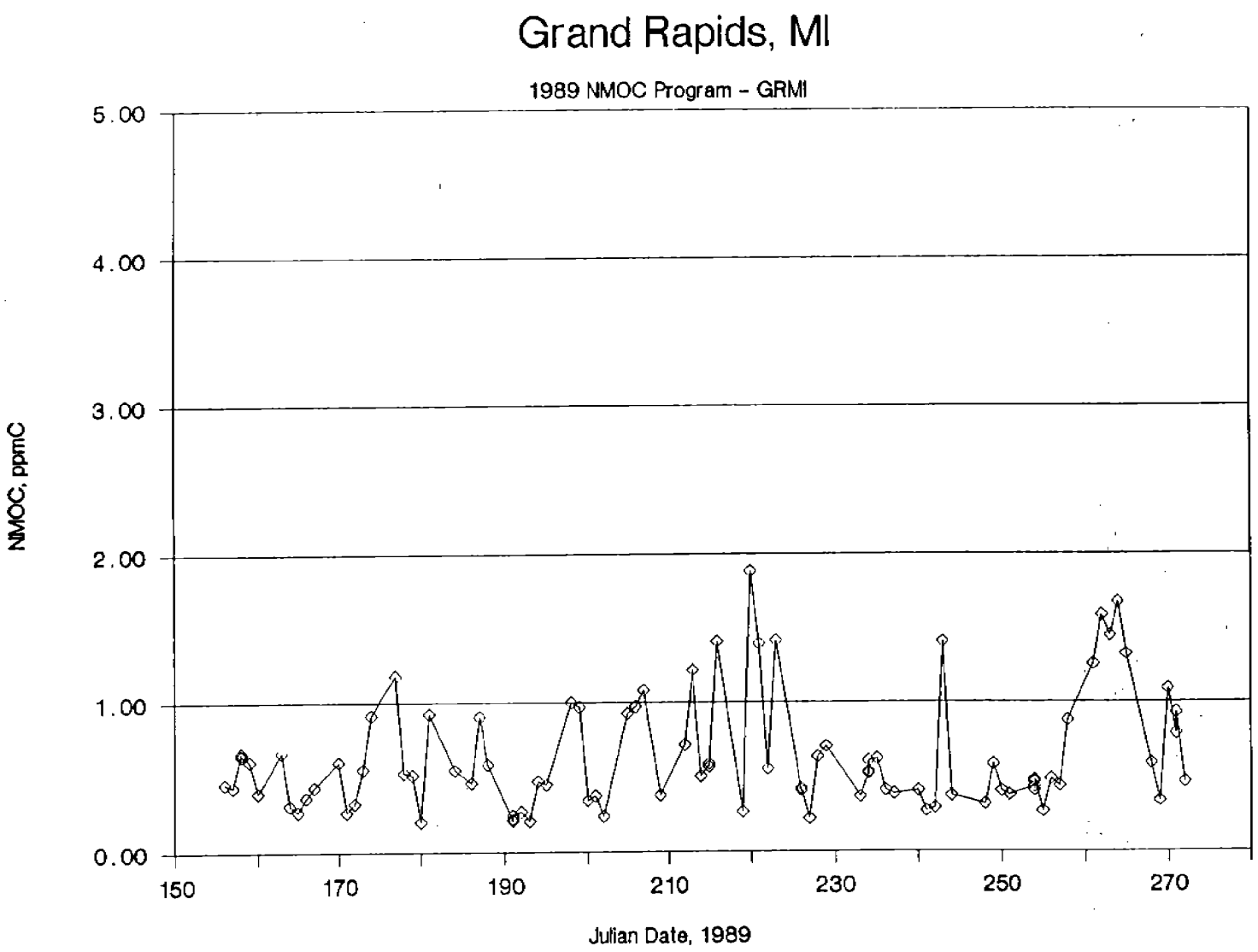


Figure C-10. Plot of NMOC concentration for Grand Rapids, MI.

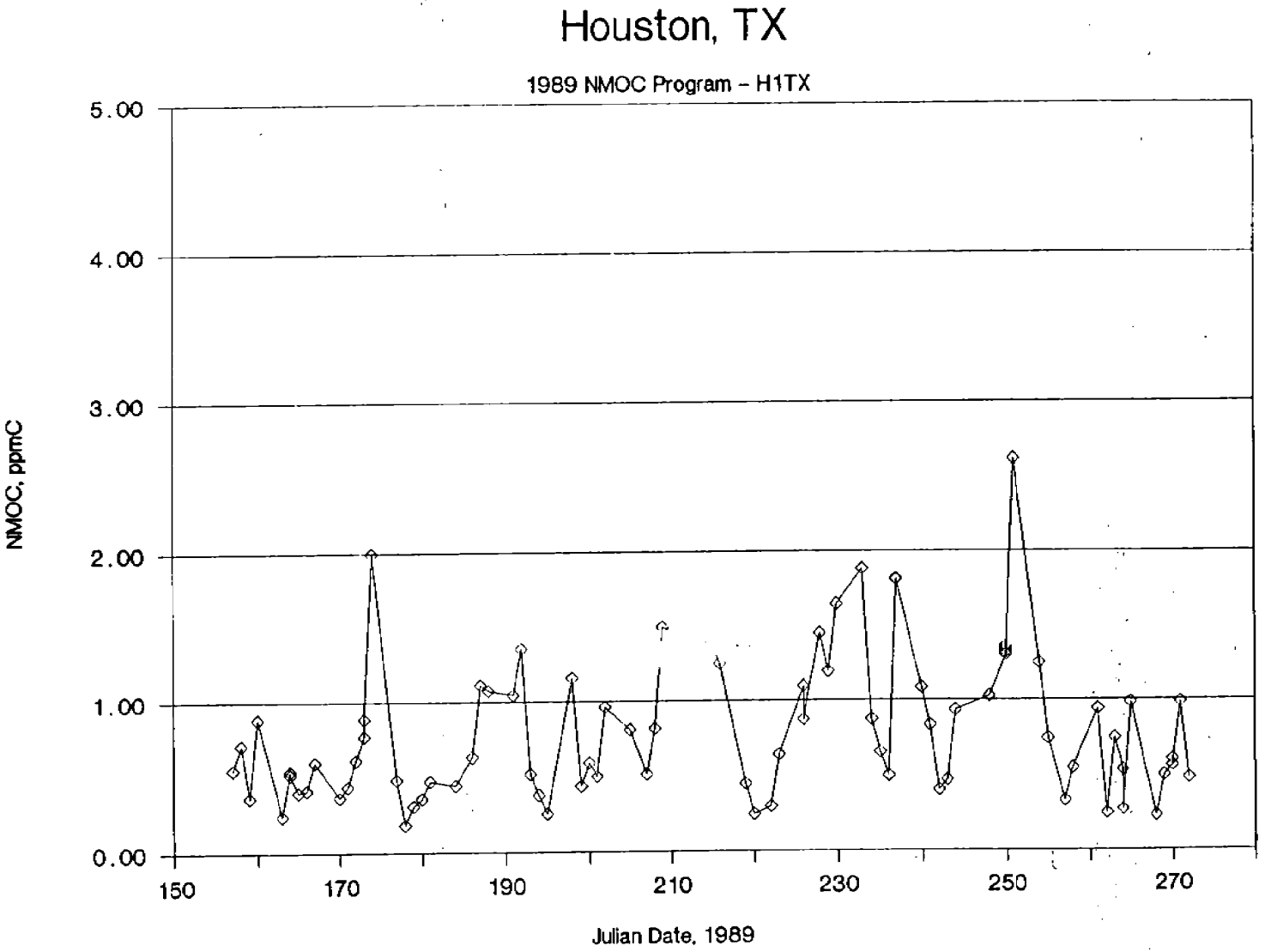


Figure C-11. Plot of NMOC concentration for Houston, TX.

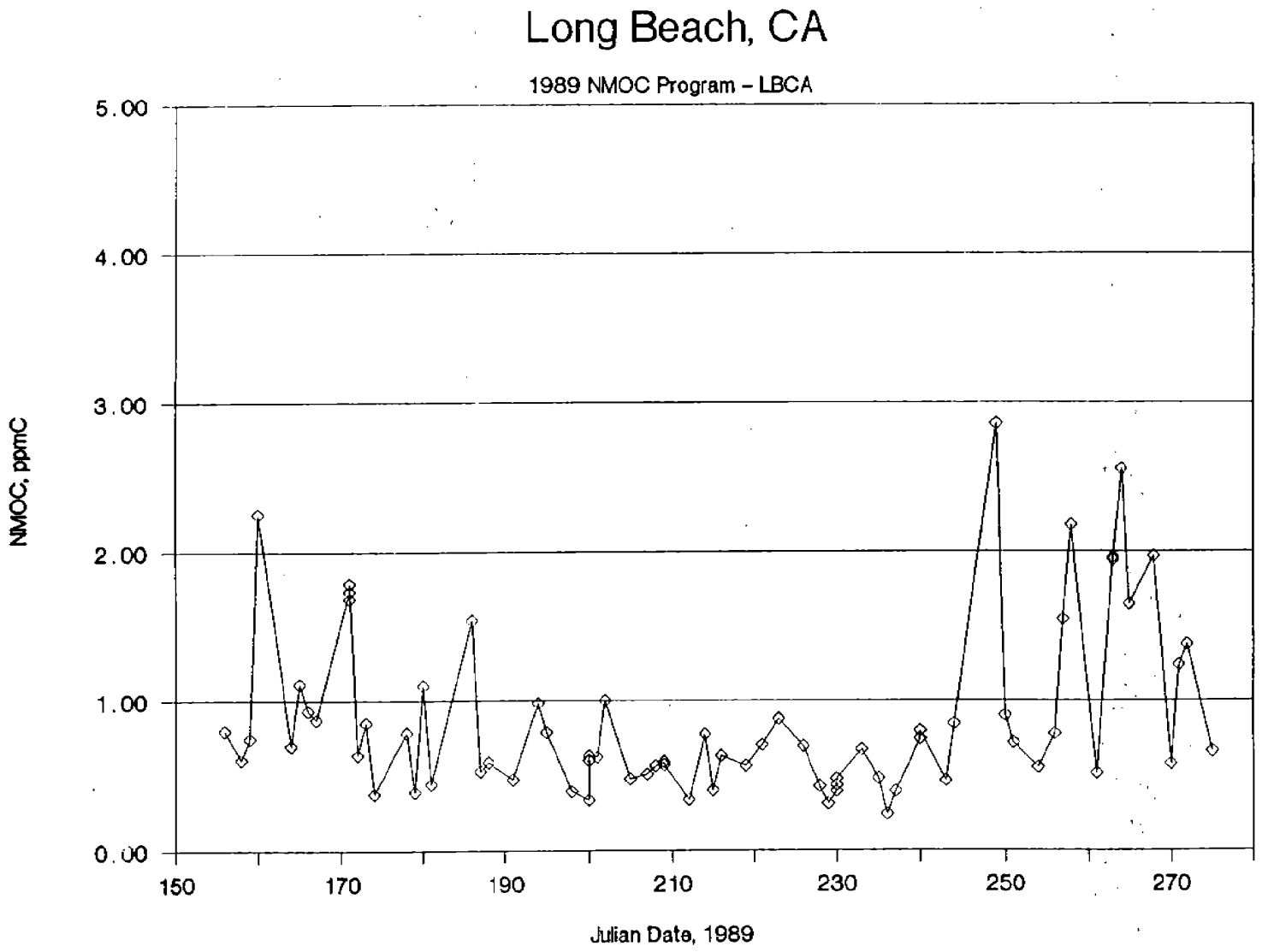


Figure C-12. Plot of NMOC concentration for Long Beach, CA.

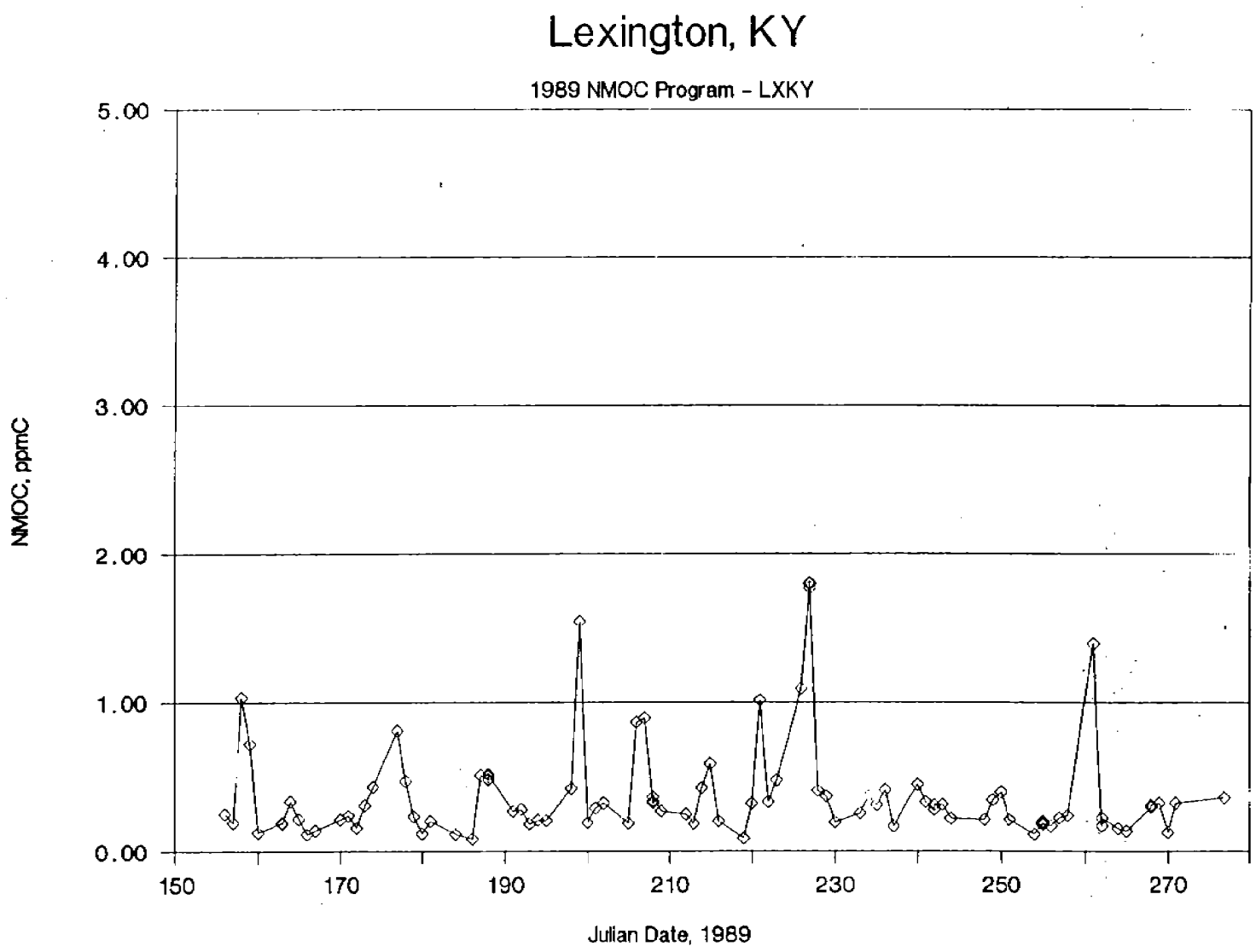


Figure C-13. Plot of NMOC concentration for Lexington, KY.

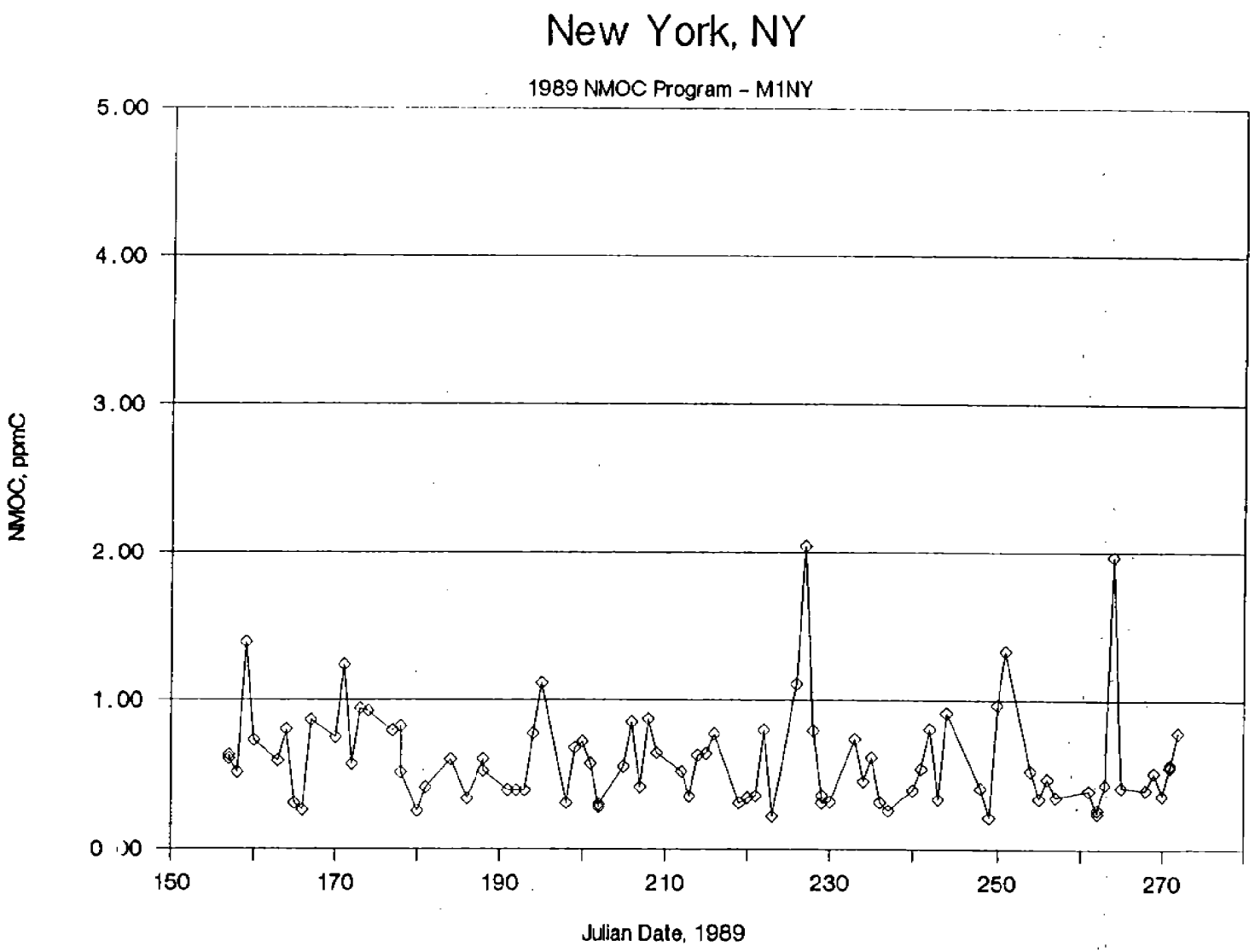


Figure C-14. Plot of NMOC concentration for New York, NY (P. S. 59).

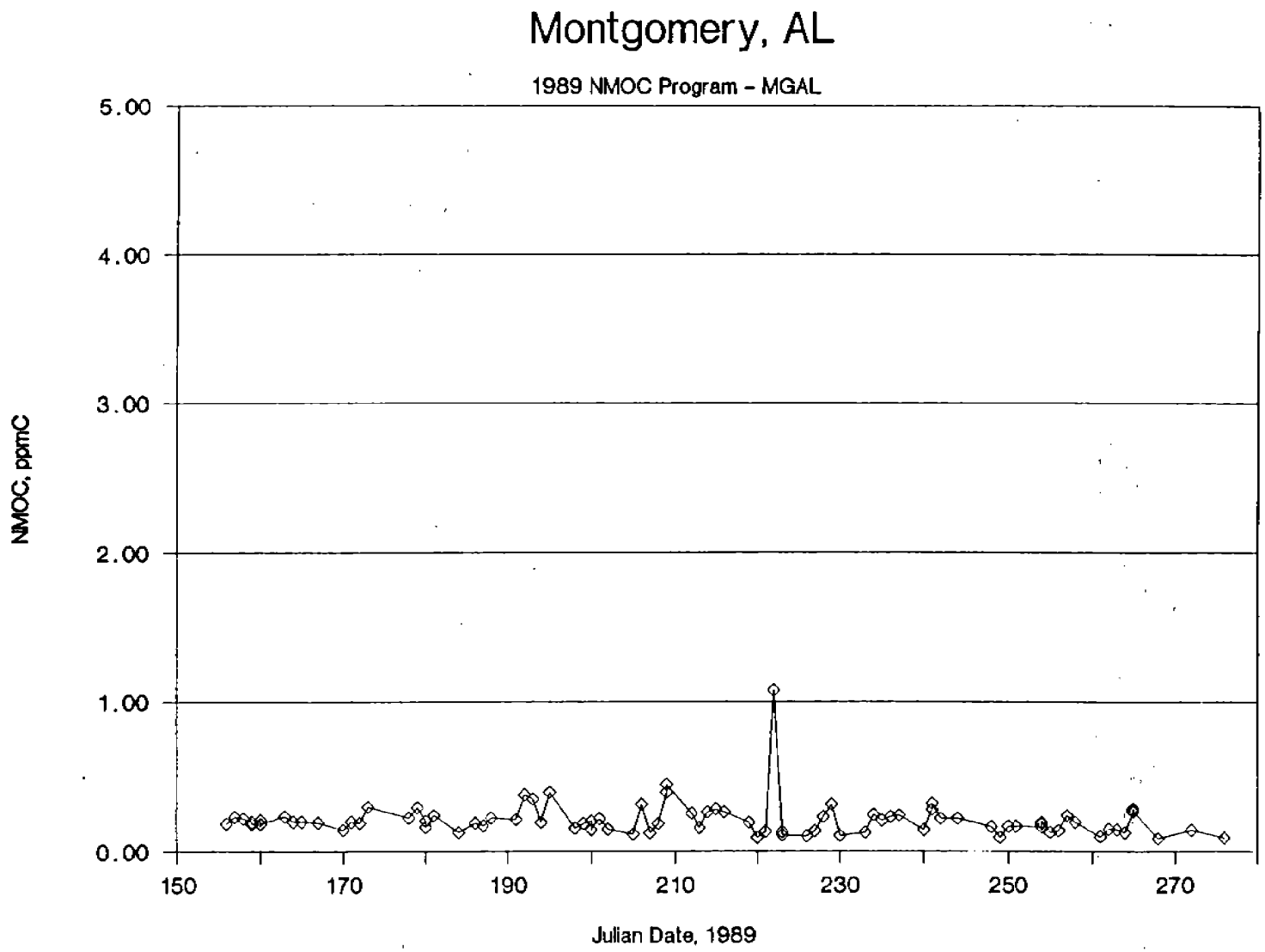


Figure C-15. Plot of NMOC concentration for Montgomery, AL.

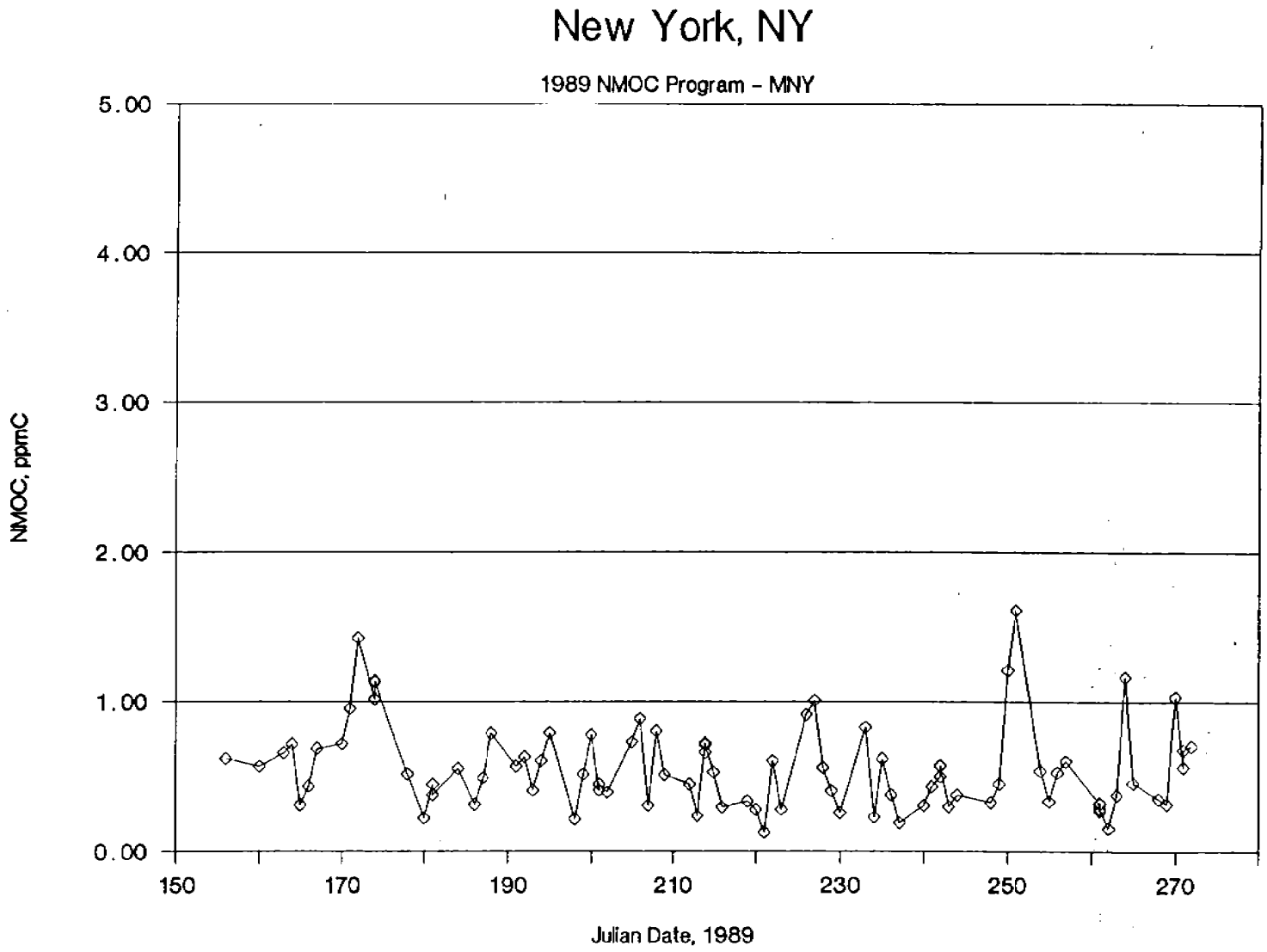


Figure C-16. Plot of NMOC concentration for New York, NY (Mabel Dean).

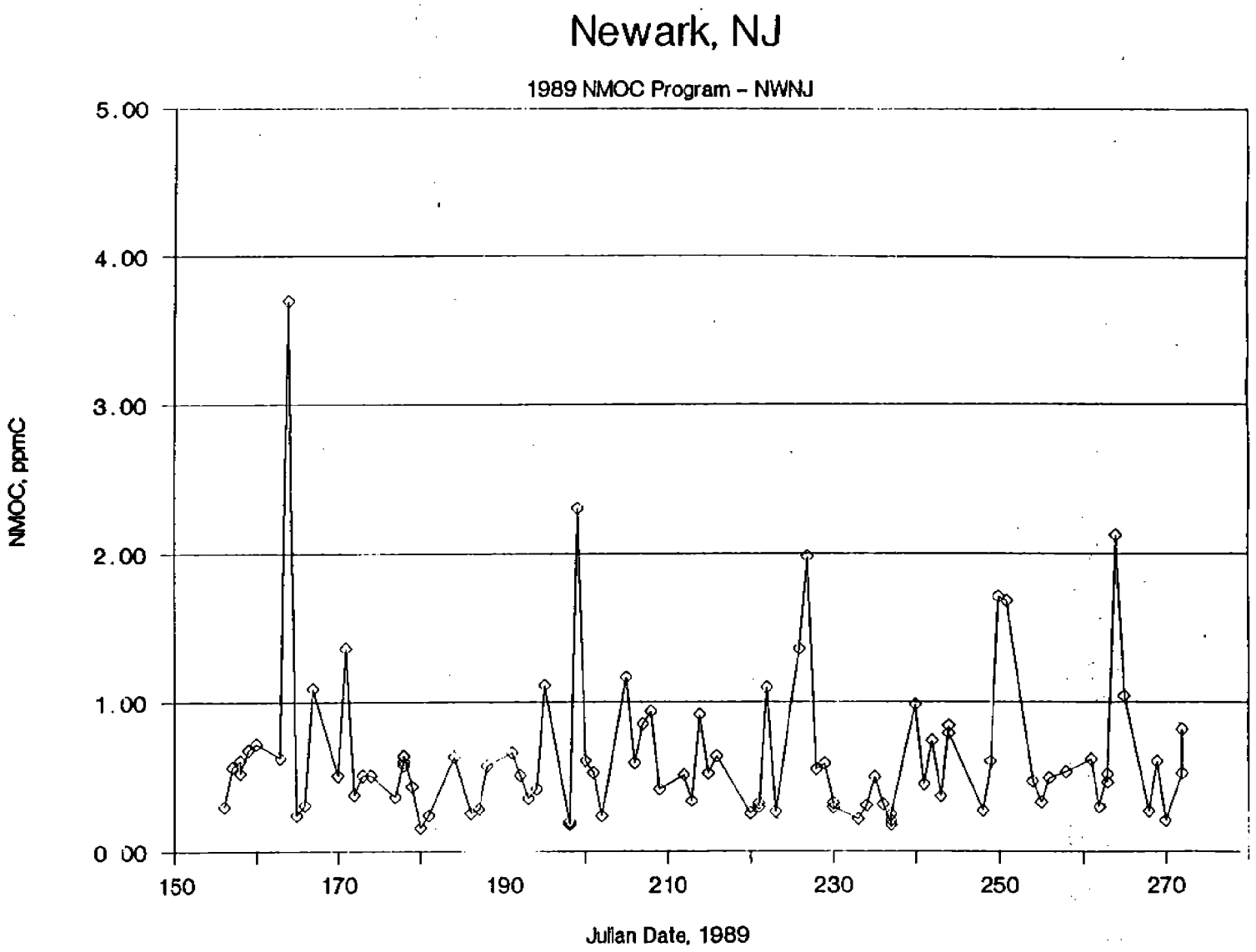


Figure C-17. Plot of NMOC concentration for Newark, NJ.

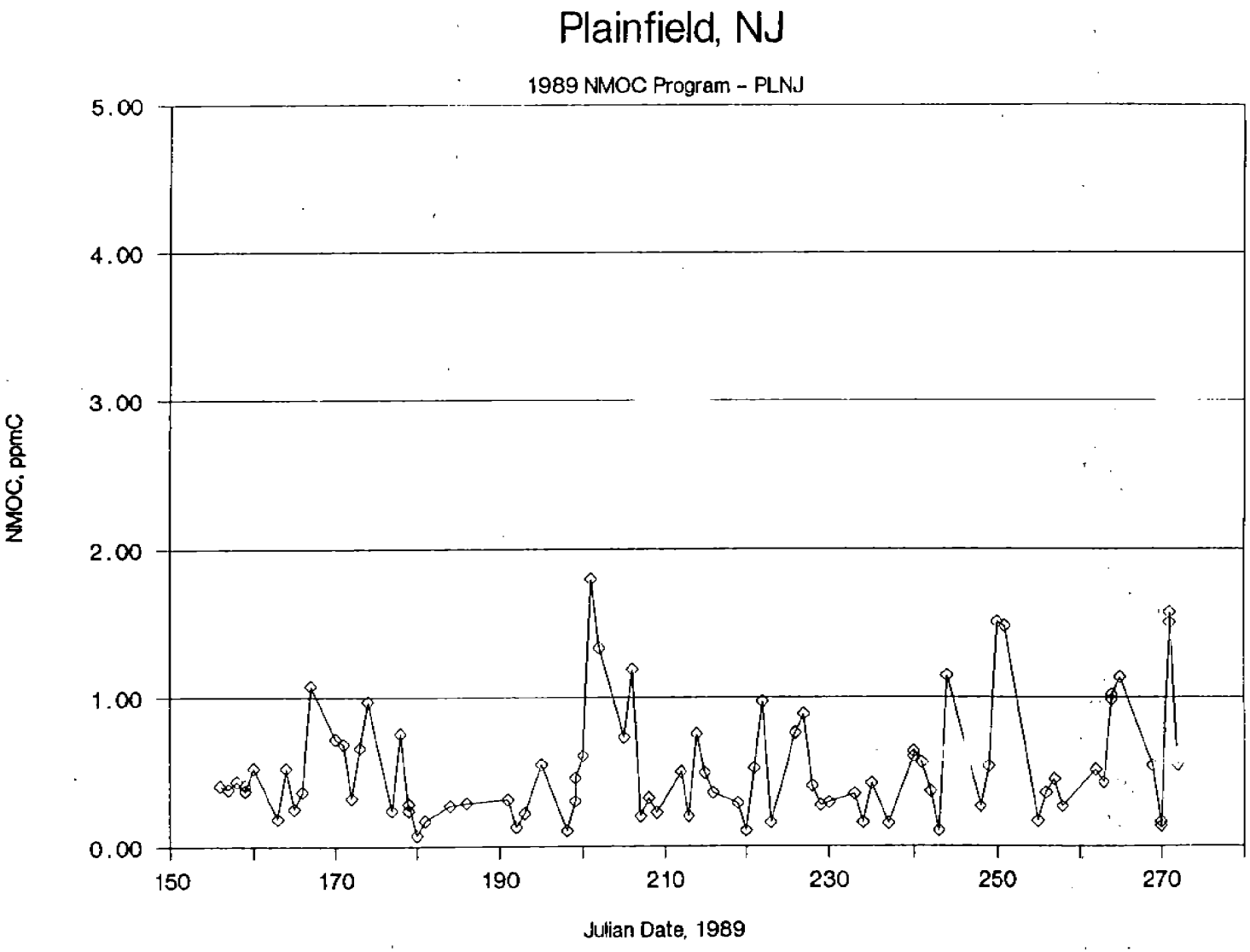


Figure C-18. Plot of NMOC concentration for Plainfield, NJ.

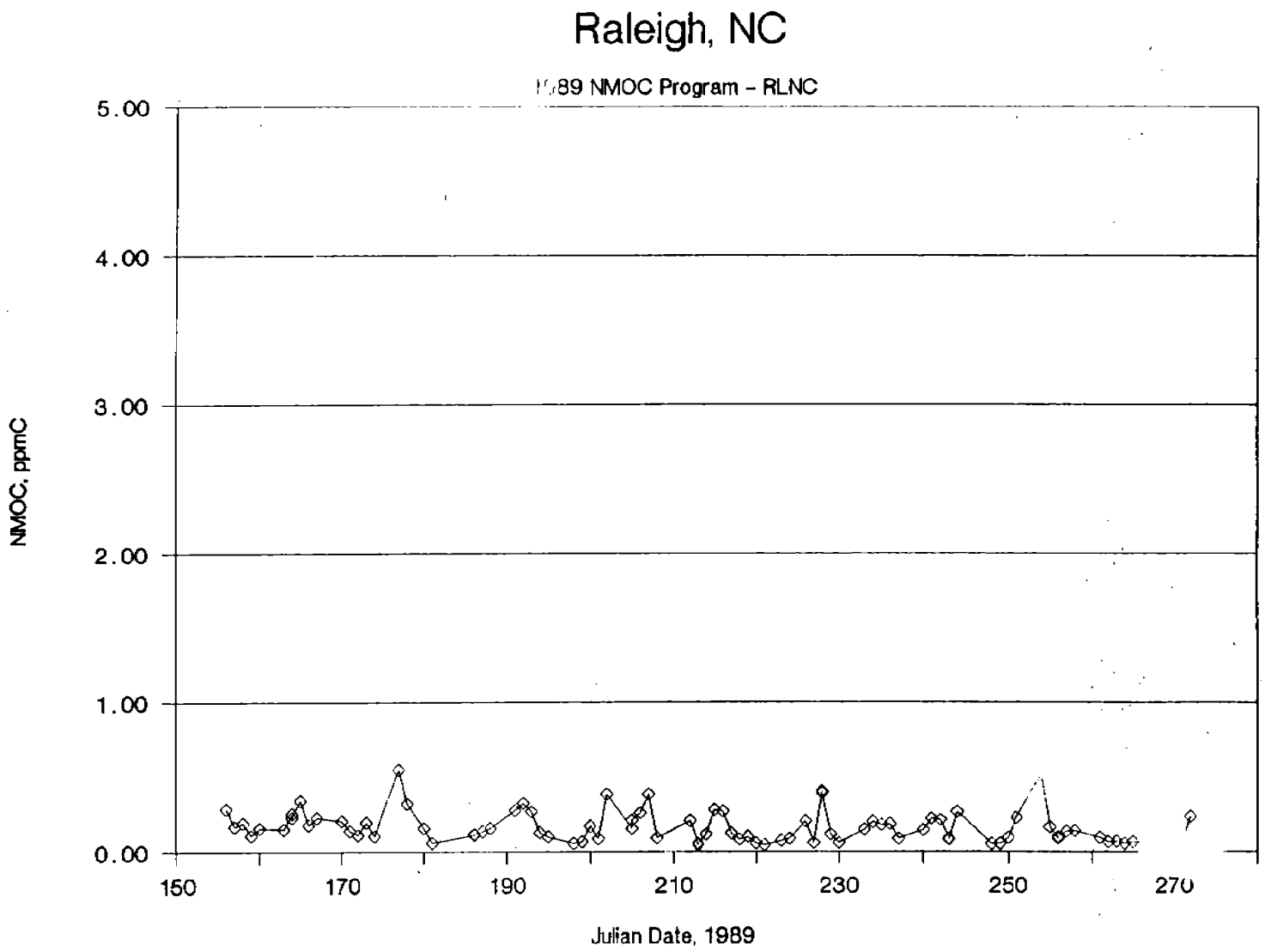


Figure C-19. Plot of NMOC concentration for Raleigh, NC.

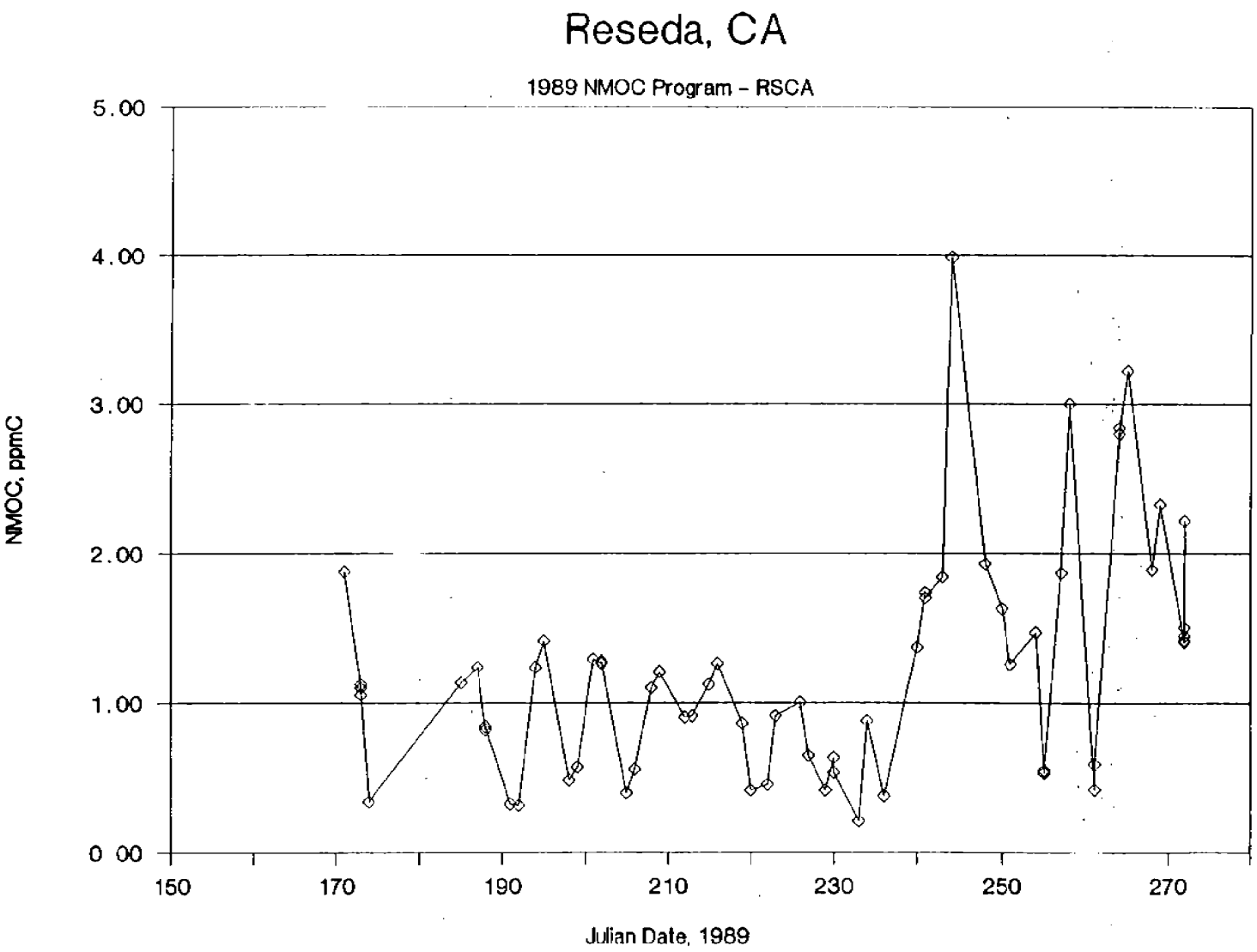


Figure C-20. Plot of NMOC concentration for Reseda, CA.

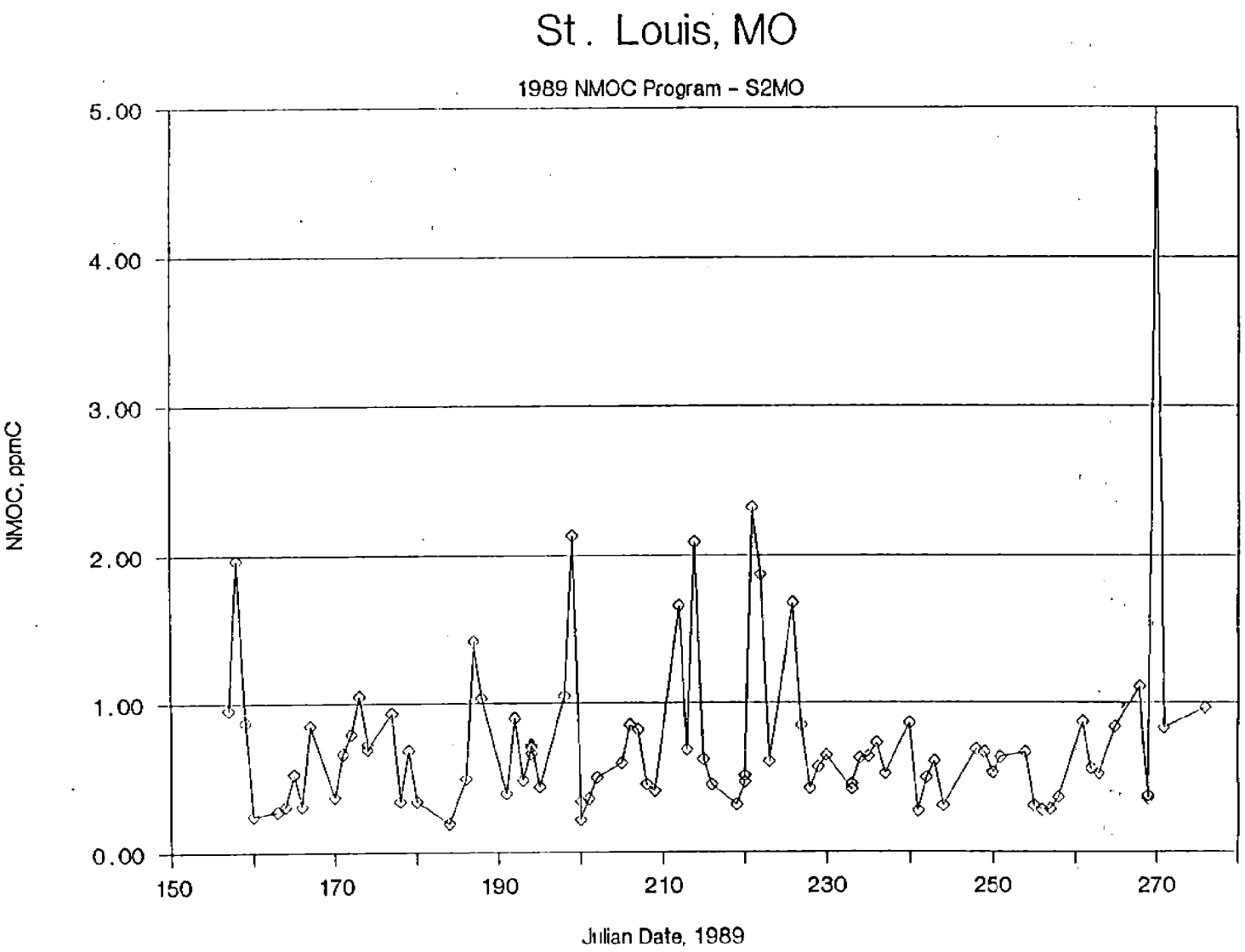


Figure C-21. Plot of NMOC concentration for St. Louis, MO.

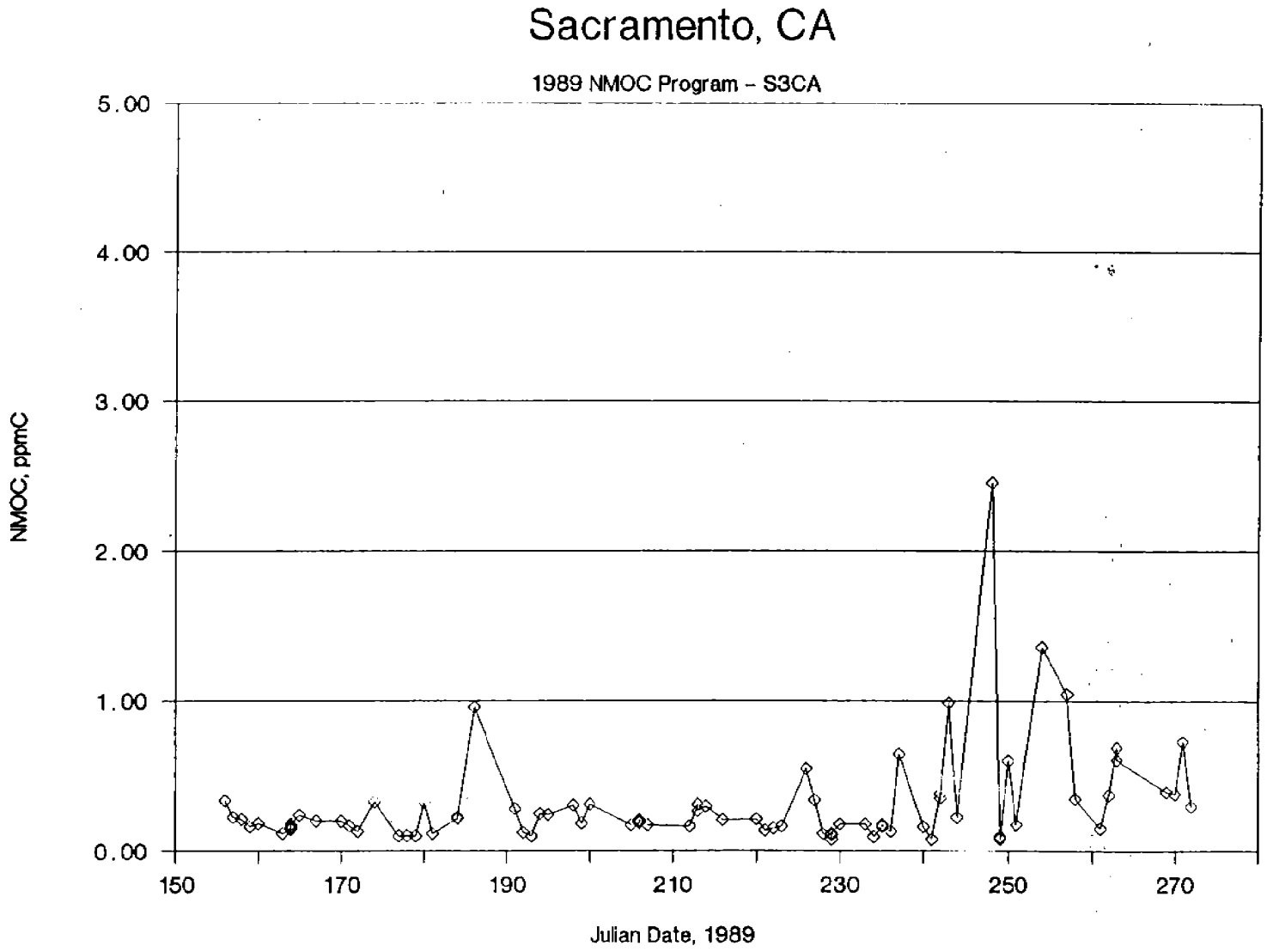


Figure C-22. Plot of NMOC concentration for Sacramento, CA (T St.).

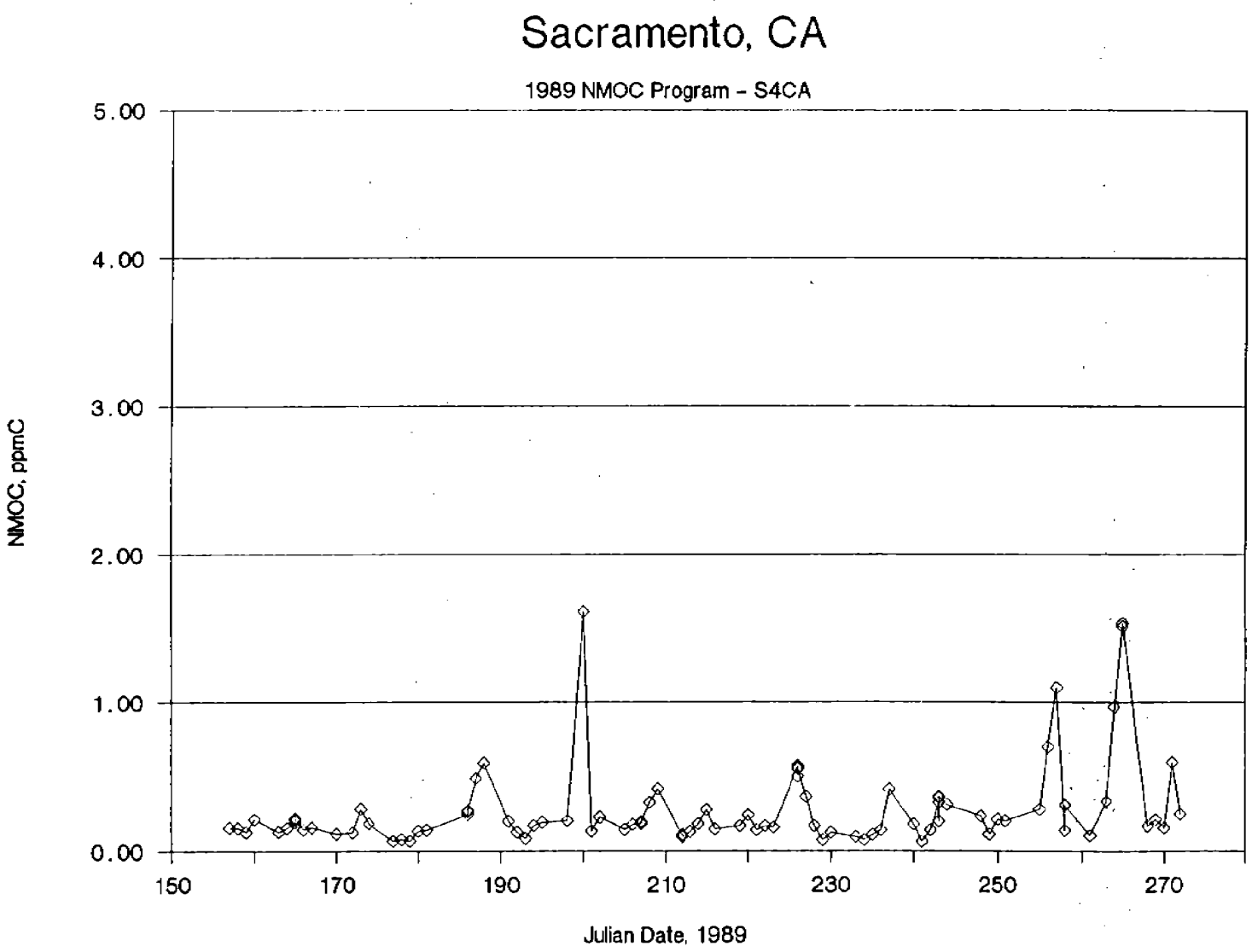


Figure C-23. Plot of NMOC concentration for Sacramento, CA (Avalon Dr.).

APPENDIX C -- LIST OF TABLES

TABLE C-1. SUMMARY OF THE 1989 NMOC DATA FOR ALPINE, CA (ALCA)

Sampling Period: 9:00 a.m. to Noon

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1016	98	15.9	15.0	B	0.069		
05-Jun-89	156	1017	72	15.9	16.0	C	0.065		
06-Jun-89	157	1033	825	15.0	14.0	B	0.101		
07-Jun-89	158	1060	672	16.0	16.0	B	0.101		
08-Jun-89	159	1091	97	14.5	14.0	B	0.080		
09-Jun-89	160	1109	899	15.0	14.0	D	0.163	0.203	
12-Jun-89	163	1133	645	16.0	15.0	A	0.093		
13-Jun-89	164	1181	407	15.0	14.0	D	0.155		
14-Jun-89	165	1183	87	15.0	14.0	D	0.112		
15-Jun-89	166	1231	406	16.5	13.5	A	0.196		
15-Jun-89	166	1232	707	16.5	13.5	A	0.195		
16-Jun-89	167	1240	726	16.0	12.0	A	0.201		
19-Jun-89	170	1270	75	14.2	10.0	C	0.414		
20-Jun-89	171	1273	39	15.0	14.0	D	0.115		
21-Jun-89	172	1301	718	15.5	15.0	B	0.087		
22-Jun-89	173	1359	899	15.0	14.0	C	0.203		
23-Jun-89	174	1365	155	15.0	14.0	D	0.097		
26-Jun-89	177	1385	53	17.0	16.0	B	0.046		
26-Jun-89	177	1386	850	17.0	16.0	C	0.066		
27-Jun-89	178	1400	640	11.0	12.0	D	0.109		
28-Jun-89	179	1426	672	15.5	15.0	C	0.163		
29-Jun-89	180	1453	914	15.5	15.0	A	0.115		
30-Jun-89	181	1478	36	16.0	15.0	A	0.101		
30-Jun-89	181	1479	501	16.0	15.0	A	0.079		
03-Jul-89	184	1516	136	15.0	13.0	B	0.209		
05-Jul-89	186	1510	765	15.0	14.0	C	0.242		
07-Jul-89	188	1594	921	14.0	12.0	C	0.180		
10-Jul-89	191	1609	773	14.0	12.0	B	0.121		
11-Jul-89	192	1628	307	14.0	15.0	D	0.117	0.160	
12-Jul-89	193	1681	775	14.5	12.0	A	0.262		
13-Jul-89	194	1701	770	15.0	14.0	B	0.110		
14-Jul-89	195	1725	13	14.0	14.0	A	0.081		
17-Jul-89	198	1742	833	15.0	14.0	A	0.155		
18-Jul-89	199	1784	626	14.5	14.0	A	0.156		
19-Jul-89	200	1807	804	14.5	20.0	A	0.269		
20-Jul-89	201	1817	123	16.5	16.0	B	0.771		
20-Jul-89	201	1818	153	16.5	16.0	C	0.862		
21-Jul-89	202	1861	924	10.5	10.0	D	0.281		
24-Jul-89	205	1884	84	14.0	15.0	D	0.122		
25-Jul-89	206	1906	713	16.0	14.0	D	0.162		
26-Jul-89	207	1927	406	15.0	15.0	C	0.172		
28-Jul-89	209	1984	698	15.5	16.0	D	0.115		
31-Jul-89	212	1994	857	15.0	15.0	D	0.123		
01-Aug-89	213	2024	27	15.0	14.0	A	0.093		
02-Aug-89	214	2059	109	16.5	16.0	C	0.390		
03-Aug-89	215	2086	640	16.0	16.0	D	0.171		

TABLE C-1. SUMMARY OF THE 1989 NMOC DATA FOR ALPINE, CA (ALCA)

Sampling Period: 9:00 a.m. to Noon

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
04-Aug-89	216	2112	825	15.0	14.0	C	0.096		
07-Aug-89	219	2124	669	16.0	15.0	D	0.152		
08-Aug-89	220	2155	878	15.0	14.0	A	0.104	0.128	
09-Aug-89	221	2178	304	16.0	15.0	A	0.155		
09-Aug-89	221	2177	677	16.0	16.0	A	0.158		
10-Aug-89	222	2200	148	9.0	9.0	D	0.164		
11-Aug-89	223	2232	786	16.0	16.0	D	0.111		
14-Aug-89	226	2260	618	10.0	10.0	C	0.147		
15-Aug-89	227	2309	11	14.5	14.0	A	0.163		
15-Aug-89	227	2279	837	15.0	14.0	A	0.191		
17-Aug-89	229	2344	774	15.5	14.0	A	0.141		
18-Aug-89	230	2341	661	15.5	14.0	C	0.124		
21-Aug-89	233	2391	815	15.0	14.5	D	0.074		
22-Aug-89	234	2418	38	15.0	14.0	D	0.078		
22-Aug-89	234	2417	146	15.0	14.0	D	0.081		
23-Aug-89	235	2440	675	14.5	14.0	D	0.096		
24-Aug-89	236	2452	671	15.0	15.0	D	0.067		
25-Aug-89	237	2487	104	14.0	14.0	B	0.102		
28-Aug-89	240	2563	97	14.5	14.0	C	0.122		
28-Aug-89	240	2526	793	15.5	15.0	C	0.193		
30-Aug-89	242	2538	916	14.5	14.0	D	0.154		
31-Aug-89	243	2591	126	14.5	12.0	A	0.111		
01-Sep-89	244	2627	89	14.5	14.0	D	0.097		
05-Sep-89	248	2635	11	14.5	14.0	B	0.082		
06-Sep-89	249	2654	43	15.0	14.0	B	0.080		
07-Sep-89	250	2730	718	15.5	15.0	B	0.056		
08-Sep-89	251	2728	84	13.0	14.0	C	0.090		
11-Sep-89	254	2743	71	15.0	14.0	B	0.144		
12-Sep-89	255	2773	801	15.0	14.0	D	0.123		
13-Sep-89	256	2795	16	14.0	13.0	C	0.118		
14-Sep-89	257	2807	31	14.5	14.0	B	0.070		
19-Sep-89	262	2903	22	14.0	14.0	A	0.063		
20-Sep-89	263	2898	50	14.5	14.0	B	0.091		
21-Sep-89	264	2944	801	15.0	14.0	C	0.038		
22-Sep-89	265	2974	25	14.0	14.0	B	0.080		
25-Sep-89	268	2984	62	15.0	14.0	B	0.147		
25-Sep-89	268	2983	652	15.0	15.0	A	0.159		
26-Sep-89	269	3019	767	15.0	14.0	C	0.068		
27-Sep-89	270	3028	52	14.0	14.0	A	0.122		
28-Sep-89	271	3075	639	15.3	15.0	D	0.098		
29-Sep-89	276	3098	697	15.5	16.0	D	0.116		
29-Sep-89	276	3097	872	15.5	16.0	B	0.082		

TABLE C-2. SUMMARY OF THE 1989 NMOC DATA FOR BAKERSFIELD, CA (BACA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1013	25	16.5	19.0	C	0.801	0.727	
06-Jun-89	157	1048	814			C	0.256		
06-Jun-89	157	1047	43		13.5	D	0.224		
07-Jun-89	158	1061	857	9.0	11.0	D	0.847		
08-Jun-89	159	1095	39	9.0	10.0	B	0.621		
09-Jun-89	160	1116	303	9.0	11.0	C	0.910		
12-Jun-89	163	1157	123	10.0	12.0	B	0.904		
13-Jun-89	164	1170	19	9.0	19.0	B	1.337		
16-Jun-89	167	1242	18	14.0	14.0	B	0.204		
16-Jun-89	167	1243	105	14.0	14.0	B	0.170		
19-Jun-89	170	1267	854	10.0	9.5	D	1.359		
20-Jun-89	171	1286	79	8.5	10.0	B	0.565		
21-Jun-89	172	1321	704	9.5	12.0	C	0.916		
22-Jun-89	173	1344	50	9.5	11.0	D	0.781		
23-Jun-89	174	1368	929	10.0	12.0	C	0.993		
26-Jun-89	177	1382	198	10.0	12.0	D	0.332		
27-Jun-89	178	1407	140	12.0	14.0	C	0.556		
27-Jun-89	178	1408	715	12.0	14.0	C	0.533		
28-Jun-89	179	1436	126	10.0	10.0	B	0.366		
29-Jun-89	180	1448	129	10.0	12.0	B	0.380	0.447	
30-Jun-89	181	1493	187	10.0	10.0	B	0.342		
03-Jul-89	184	1537	30	10.0	10.0	C	0.771		
06-Jul-89	187	1564	793	10.5	13.0	B	1.071		
07-Jul-89	188	1574	92	10.0	12.0	B	0.861	0.920	
07-Jul-89	188	1536	762	10.5	10.0	B	0.863		
10-Jul-89	191	1614	409	10.0	10.0	D	0.909		
11-Jul-89	192	1643	868	10.0	11.0	D	0.238		
12-Jul-89	193	1653	190	10.0	10.0	A	0.497	0.556	
13-Jul-89	194	1691	713	11.0	11.0	B	0.528		
14-Jul-89	195	1714	148	10.0	12.0	B	0.690		
17-Jul-89	198	1739	169	10.0	12.0	A	0.775		
18-Jul-89	199	1768	21	10.0	12.0	D	0.655		
19-Jul-89	200	1787	38	10.0	11.0	C	1.290		
20-Jul-89	201	1830	689	11.0	11.0	D	1.053		
21-Jul-89	202	1851	74	13.0	15.0	D	1.090		
21-Jul-89	202	1852	815	13.0	15.0	B	1.121		
24-Jul-89	205	1868	17	10.0	12.0	C	0.575		
25-Jul-89	206	1890	659	10.0	12.0	B	0.898	1.068	
26-Jul-89	207	1923	403	10.0	9.0	C	0.494		
27-Jul-89	208	1949	677	10.0	13.0	C	0.947		
28-Jul-89	209	1979	828	10.0	12.0	D	0.985		
31-Jul-89	212	1998	789	11.0	12.0	C	0.336		
01-Aug-89	213	2020	642	11.0	13.0	A	0.479		
02-Aug-89	214	2040	306	10.0	10.0	C	0.950	1.008	
03-Aug-89	215	2075	705	10.5	12.0	A	0.868		
04-Aug-89	216	2101	924	10.0	12.0	D	1.746		

TABLE C-2. SUMMARY OF THE 1989 NMOC DATA FOR BAKERSFIELD, CA (BACA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
07-Aug-89	219	2133	66	13.0	14.0	A	2.498		
08-Aug-89	220	2160	17	10.0	11.0	C	1.070		
09-Aug-89	221	2183	118	10.0	11.0	D	0.756		
10-Aug-89	222	2194	84	13.5	16.0	C	0.670		
10-Aug-89	222	2195	37	13.5	16.5	C	0.723		
15-Aug-89	227	2273	635	13.0	12.0	B	1.019		
16-Aug-89	228	2305	634	11.0	13.0	B	1.548		
17-Aug-89	229	2321	53	10.0	12.0	B	0.279		
18-Aug-89	230	2357	400	10.0	12.0	C	0.645	0.699	
21-Aug-89	233	2383	691	12.0	14.0	A	0.478		
22-Aug-89	234	2407	15	10.0	12.0	B	0.876		
23-Aug-89	235	2423	808	11.0	13.0	B	0.222		
24-Aug-89	236	2463	720	11.5	13.0	C	0.544		
25-Aug-89	237	2473	770	11.0	13.0	D	0.799		
28-Aug-89	240	2568	109		15.0	A	1.217		
28-Aug-89	240	2500	92[illegible]		16.0	D	0.993		
31-Aug-89	243	2585	14[illegible]	8.0	10.0	C	1.591		
01-Sep-89	244	2612	672	7.5	9.0	A	0.949		
05-Sep-89	248	2633	681	10.0	12.0	A	1.155		
06-Sep-89	249	2669	842	10.0	12.0	A	1.440		
07-Sep-89	250	2687	839	10.0	13.0	A	0.304		
11-Sep-89	254	2755	46	14.0	16.0	C	0.929		
11-Sep-89	254	2754	51	14.0	16.0	A	0.516		
12-Sep-89	255	2763	705	10.5	12.0	C	1.262		
13-Sep-89	256	2791	850	10.0	11.0	D	1.242		
14-Sep-89	257	2825	309	10.0	11.0	D	0.935		
15-Sep-89	258	2833	665	10.0	12.0	A	1.129		
18-Sep-89	261	2874	669	10.5	11.0	D	0.150		
20-Sep-89	263	2919	21	9.5	12.0	D	0.5[illegible]		
22-Sep-89	265	2972	691	10.0	13.0	A	1.[illegible]		
25-Sep-89	268	2992	131	10.0	12.0	C	0.[illegible]		
26-Sep-89	269	3006	659	15.5	16.0	D	1.23[illegible]		
26-Sep-89	269	3005	673	15.5	16.0	A	1.222		
27-Sep-89	270	3038	623	9.0	12.0	D	0.697		
28-Sep-89	271	3058	63	9.0	11.0	C	0.763		
29-Sep-89	272	3105	665	13.5	14.0	B	0.624		
29-Sep-89	272	3106	123	13.5	16.0	D	0.572		

TABLE C-3. SUMMARY OF THE 1989 NMOC DATA FOR BEAUMONT, TX (BMTX)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1020	642	16.0	16.0	D	0.529		
06-Jun-89	157	1036	718	16.0	16.0	A	0.909		
07-Jun-89	158	1052	765	16.0	16.0	C	0.348		
08-Jun-89	159	1084	192	23.0	22.0	D	0.332		
08-Jun-89	159	1083	722	23.0	22.0	C	0.307		
09-Jun-89	160	1074	872	15.0	15.0	C	0.355	0.369	
12-Jun-89	163	1149	145	15.0	15.0	C	0.451		
13-Jun-89	164	1173	306	17.0	16.0	B	0.515		
14-Jun-89	165	1196	797	17.0	17.0	B	1.015		
15-Jun-89	166	1228	642	18.0	15.0	D	0.427		
16-Jun-89	167	1220	114	17.0	14.0	D	1.592		
19-Jun-89	170	1277	60	22.0	24.0	A	0.406		
19-Jun-89	170	1278	689	22.0	24.0	B	0.454		
20-Jun-89	171	1291	765	17.0	17.0	C	0.776		
21-Jun-89	172	1311	624	17.0	16.0	A	0.647		
22-Jun-89	173	1323	794	17.0	16.0	B	0.546		
23-Jun-89	174	1340	112	16.0	16.0	C	0.754		
26-Jun-89	177	1396	181	16.0	16.0	C	0.252		
27-Jun-89	178	1415	407	16.0	16.0	D	0.529		
28-Jun-89	179	1431	685	17.0	17.0	D	0.219		
29-Jun-89	180	1433	93	16.0	15.0	A	0.872		
30-Jun-89	181	1463	148	17.0	16.0	A	0.310		
03-Jul-89	184	1519	928	17.0	18.0	C	0.440		
05-Jul-89	186	1535	50	16.0	14.0	D	1.669		
06-Jul-89	187	1560	21	17.0	14.0	D	0.571		
07-Jul-89	188	1575	842	17.0	14.0	C	0.926		
10-Jul-89	191	1625	404	17.0	15.0	D	0.743		
12-Jul-89	193	1674	852	23.0	21.0	C	1.648		
12-Jul-89	193	1675	6	23.0	22.0	C	1.758		
13-Jul-89	194	1686	878	16.0	14.0	C	0.703		
14-Jul-89	195	1711	853	16.0	16.0	C	0.392	0.467	
17-Jul-89	198	1746	726	17.0	17.0	B	0.363		
18-Jul-89	199	1769	638	17.0	17.0	C	0.513		
19-Jul-89	200	1793	131		16.0	D	0.614		
20-Jul-89	201	1839	630	19.0	18.0	D	3.443	3.319	
21-Jul-89	202	1838	45	16.0	16.0	A	0.952		
24-Jul-89	205	1855	823	16.0	16.0	C	1.096		
25-Jul-89	206	1899	43	16.0	16.0	D	0.608		
26-Jul-89	207	1932	115	24.0	24.0	D	0.348		
26-Jul-89	207	1931	669	24.0	24.0	D	0.341		
27-Jul-89	208	1942	148	17.0	15.0	A	0.341	0.400	
28-Jul-89	209	1953	501	16.0	16.0	C	0.948		
31-Jul-89	212	1995	671	17.0	17.0	A	0.423		
01-Aug-89	213	2045	96	16.0	16.0	D	0.254	0.298	0.313
02-Aug-89	214	2043	53	16.0	15.0	C	0.232		
03-Aug-89	215	2072	166	16.0	17.0	A	0.503		

TABLE C-3. SUMMARY OF THE 1989 NMOC DATA FOR BEAUMONT, TX (BMTX)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
04-Aug-89	216	2090	151	22.0	22.0	C	0.965		
04-Aug-89	216	2089	162	22.0	22.0	C	0.966		
07-Aug-89	219	2103	685	17.0	16.0	C	0.663		
08-Aug-89	220	2162	622	18.0	16.0	B	0.586		
09-Aug-89	221	2187	765	17.0	17.0	C	0.902		
10-Aug-89	222	2220	189	16.0	16.0	B	0.569		
11-Aug-89	223	2204	86	16.0	16.0	B	0.454		
14-Aug-89	226	2249	20	16.0	16.0	B	0.730		
15-Aug-89	227	2281	32	21.0	21.0	B	0.863		
15-Aug-89	227	2280	142	21.0	21.0	B	0.831		
16-Aug-89	228	2266	156	15.0	14.0	C	0.681	0.755	0.793
17-Aug-89	229	2325	145		16.0	A	0.752		
18-Aug-89	230	2333	656	16.0	16.0	D	1.093		
21-Aug-89	233	2375	620	17.0	16.0	B	1.162		
22-Aug-89	234	2396	17	16.0	16.0	C	0.809		
23-Aug-89	235	2434	25	15.0	15.0	D	1.275		
25-Aug-89	237	2485	99	22.0	22.0	C	1.443	1.410	
25-Aug-89	237	2484	897	22.0	22.0	A	1.349		
28-Aug-89	240	2566	188	17.0	17.0	D	1.157		
29-Aug-89	241	2512	894	16.0	16.0	B	0.708		
30-Aug-89	242	2543	680	18.0	17.0	A	3.134		
31-Aug-89	243	2592	686	18.0	17.0	D	0.930		
01-Sep-89	244	2613	825	16.0	16.0	B	0.980		1.018
05-Sep-89	248	2637	100	17.0	16.0	B	0.802		0.916
06-Sep-89	249	2653	165	16.0	16.0	D	0.484		0.589
07-Sep-89	250	2684	649	18.0	18.0	D	0.621		
08-Sep-89	251	2690	176	23.0	23.0	A	1.223		
08-Sep-89	251	2691	192	23.0	23.0	B	1.179		
11-Sep-89	254	2753	929	17.0	17.0	D	0.910		
12-Sep-89	255	2746	774	18.0	17.0	D	0.566	0.590	0.676
13-Sep-89	256	2768	77	16.0	16.0	C	0.820		0.848
14-Sep-89	257	2805	99	16.0	16.0	C	0.282		0.371
15-Sep-89	258	2847	6	17.0	16.0	A	0.318		
18-Sep-89	261	2861	814	18.0	16.5	C	0.545		
19-Sep-89	262	2886	644	22.0	20.0	D	0.425		
19-Sep-89	262	2885	108	22.0	22.0	C	0.556		
20-Sep-89	263	2918	679	18.0	18.0	A	0.537		
21-Sep-89	264	2923	90	17.0	16.0	D	0.556		
22-Sep-89	265	2958	166	17.0	16.0	A	4.047		
25-Sep-89	268	2989	705	18.0	18.0	B	0.608		
26-Sep-89	269	3015	689	18.0	18.0	A	0.519		
27-Sep-89	270	3030	678	18.0	18.0	A	1.657		
29-Sep-89	272	3108	786	24.0	24.0	B	1.355		
29-Sep-89	272	3065	804	24.0	24.0	A	1.322		

TABLE C-4. SUMMARY OF THE 1989 NMOC DATA FOR CHICAGO, IL (C3IL)

Sampling Period: 6:00 a.m. to 9:00 a.m. Sampling Location: 90th Floor, Sears Tower

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1043	115	17.0	16.0	B	0.493		
05-Jun-89	156	1044	171	17.0	16.0	C	0.504		
07-Jun-89	158	1073	679	12.0	11.0	D	0.454		
08-Jun-89	159	1094	91	12.0	11.0	A	0.448		
09-Jun-89	160	1085	17	12.0	10.0	D	0.369		
12-Jun-89	163	1136	883	12.0	10.0	D	0.214		
13-Jun-89	164	1174	8	12.0	10.0	A	0.343		
14-Jun-89	165	1194	649	19.0	18.0	A	0.171		
14-Jun-89	165	1193	685	19.0	18.0	C	0.199		
15-Jun-89	166	1216	307	12.0	8.0	C	0.296		
16-Jun-89	167	1255	928	12.0	8.0	B	0.676		
19-Jun-89	170	1252	814	12.0	8.0	D	0.268		
20-Jun-89	171	1280	676	12.0	10.0	C	0.142		
21-Jun-89	172	1326	17	11.0	9.0	C	0.140		
22-Jun-89	173	1334	13	11.8	9.0	C	0.363		
23-Jun-89	174	1332	813	12.0	10.0	C	0.460	0.390	
26-Jun-89	177	1384	627	12.0	10.0	A	0.354		
27-Jun-89	178	1402	147	11.0	10.0	C	0.359		
28-Jun-89	179	1421	176	11.0	9.0	D	0.393		
29-Jun-89	180	1476	675	12.0	10.0	C	0.076		
30-Jun-89	181	1473	783	12.0	12.0	D	0.265	0.357	
03-Jul-89	184	1496	897	12.0	8.0	C	0.104		
05-Jul-89	186	1555	165	18.0	16.0	C	0.058		
05-Jul-89	186	1554	661	18.0	16.0	A	0.070		
07-Jul-89	188	1593	837	11.0	10.0	B	0.175		
10-Jul-89	191	1601	621	12.0	8.0	C	0.312	0.254	
11-Jul-89	192	1632	20	10.0	8.0	B	0.332		
12-Jul-89	193	1699	105	11.0	8.0	B	0.271		
13-Jul-89	194	1696	673	12.0	8.0	C	0.200		
14-Jul-89	195	1754	766	12.0	10.0	C	0.147		
17-Jul-89	198	1748	675	12.0	10.0	C	0.417		
18-Jul-89	199	1804	96	11.0	10.0	D	0.224		
19-Jul-89	200	1797	825	11.0	10.0	C	0.217		
20-Jul-89	201	1816	774	12.0	12.0	A	0.103		
21-Jul-89	202	1871	661	12.0	11.0	C	0.084	0.133	
24-Jul-89	205	1870	775	12.0	11.0	C	0.248		
26-Jul-89	207	1934	71	18.0	16.0	D	0.350		
26-Jul-89	207	1933	720	18.0	17.0	D	0.348		
27-Jul-89	208	1951	925	12.0	11.0	B	0.294		
28-Jul-89	209	1964	622	12.0	11.0	D	0.098		
31-Jul-89	212	2028	666	12.0	11.0	C	0.225		
01-Aug-89	213	2018	45	20.0	17.0	B	0.138		
01-Aug-89	213	2019	658	20.0	17.0	B	0.142		
02-Aug-89	214	2046	36	11.0	10.0	D	0.352		
03-Aug-89	215	2088	783	12.0	11.0	B	0.291		
04-Aug-89	216	2123	630	13.0	12.5	D	0.953		

TABLE C-4. SUMMARY OF THE 1989 NMOC DATA FOR CHICAGO, IL (C3IL)

Sampling Period: 6:00 a.m. to 9:00 a.m. Sampling Location: 90th Floor, Sears Tower

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
07-Aug-89	219	2120	815	12.0	10.0	C	0.330		
08-Aug-89	220	2119	165	12.0	10.0	A	0.187	.244	
09-Aug-89	221	2174	61	11.0	9.0	D	0.232		
10-Aug-89	222	2234	810	14.0	10.0	C	0.764		
11-Aug-89	223	2223	804	12.0	10.0	D	0.211		
14-Aug-89	226	2283	713	12.0	12.0	D	0.242		
15-Aug-89	227	2277	925	12.0	12.0	D	0.252		
16-Aug-89	228	2316	102	11.0	10.0	A	0.304		
17-Aug-89	229	2338	57	18.0	17.0	B	0.141		
17-Aug-89	229	2339	638	18.0	18.0	D	0.150		
18-Aug-89	230	2416	715	12.0	11.0	A	0.080		
21-Aug-89	233	2378	1	11.0	10.0	D	0.542		
22-Aug-89	234	2400	130	11.0	10.0	A	0.233		
23-Aug-89	235	2436	914	11.0	10.0	C	0.093		
24-Aug-89	236	2446	724	12.0	11.0	C	0.075		
25-Aug-89	237	2561	810	13.0	9.5	D	0.160		
28-Aug-89	240	2558	86	11.0	10.0	B	0.159		
29-Aug-89	241	2517	790	12.0	10.0	A	0.274		
30-Aug-89	242	2536	654	12.0	10.5	A	0.244		
31-Aug-89	243	2582	631	12.0	10.0	C	0.182		
01-Sep-89	244	2605	138	11.0	9.0	A	0.154		
06-Sep-89	249	2638	726	13.0	12.0	D	0.574		
06-Sep-89	249	2663	93	12.0	10.0	C	0.160		
07-Sep-89	250	2699	723	12.0	11.0	C	0.221		
08-Sep-89	251	2722	122	12.0	10.0	C	0.260		
11-Sep-89	254	2738	793	12.0	10.0	D	0.561		
12-Sep-89	255	2774	302	12.0	12.0	B	0.114		
13-Sep-89	256	2788	175	12.0	10.0	A	0.045		
14-Sep-89	257	2828	162	12.0	10.0	B	0.042		
20-Sep-89	263	2908	899	12.0	10.0	C	0.130		
21-Sep-89	264	2935	722	15.0	15.0	C	0.720		
22-Sep-89	265	2964	181	13.0	10.0	D	0.198		
25-Sep-89	268	2981	162	12.0	12.0	D	0.239		
26-Sep-89	269	3027	121	14.0	10.0	C	0.141		
27-Sep-89	270	3044	698	13.0	12.0	B	0.078		
28-Sep-89	271	3064	57		15.0	A	0.409		
29-Sep-89	272	3048	890		17.0	A	0.190		
29-Sep-89	272	3049	38	14.0	18.0	C	0.209		

TABLE C-5. SUMMARY OF THE 1989 NMOC DATA FOR CHICAGO, IL (C6IL)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1026	646	14.0	11.5	C	1.290	1.048	
06-Jun-89	157	1041	871	15.0	15.0	B	0.542		
06-Jun-89	157	1042	644	16.0	15.0	D	0.553		
07-Jun-89	158	1072	10	11.0	10.5	C	0.729		
08-Jun-89	159	1093	916	10.0	10.0	B	1.741		
09-Jun-89	160	1089	305	14.0	14.0	A	0.546		
12-Jun-89	163	1135	914	13.0	14.0	C	0.221		
13-Jun-89	164	1175	119	13.5	13.0	A	1.046		
14-Jun-89	165	1180	670	14.0	14.0	C	0.531	0.537	
15-Jun-89	166	1207	405	15.0	15.0	A	0.270		
15-Jun-89	166	1208	678	15.0	15.0	D	0.362		
16-Jun-89	167	1254	833	14.0	11.0	C	0.499		
19-Jun-89	170	1253	43	13.5	11.0	B	1.378		
20-Jun-89	171	1279	831	15.0	14.5	B	0.764		
21-Jun-89	172	1327	837	14.0	14.0	D	0.460		
22-Jun-89	173	1333	106	14.0	14.0	A	1.030		
23-Jun-89	174	1331	12	14.0	13.5	A	0.790		
26-Jun-89	177	1383	924	13.0	13.0	A	1.178		
27-Jun-89	178	1401	178	15.0	15.0	D	2.147		
28-Jun-89	179	1422	720	14.0	14.0	C	1.013		
29-Jun-89	180	1477	121	14.0	11.0	D	0.473		
30-Jun-89	181	1472	46	14.0	14.0	C	0.658	0.719	
03-Jul-89	184	1495	819	13.0	12.0	D	0.449		
05-Jul-89	186	1566	400	14.0	12.0	C	0.880		
06-Jul-89	187	1587	172	16.0	14.0	A	1.155		
06-Jul-89	187	1588	704	16.0	14.0	D	1.157		
07-Jul-89	188	1592	850	14.0	12.0	A	0.791		
10-Jul-89	191	1602	823	14.0	12.0	D	0.294	0.365	
11-Jul-89	192	1633	126	14.0	13.0	A	1.175		
12-Jul-89	193	1698	670	14.0	12.0	D	1.356		
13-Jul-89	194	1697	678	14.0	12.0	D	1.573		
14-Jul-89	195	1755	848	14.0	14.0	D	0.728		
17-Jul-89	198	1749	46	13.0	13.0	B	0.973		
18-Jul-89	199	1805	60	14.0	14.0	A	0.676		
19-Jul-89	200	1796	303	14.0	14.0	A	0.713		
21-Jul-89	202	1876	93	14.0	14.0	D	0.226		
24-Jul-89	205	1869	129	14.0	14.0	C	0.686		
26-Jul-89	207	1918	118	14.0	14.0	C	0.958		
27-Jul-89	208	1963	180	15.0	15.0	B	0.473		
27-Jul-89	208	1962	198	15.0	15.0	D	0.485		
28-Jul-89	209	1965	188	14.0	14.0	B	0.532		
31-Jul-89	212	2027	780	14.0	15.0	A	0.326		
01-Aug-89	213	2037	895	14.0	14.0	C	0.836		
02-Aug-89	214	2061	193	15.0	15.0	C	1.494		
02-Aug-89	214	2060	788	15.0	15.0	B	1.319		
03-Aug-89	215	2085	178	11.0	11.0	B	0.617		

TABLE C-5. SUMMARY OF THE 1989 NMOC DATA FOR CHICAGO, IL (C6IL)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
04-Aug-89	216	2122	692	11.0	11.0	B	0.489		
07-Aug-89	219	2121	153	11.0	10.0	D	0.868		
08-Aug-89	220	2118	113	14.0	12.0	C	0.659	0.718	
09-Aug-89	221	2173	697	15.0	15.0	C	0.960		
10-Aug-89	222	2231	673	15.0	15.0	B	0.234		
11-Aug-89	223	2224	50	14.0	12.0	D	1.442		
14-Aug-89	226	2282	27	14.0	14.0	C	0.645		
15-Aug-89	227	2276	928	14.0	13.0	C	0.628		
16-Aug-89	228	2317	406	14.0	15.0	C	0.963		
17-Aug-89	229	2331	853	14.0	14.0	D	1.952		
18-Aug-89	230	2415	839	13.0	14.0	B	0.397		
21-Aug-89	233	2389	807	16.0	16.0	D	1.781		
22-Aug-89	234	2401	630	17.0	16.0	C	2.663		
23-Aug-89	235	2437	868	13.0	14.0	C	0.733		
24-Aug-89	236	2447	302	14.0	14.0	D	0.225	0.271	
25-Aug-89	237	2560	929	14.0	15.0	A	0.182		
28-Aug-89	240	2557	687	17.0	17.0	B	0.394		
29-Aug-89	241	2518	46	13.0	14.0	D	0.811		
30-Aug-89	242	2535	673	14.0	15.0	D	0.889		
31-Aug-89	243	2581	691	14.0	14.0	B	0.732		
01-Sep-89	244	2606	19	13.0	12.0	A	0.859		
01-Sep-89	244	2661	129	13.0	14.0	A	0.901		
06-Sep-89	249	2637	796	14.0	15.0	B	0.833		
07-Sep-89	250	2695	644	14.0	15.0	D	1.200		
08-Sep-89	251	2721	178	15.0	15.0	B	1.227		
11-Sep-89	254	2739	786	14.0	14.0	D	2.520		
12-Sep-89	255	2776	104	14.0	14.0	C	0.771		
14-Sep-89	257	2818	301	14.0	14.0	C	0.164		
18-Sep-89	261	2877	161	14.0	13.5	D	1.113		
19-Sep-89	262	2902	17	14.0	14.0	B	0.664		
20-Sep-89	263	2907	184	14.0	14.0	D	1.290		
21-Sep-89	264	2926	626	13.0	11.0	C	0.126		
22-Sep-89	265	2971	188	14.0	14.0	A	0.896		
25-Sep-89	268	2982	301	14.0	15.0	A	0.596		
26-Sep-89	269	3041	306	12.0	15.0	A	0.730		
27-Sep-89	270	3043	662	14.0	16.0	B	0.268		
28-Sep-89	271	3073	51	14.0	11.0	D	0.170		
29-Sep-89	272	3071	628	14.0	17.0	B	1.175		
29-Sep-89	272	3072	702	14.0	17.0	D	1.162		

TABLE C-6. SUMMARY OF THE 1989 NMOC DATA FOR DALLAS, TX (DLTX)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1028	56	15.0	16.0	A	0.734		
06-Jun-89	157	1062	620	16.0	16.0	A	0.967		
07-Jun-89	158	1098	924	16.0	15.5	A	0.477		
08-Jun-89	159	1117	193	15.0	15.5	A	0.302		
09-Jun-89	160	1132	93	15.0	16.0	D	0.760		
09-Jun-89	160	1131	900	15.0	16.0	D	0.802		
12-Jun-89	163	1201	618	16.0	17.0	D	0.222		
13-Jun-89	164	1190	768	17.0	16.5	D	0.178		
14-Jun-89	165	1217	668	17.0	14.0	C	0.605		
15-Jun-89	166	1234	157	15.0	14.0	C	0.423	0.450	
16-Jun-89	167	1268	56	15.0	14.0	A	1.611		
19-Jun-89	170	1294	162	17.0	16.0	D	1.486		
20-Jun-89	171	1309	30	17.0	17.0	A	0.673		
20-Jun-89	171	1310	622	17.0	17.0	C	0.672		
21-Jun-89	172	1328	143	16.0	16.0	A	0.541		
22-Jun-89	173	1367	724	17.0	16.0	D	0.179		
23-Jun-89	174	1390	679	16.0	18.0	D	0.361		
26-Jun-89	177	1428	669	17.0	17.0	A	0.488		
27-Jun-89	178	1430	33	16.0	16.0	D	0.271		
28-Jun-89	179	1467	623	18.0	18.0	B	0.375		
29-Jun-89	180	1499	137	15.0	15.0	D	0.292		
30-Jun-89	181	1521	162	16.0	16.0	B	0.271		
03-Jul-89	184	1545	4	16.0	15.0	A	0.514		
05-Jul-89	186	1556	899	16.0	15.0	D	0.522		
06-Jul-89	187	1583	659	18.0	16.0	C	0.876		
07-Jul-89	188	1620	100	15.0	14.0	C	0.651		
10-Jul-89	191	1639	22	15.0	14.0	A	0.252		
11-Jul-89	192	1670	788	17.0	17.0	D	0.244		
12-Jul-89	193	1705	686	16.0	18.0	C	0.190		
12-Jul-89	193	1704	894	16.0	18.0	C	0.215		
13-Jul-89	194	1717	42	15.0	16.0	C	0.494		
14-Jul-89	195	1738	723	16.5	17.0	B	0.366		
17-Jul-89	198	1767	39	15.0	16.0	B	0.301		
18-Jul-89	199	1789	72	16.0	16.0	B	0.158		
19-Jul-89	200	1829	808	17.0	17.0	C	0.266		
20-Jul-89	201	1854	920	15.5	16.0	A	0.394		
21-Jul-89	202	1888	3	15.0	16.0	D	0.668		
21-Jul-89	202	1887	126	15.0	16.0	B	0.316		
24-Jul-89	205	1891	98	15.0	16.0	A	0.446		
25-Jul-89	206	1920	635	17.0	18.0	D	0.549		
26-Jul-89	207	1943	91	16.0	15.0	B	0.390		
27-Jul-89	208	1987	181	16.0	16.5	C	0.296		
28-Jul-89	209	1997	156	16.0	16.0	B	0.426		
31-Jul-89	212	2036	786	16.0	17.0	A	0.411		
01-Aug-89	213	2044	104	15.0	16.0	A	0.421		
02-Aug-89	214	2065	823	16.0	15.0	A	0.151		

TABLE C-6. SUMMARY OF THE 1989 NMOC DATA FOR DALLAS, TX (DLTX)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
03-Aug-89	215	2116	670	17.0	17.5	D	0.116		
03-Aug-89	215	2115	704	17.0	18.0	B	0.114		
04-Aug-89	216	2137	656	16.0	17.0	C	0.141		
07-Aug-89	219	2166	628	16.0	17.0	D	0.247		
08-Aug-89	220	2186	197	16.0	16.0	C	0.260		
09-Aug-89	221	2206	42	16.5	17.0	C	0.808		
10-Aug-89	222	2238	71	17.0	16.0	B	1.009		
11-Aug-89	223	2245	644	18.0	18.0	B	0.173		
14-Aug-89	226	2268	140	16.0	16.0	C	0.433		
15-Aug-89	227	2293	652	17.0	17.0	D	0.487		
16-Aug-89	228	2335	788	17.5	17.0	C	0.452		
17-Aug-89	229	2355	658	17.0	17.0	B	0.284		
18-Aug-89	230	2385	77	16.0	16.0	C	0.732		
21-Aug-89	233	2402	870	16.0	16.0	C	0.202		
22-Aug-89	234	2424	864	16.0	16.0	A	0.280		
23-Aug-89	235	2456	702	16.5	18.0	A	0.530	0.545	
23-Aug-89	235	2455	789	16.5	18.0	A	0.515		
24-Aug-89	236	2475	185	16.0	14.0	D	0.523		
25-Aug-89	237	2493	684	16.0	17.0	B	0.420		
28-Aug-89	240	2507	192	16.0	16.0	C	0.577		
29-Aug-89	241	2548	72	16.0	16.0	A	0.675		
30-Aug-89	242	2589	77	15.0	16.0	B	0.427		
31-Aug-89	243	2622	114	16.0	16.0	D	0.307		
01-Sep-89	244	2644	792	17.0	16.0	A	0.227		0.312
05-Sep-89	248	2656	189	15.0	16.0	A	0.518		0.591
06-Sep-89	249	2692	838	15.0	16.0	D	0.378	0.443	0.459
07-Sep-89	250	2711	97	15.0	17.0	A	0.369		
07-Sep-89	250	2712	184	15.0	17.0	A	0.356		
08-Sep-89	251	2745	53	15.0	14.0	C	0.243	0.284	
11-Sep-89	254	2767	837	16.0	16.0	A	0.152		0.294
12-Sep-89	255	2787	137	15.0	16.0	A	0.334		
13-Sep-89	256	2804	113	15.0	16.0	B	0.160		0.250
14-Sep-89	257	2830	19	16.0	16.0	B	0.160		
15-Sep-89	258	2858	193	17.0	16.0	D	0.393		0.468
18-Sep-89	261	2889	164	16.0	16.0	C	0.612		
18-Sep-89	261	2888	91	16.0	16.4	C	0.527		
19-Sep-89	262	2917	304	17.0	17.0	B	0.651		
20-Sep-89	263	2920	11	16.0	16.0	C	0.540		
21-Sep-89	264	2965	45	16.0	16.0	C	1.074		
22-Sep-89	265	2993	107	16.0	16.0	D	0.484		
25-Sep-89	268	3016	309	16.0	16.0	D	0.832		
26-Sep-89	269	3035	857	17.0	16.0	D	0.408		
27-Sep-89	270	3070	800	17.0	18.0	C	0.598		
28-Sep-89	271	3099	670	17.5	18.0	D	1.097		
29-Sep-89	272	3116	305	16.0	16.0	D	1.129		

TABLE C-7. SUMMARY OF THE 1989 NMOC DATA FOR EL CAJON, CA (ELCA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1011	666	14.0	14.0	D	0.147		
06-Jun-89	157	1037	623	14.2	15.0	A	0.152		
07-Jun-89	158	1066	676	16.0	16.0	C	0.152		
07-Jun-89	158	1067	780	16.2	16.0	C	0.148		
08-Jun-89	159	1092	790	13.5	14.0	B	0.092		
09-Jun-89	160	1110	663	11.0	11.0	C	0.194	0.241	
12-Jun-89	163	1134	182	13.0	14.0	C	0.187		
13-Jun-89	164	1182	680	14.2	14.0	A	0.287		
14-Jun-89	165	1184	772	14.0	14.0	B	0.497		
15-Jun-89	166	1218	828	13.0	11.0	C	0.315		
16-Jun-89	167	1241	674	14.0	12.0	D	0.225		
19-Jun-89	170	1259	806	16.0	12.0	B	0.486		
19-Jun-89	170	1258	644	16.0	14.0	A	0.738		
20-Jun-89	171	1274	844	14.0	14.0	A	1.008		
21-Jun-89	172	1302	309	14.5	15.0	A	0.699		
22-Jun-89	173	1351	22	14.0	14.0	D	0.397	0.430	
23-Jun-89	174	1366	860	13.5	14.0	C	0.101		
26-Jun-89	177	1387	663	14.2	14.0	A	0.169		
27-Jun-89	178	1399	894	13.0	14.0	C	0.286		
28-Jun-89	179	1424	49	19.0	20.0	D	1.205		
28-Jun-89	179	1423	164	19.0	20.0	C	1.321		
29-Jun-89	180	1452	770	17.0	18.0	C	0.411		
30-Jun-89	181	1486	43	16.0	16.0	B	0.165		
03-Jul-89	184	1517	645	16.2	17.0	B	0.528		
05-Jul-89	186	1511	638	16.5	18.0	D	0.746		
06-Jul-89	187	1549	193	15.5	15.0	A	0.282	0.319	
07-Jul-89	188	1595	929	16.5	15.0	D	0.245		
10-Jul-89	191	1610	900	16.0	15.0	A	0.088		
11-Jul-89	192	1627	173	16.0	15.0	C	0.122	0.134	
12-Jul-89	193	1680	672	16.5	17.0	D	0.262		
13-Jul-89	194	1700	64	16.0	15.0	B	0.592		
14-Jul-89	195	1724	63	15.5	16.0	A	0.587		
17-Jul-89	198	1751	8	15.0	16.0	C	0.197		
17-Jul-89	198	1750	838	15.0	16.0	A	0.219		
19-Jul-89	200	1806	618	19.0	14.0	C	0.202		
20-Jul-89	201	1827	100	15.0	14.0	C	0.437		
24-Jul-89	205	1877	719	16.0	17.0	D	0.195		
25-Jul-89	206	1905	31	15.5	16.0	B	0.174		
26-Jul-89	207	1928	165	16.0	16.0	A	0.301		
27-Jul-89	208	1926	107	15.5	16.0	A	0.330	0.357	
28-Jul-89	209	1983	400	15.5	16.0	C	0.429		
31-Jul-89	212	1992	60	15.0	16.0	D	0.189	0.230	
02-Aug-89	214	2058	772	16.5	17.0	D	0.328		
03-Aug-89	215	2087	92	15.0	16.0	D	0.271		
04-Aug-89	216	2111	722	16.5	17.0	D	0.305		
07-Aug-89	219	2125	129	16.5	16.0	A	0.342		

TABLE C-7. SUMMARY OF THE 1989 NMOC DATA FOR EL CAJON, CA (ELCA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
08-Aug-89	220	2154	770	16.5	16.0	C	0.147	0.164	
09-Aug-89	221	2188	864	15.0	16.0	A	0.166		
10-Aug-89	222	2201	1	15.5	16.0	D	0.274		
11-Aug-89	223	2225	18	15.0	16.0	A	0.370		
11-Aug-89	223	2226	674	15.0	16.0	A	0.376		
14-Aug-89	226	2259	856	15.0	16.0	C	0.285		
15-Aug-89	227	2278	719	16.5	17.0	D	0.263		
16-Aug-89	228	2310	176	16.0	16.0	D	0.185		
17-Aug-89	229	2345	654	16.0	17.0	A	0.203		
18-Aug-89	230	2340	680	16.0	17.0	B	0.196		
21-Aug-89	233	2390	916	16.0	16.0	D	0.128		
22-Aug-89	234	2399	624	17.0	18.0	B	0.567		
25-Aug-89	237	2486	123	15.0	16.0	B	0.115	0.415	
28-Aug-89	240	2562	831	16.0	17.0	B	0.208		
29-Aug-89	241	2515	14	15.0	16.0	B	0.595		
29-Aug-89	241	2516	784	15.0	16.0	B	0.595		
30-Aug-89	242	2537	711	15.5	17.0	C	0.250		
31-Aug-89	243	2590	75	15.0	16.0	C	0.512		
01-Sep-89	244	2628	161	14.0	16.0	B	0.355		
05-Sep-89	248	36	38	21.0	22.0	A	1.280		
06-Sep-89	249	52	63	15.5	17.0	D	0.926		
07-Sep-89	250	2729	642		18.0	D	0.726		
08-Sep-89	251	2710	831	15.0	15.0	B	0.279		
08-Sep-89	251	2709	894	15.0	16.0	A	0.655		
11-Sep-89	254	2742	153	15.8	16.0	A	0.265		
12-Sep-89	255	2772	916	15.5	16.0	D	0.184		
13-Sep-89	256	2796	148	15.5	16.0	A	0.665		
14-Sep-89	257	2808	79	16.0	16.0	C	1.733		
15-Sep-89	258	2849	765	16.5	16.0	B	1.280		
19-Sep-89	262	2901	146	15.5	16.0	B	0.229		
20-Sep-89	263	2897	723	17.0	18.0	A	0.395		
21-Sep-89	264	2943	776	16.5	17.0	A	0.632		
22-Sep-89	265	2975	14	15.5	16.0	D	1.654		
26-Sep-89	269	3018	642	16.5	16.0	B	1.358		
27-Sep-89	270	3025	676	16.0	16.0	B	0.427		
27-Sep-89	270	3024	925	16.0	16.0	B	0.427		
28-Sep-89	272	3074	618	16.5	18.0	D	1.077		
29-Sep-89	276	3095	765	15.0	16.0	B	0.883		
29-Sep-89	276	3096	823	15.0	16.0	D	0.883		

TABLE C-8. SUMMARY OF THE 1989 NMOC DATA FOR EL PASO, TX (ELTX)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1038	60	11.0	9.0	A	0.331		
06-Jun-89	157	1030	114	11.0	9.0	A	0.579		
07-Jun-89	158	1055	131	10.0	8.0	D	0.165		
08-Jun-89	159	1080	789	11.0	10.0	B	0.826		
09-Jun-89	160	1104	181	9.5	8.0	C	0.209		
12-Jun-89	163	1146	112	14.0	13.0	A	0.125		
12-Jun-89	163	1145	197	14.0	13.0	A	0.126		
13-Jun-89	164	1155	705	11.0	9.0	B	0.551		
14-Jun-89	165	1198	501	10.0	10.0	C	0.310		
15-Jun-89	166	1238	770	10.5	6.0	C	0.355		
16-Jun-89	167	1237	662	10.0	6.0	D	0.293		
19-Jun-89	170	1269	675	10.0	7.0	C	0.655		
20-Jun-89	171	1284	864	11.0	10.0	A	0.661		
21-Jun-89	172	1304	774	14.5	13.0	C	0.389		
21-Jun-89	172	1303	895	14.5	13.0	B	0.416		
22-Jun-89	173	1347	1	11.0	10.0	D	0.176		
23-Jun-89	174	1348	96	11.0	10.0	C	0.324		
26-Jun-89	177	1388	900	11.0	10.0	D	0.453		
27-Jun-89	178	1414	768	12.0	10.0	D	0.141		
28-Jun-89	179	1427	189	11.0	10.0	D	0.262		
29-Jun-89	180	1465	105	11.0	10.0	C	0.440		
30-Jun-89	181	1489	662	11.0	10.0	D	0.309		
03-Jul-89	184	1505	112	11.0	10.0	D	0.242	0.360	
04-Jul-89	185	1533	634	12.0	9.0	C	0.434		
05-Jul-89	186	1534	184	11.0	10.0	D	0.339		
06-Jul-89	187	1538	68	13.0	13.0	A	0.134		
07-Jul-89	188	1598	309	11.0	10.0	A	1.247	1.306	
10-Jul-89	191	1618	7	11.0	8.0	C	0.549		
11-Jul-89	192	1640	777	12.0	10.0	A	0.488		
12-Jul-89	193	1659	197	11.0	11.0	D	0.227		
13-Jul-89	194	1702	304	14.5	14.0	C	0.340		
13-Jul-89	194	1703	796	14.5	14.0	D	0.348		
14-Jul-89	195	1718	75	11.0	10.0	C	1.266		
17-Jul-89	198	1747	161	8.0	10.0	D	0.144		
18-Jul-89	199	1766	780	12.0	10.5	C	0.195		
19-Jul-89	200	1786	162	11.0	9.5	D	0.283	0.345	
20-Jul-89	201	1823	409	15.0	14.0	B	0.230		
20-Jul-89	201	1824	772	15.0	15.0	C	0.292		
21-Jul-89	202	1840	20	11.0	10.0	C	0.436		
24-Jul-89	205	1867	875	12.0	10.0	D	0.248		
25-Jul-89	206	1898	113	8.0	10.0	C	0.194		
26-Jul-89	207	1897	806	12.0	13.0	C	2.442		
27-Jul-89	208	1971	776	9.0	12.0	B	0.396		
28-Jul-89	209	1982	42	13.0	11.0	D	1.683		
31-Jul-89	212	1999	804	12.0	10.5	A	0.303		
01-Aug-89	213	2032	686	12.0	11.0	C	0.271		

TABLE C-8. SUMMARY OF THE 1989 NMOC DATA FOR EL PASO, TX (ELTX)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
02-Aug-89	214	2049	135	11.0	10.0	C	0.308		
03-Aug-89	215	2042	108	12.0	11.0	D	0.612		
04-Aug-89	216	2092	303	14.0	13.0	C	0.092		
04-Aug-89	216	2091	626	14.0	13.0	C	0.106		
07-Aug-89	219	2140	180	12.0	10.0	D	0.295		
08-Aug-89	220	2148	803	12.0	11.0	D	0.186		
09-Aug-89	221	2161	801	13.0	10.0	D	0.365		
10-Aug-89	222	2216	780	12.5	11.0	C	0.918		
11-Aug-89	223	2215	169	11.0	10.0	A	0.201		
14-Aug-89	226	2251	309	12.0	10.0	D	0.191		
15-Aug-89	227	2274	123	12.0	10.0	C	0.661		
16-Aug-89	228	2294	665	12.0	10.0	C	0.339		
17-Aug-89	229	2328	899	12.0	10.0	D	0.869		
18-Aug-89	230	2353	12	12.0	10.5	A	0.568		
21-Aug-89	233	2380	164	11.5	10.0	D	0.105		
22-Aug-89	234	2386	711	12.5	12.0	C	0.375		
23-Aug-89	235	2430	150	11.5	10.0	C	0.775		
24-Aug-89	236	2445	162	14.5	12.5	B	0.358		
24-Aug-89	236	2444	148	14.5	13.0	A	0.357		
25-Aug-89	237	2476	309	12.0	10.0	D	0.601		
28-Aug-89	240	2495	674	12.5	12.0	C	0.601		
29-Aug-89	241	2511	652	12.5	10.5	C	0.333		
30-Aug-89	242	2546	640	12.0	10.5	C	0.387		
31-Aug-89	243	2602	137	11.5	10.0	C	0.578		
01-Sep-89	244	2615	661	12.0	10.0	D	0.458		
05-Sep-89	248	2643	695	15.0	13.0	D	0.464		
05-Sep-89	248	2642	914	15.0	13.0	C	0.403		
06-Sep-89	249	2652	772	12.5	14.0	C	0.555		
07-Sep-89	250	2678	108	11.5	10.0	D	0.395		
08-Sep-89	251	2685	171	12.0	10.0	B	0.763		
11-Sep-89	254	2748	711	12.0	10.0	B	1.029		
12-Sep-89	255	2762	75	11.0	10.0	D	0.433		
13-Sep-89	256	2797	138	12.0	10.0	C	0.204		
14-Sep-89	257	2826	685	12.5	11.0	B	0.148		
15-Sep-89	258	2823	631	12.5	11.0	A	0.937		
18-Sep-89	261	2859	697	12.0	10.0	D	0.687		
19-Sep-89	262	2904	15	11.0	10.0	A	0.770		
20-Sep-89	263	2939	84	15.0	13.0	D	0.531		
20-Sep-89	263	2938	684	15.0	13.0	D	0.538		
21-Sep-89	264	2921	929	12.0	10.0	D	0.669		
22-Sep-89	265	2960	680	12.0	11.0	C	0.184		
25-Sep-89	268	3001	900	12.0	10.0	A	1.430		
26-Sep-89	269	3008	668	12.0	11.0	D	0.331		
27-Sep-89	270	3034	178	13.0	12.0	C	0.585		
28-Sep-89	271	3060	837	12.0	11.0	A	1.950		
29-Sep-89	276	3092	108	12.0	10.0	C	1.359		

TABLE C-9. SUMMARY OF THE 1989 NMOC DATA FOR FREMONT, CA (FECA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1031	30	22.5	24.0	B	0.701		
06-Jun-89	157	1035	50	18.0	18.0	D	0.153		
07-Jun-89	158	1051	897	18.0	18.0	D	0.196	0.192	
08-Jun-89	159	1122	838	18.0	18.0	A	0.198		
09-Jun-89	160	1101	74	16.0	17.0	D	0.199		
09-Jun-89	160	1100	89	16.0	17.0	D	0.198		
12-Jun-89	163	1152	68	20.0	22.0	C	0.319		
13-Jun-89	164	1172	13	18.0	20.0	B	0.286		
14-Jun-89	165	1200	852	18.0	19.0	B	0.408		
15-Jun-89	166	1223	137	18.0	16.0	B	0.304		
16-Jun-89	167	1209	31	18.0	19.5	A	0.306	0.394	
19-Jun-89	170	1293	857	20.0	22.0	A	0.389		
21-Jun-89	172	1345	784	18.0	16.0	A	0.930		
22-Jun-89	173	1329	146	17.0	17.5	A	1.267		
23-Jun-89	174	1324	305	17.0	15.0	D	0.777		
26-Jun-89	177	1374	848	20.0	19.0	A	0.371	0.378	
27-Jun-89	178	1464	63	18.0	19.0	D	0.131		
28-Jun-89	179	1461	809	19.0	20.0	C	0.139		
29-Jun-89	180	1457	118	16.0	16.0	D	0.291		
29-Jun-89	180	1456	18	16.0	17.0	C	0.455		
30-Jun-89	181	1485	831	20.0	21.0	B	0.636		
03-Jul-89	184	1518	833	20.0	22.0	C	0.925		
05-Jul-89	186	1542	674	20.0	20.0	D	1.078		
06-Jul-89	187	1540	925	18.0	18.0	B	2.490	2.303	
07-Jul-89	188	1578	38	17.5	16.0	A	0.519		
10-Jul-89	191	1615	153	19.0	20.0	C	0.713		
11-Jul-89	192	1638	37	17.5	15.0	C	0.232		
12-Jul-89	193	1657	657	19.0	19.0	B	0.124		
13-Jul-89	194	1692	631	18.5	18.0	D	0.498		
14-Jul-89	195	1719	25	17.0	19.0	A	0.282		
17-Jul-89	198	1734	637	20.5	22.0	A	0.245	0.300	
18-Jul-89	199	1781	674	16.0	18.0	D	0.283		
18-Jul-89	199	1780	914	16.0	18.0	A	0.307		
19-Jul-89	200	1795	10	17.5	18.0	A	0.240		
20-Jul-89	201	1842	104	17.5	18.0	B	0.189		
21-Jul-89	202	1834	819	17.5	18.0	A	0.268		
24-Jul-89	205	1874	687	21.0	22.0	B	0.581		
25-Jul-89	206	1894	102	17.5	18.0	B	0.189		
26-Jul-89	207	1922	854	17.5	19.0	A	0.206		
27-Jul-89	208	1946	171	17.5	19.0	B	0.190		
28-Jul-89	209	1985	157	13.0	14.0	A	0.396		
28-Jul-89	209	1986	305	16.0	17.0	B	0.343		
31-Jul-89	212	1993	660	21.0	21.0	C	0.434	0.407	
01-Aug-89	213	2035	839	18.0	19.0	D	0.176		
02-Aug-89	214	2054	618	19.0	20.0	A	0.534		
03-Aug-89	215	2074	719	18.5	20.0	D	0.393		

TABLE C-9. SUMMARY OF THE 1989 NMOC DATA FOR FREMONT, CA (FECA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
04-Aug-89	216	2099	68	17.0	18.0	B	0.361	0.447	
07-Aug-89	219	2129	403	18.0	19.0	B	0.441		
07-Aug-89	219	2128	775	18.0	19.0	B	0.592		
08-Aug-89	220	2164	776	18.0	19.0	C	0.216		
09-Aug-89	221	2179	150	17.5	18.0	A	0.217		
10-Aug-89	222	2202	894	17.5	19.0	C	0.246		
11-Aug-89	223	2229	157	17.5	19.0	D	0.152		
14-Aug-89	226	2243	707	21.0	20.0	C	1.141	1.112	
16-Aug-89	228	2299	45	17.0	19.0	C	0.267		
17-Aug-89	229	2336	409	18.0	19.0	B	0.185	0.273	
18-Aug-89	230	2359	14	17.5	19.0	D	0.289		
21-Aug-89	233	2379	628	20.5	20.5	B	0.312		
22-Aug-89	234	2406	64	17.5	18.0	A	0.259		
23-Aug-89	235	2443	662	18.0	20.0	C	0.142		
24-Aug-89	236	2465	722	18.5	20.0	D	0.769		
25-Aug-89	237	2569	122	17.0	18.0	D	0.948		
28-Aug-89	240	2529	707	20.5	22.0	A	0.414		
29-Aug-89	241	2504	667	18.0	20.0	A	0.214		
30-Aug-89	242	2550	804	18.0	18.0	D	0.147		
31-Aug-89	243	2588	660	18.0	20.0	B	0.709		
01-Sep-89	244	2617	22	15.5	15.0	C	0.727		
01-Sep-89	244	2618	627	15.5	16.0	C	0.672		
05-Sep-89	248	2623	146	21.0	22.0	C	0.776	0.659	
06-Sep-89	249	2664	768	18.5	20.0	C	1.217		
07-Sep-89	250	2689	96	17.5	19.0	D	1.920		
08-Sep-89	251	2715	674	18.0	20.0	D	0.601		
13-Sep-89	256	2800	640	18.0	18.0	B	1.001		
14-Sep-89	257	2821	27	17.0	18.0	D	1.011		
15-Sep-89	258	2841	885	17.5	18.0	A	0.462		
18-Sep-89	261	2867	409	20.0	20.0	D	0.329		
19-Sep-89	262	2883	176	16.0	18.0	C	0.769		
19-Sep-89	262	2884	697	16.0	18.0	D	0.707		
20-Sep-89	263	2922	790	18.0	20.0	C	0.164		
21-Sep-89	264	2924	61	17.5	19.0	C	1.158		
22-Sep-89	265	2973	773	18.0	20.0	C	1.376		
25-Sep-89	268	2990	86	13.5	14.0	C	1.224		
26-Sep-89	269	3031	631	17.0	20.0	D	0.502		
27-Sep-89	270	3063	660	18.0	20.0	B	0.783		
28-Sep-89	271	3113	677	17.0	17.0	C	0.364		
28-Sep-89	271	3112	677	17.0	18.0	B	0.330		
29-Sep-89	272	3117	897	18.0	19.0	A	0.537		

TABLE C-10. SUMMARY OF THE 1989 NMOC DATA FOR GRAND RAPIDS, MI (GRMI)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1015	687	11.0	10.0	D	0.456		
06-Jun-89	157	1059	75	14.0	13.0	A	0.432		
07-Jun-89	158	1068	79	18.0	18.0	C	0.661		
07-Jun-89	158	1069	813	18.0	18.0	C	0.644		
08-Jun-89	159	1081	147	14.0	14.0	B	0.607		
09-Jun-89	160	1102	894	14.0	13.0	D	0.396		
12-Jun-89	163	1141	686	15.0	14.0	B	0.666		
13-Jun-89	164	1158	791	14.0	14.0	A	0.312	0.389	
14-Jun-89	165	1202	130	14.0	13.0	D	0.271		
15-Jun-89	166	1205	728	14.0	14.0	C	0.362		
16-Jun-89	167	1215	77	18.0	16.0	D	0.432		
19-Jun-89	170	1263	656	14.0	12.0	C	0.602		
20-Jun-89	171	1285	667	14.0	14.0	D	0.265		
21-Jun-89	172	1320	812	15.0	13.0	A	0.327		
22-Jun-89	173	1330	722	15.0	15.0	B	0.554		
23-Jun-89	174	1325	109	14.0	13.0	A	0.916		
26-Jun-89	177	1392	856	14.0	14.0	D	1.181		
27-Jun-89	178	1398	686	14.0	14.0	B	0.529	0.472	
28-Jun-89	179	1435	797	15.0	15.0	A	0.513		
29-Jun-89	180	1425	631	15.0	15.0	D	0.203		
30-Jun-89	181	1462	654	15.0	15.0	D	0.924		
03-Jul-89	184	1522	872	14.0	14.0	D	0.548		
05-Jul-89	186	1544	618	15.0	15.0	D	0.460		
06-Jul-89	187	1557	895	14.0	13.0	B	0.905		
07-Jul-89	188	1582	45	14.0	12.0	D	0.585		
10-Jul-89	191	1603	640	18.0	17.0	B	0.213		
10-Jul-89	191	1604	182	18.0	18.0	C	0.243		
11-Jul-89	192	1634	93	14.0	14.0	C	0.269		
12-Jul-89	193	1658	874	14.0	14.0	D	0.206		
13-Jul-89	194	1685	12	14.0	12.0	C	0.473		
14-Jul-89	195	1720	305	14.0	14.0	C	0.449		
17-Jul-89	198	1761	711	15.0	15.0	B	1.001		
18-Jul-89	199	1776	715	15.0	14.0	B	0.966		
19-Jul-89	200	1790	783	15.0	15.0	C	0.344		
20-Jul-89	201	1825	900	14.0	14.0	A	0.375		
21-Jul-89	202	1836	79	14.0	14.0	D	0.236		
24-Jul-89	205	1881	777	15.0	15.0	C	0.925	1.008	1.017
25-Jul-89	206	1889	662	15.0	14.5	C	0.968	0.948	
26-Jul-89	207	1915	304	14.0	14.0	A	1.080	1.115	
28-Jul-89	209	1945	673	14.0	15.0	A	0.376		
31-Jul-89	212	2000	674	15.0	15.0	A	0.714		
01-Aug-89	213	2029	644	15.0	14.0	A	1.213		
02-Aug-89	214	2053	907	14.0	14.0	D	0.503		
03-Aug-89	215	2093	850	20.0	21.0	B	0.586		
03-Aug-89	215	2094	138	20.5	22.0	D	0.567		
04-Aug-89	216	2077	143	14.0	14.0	A	1.408	1.370	

TABLE C-10. SUMMARY OF THE 1989 NMOC DATA FOR GRAND RAPIDS, MI (GRMI)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	ARIMAL NMOC ppmc
07-Aug-89	219	2104	929	15.0	15.0	C	0.263		
08-Aug-89	220	2163	91	14.0	14.0	A	1.880		
09-Aug-89	221	2180	175	15.0	14.0	C	1.394		
10-Aug-89	222	2214	64	14.0	13.0	C	0.552		
11-Aug-89	223	2208	75	14.0	14.0	D	1.414		
14-Aug-89	226	2257	728	17.5	19.0	A	0.407		
14-Aug-89	226	2258	797	17.5	19.0	D	0.424		
15-Aug-89	227	2272	705	14.0	14.0	A	0.218		
16-Aug-89	228	2295	179	12.0	13.0	C	0.636		
17-Aug-89	229	2337	198	12.0	12.0	A	0.701		
21-Aug-89	233	2387	625	14.0	14.0	D	0.364		
22-Aug-89	234	2398	118	18.0	17.0	D	0.532		
22-Aug-89	234	2397	129	18.0	18.0	D	0.520		
23-Aug-89	235	2429	172	14.5	14.0	B	0.622		
24-Aug-89	236	2461	644	14.5	15.0	D	0.409		
25-Aug-89	237	2468	140	14.5	14.0	D	0.384		
28-Aug-89	240	2565	783	16.0	15.0	A	0.405		
29-Aug-89	241	2506	786	15.5	14.0	D	0.270		
30-Aug-89	242	2547	775	16.0	14.0	D	0.288		
31-Aug-89	243	2598	656	15.8	14.0	D	1.405		
01-Sep-89	244	2621	90	14.0	13.0	A	0.370		
05-Sep-89	248	2634	150	14.5	14.0	A	0.315		
06-Sep-89	249	2651	41	14.5	14.0	D	0.583		
07-Sep-89	250	2679	848	14.5	14.0	C	0.401		
08-Sep-89	251	2702	3	14.2	14.0	D	0.374		
11-Sep-89	254	2707	659	20.0	19.0	A	0.462		
11-Sep-89	254	2708	784	20.0	19.0	C	0.405		
12-Sep-89	255	2777	107	14.5	15.0	D	0.263		
13-Sep-89	256	2801	62	15.0	14.0	C	0.483		
14-Sep-89	257	2819	819	15.0	15.0	C	0.436		
15-Sep-89	258	2840	98	15.0	14.0	D	0.876		
18-Sep-89	261	2873	683	16.0	14.0	D	1.253		
19-Sep-89	262	2878	842	15.0	14.0	A	1.582		
20-Sep-89	263	2905	41	14.5	14.0	A	1.445		
21-Sep-89	264	2928	838	15.0	14.0	D	1.669		
22-Sep-89	265	2967	834	14.5	14.0	D	1.319		
25-Sep-89	268	2969	883	14.5	15.0	C	0.588		
26-Sep-89	269	2997	6	14.5	14.0	D	0.337		
27-Sep-89	270	3017	126	16.0	14.0	C	1.088		
28-Sep-89	271	3046	806	21.0	19.0	C	0.927		
28-Sep-89	271	3045	797	21.0	20.0	B	0.787		
29-Sep-89	272	3061	169	15.0	15.0	D	0.462		

TABLE C-11. SUMMARY OF THE 1989 NMOC DATA FOR HOUSTON, TX (H1TX)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
06-Jun-89	157	1025	691	11.5	10.0	D	0.550	0.566	
07-Jun-89	158	1053	635	12.0	13.0	C	0.712		
08-Jun-89	159	1103	652	13.0	13.0	A	0.363		
09-Jun-89	160	1123	658	13.0	13.0	D	0.882		
12-Jun-89	163	1151	96	12.0	12.0	B	0.241		
13-Jun-89	164	1162	46	19.0	18.0	B	0.516	0.549	
13-Jun-89	164	1161	657	19.0	18.0	A	0.538		
14-Jun-89	165	1197	796	13.0	13.0	D	0.398		
15-Jun-89	166	1222	15	12.0	10.0	D	0.413		
16-Jun-89	167	1224	786	13.0	11.0	C	0.599		
19-Jun-89	170	1260	166	12.0	10.0	D	0.365		
20-Jun-89	171	1283	870	12.0	12.0	C	0.437		
21-Jun-89	172	1317	74	12.0	12.0	D	0.612		
22-Jun-89	173	1306	643	19.0	18.0	B	0.889		
22-Jun-89	173	1305	108	19.0	20.0	B	0.769		
23-Jun-89	174	1339	780	13.0	13.0	D	1.998		
26-Jun-89	177	1389	182	12.0	12.0	A	0.482		
27-Jun-89	178	1410	927	12.0	12.0	A	0.180		
28-Jun-89	179	1429	874	12.0	12.0	B	0.307		
29-Jun-89	180	1460	697	13.0	13.0	D	0.358		
30-Jun-89	181	1501	25	13.0	13.0	C	0.473		
03-Jul-89	184	1523	825	12.0	12.0	D	0.444		
05-Jul-89	186	1539	883	12.0	10.0	D	0.631		
06-Jul-89	187	1562	161	12.0	12.0	A	1.113		
07-Jul-89	188	1580	667	13.0	11.0	B	1.074		
10-Jul-89	191	1623	104	12.0	12.0	A	1.044		
11-Jul-89	192	1635	807	13.0	13.0	D	1.353		
12-Jul-89	193	1636	669	13.0	13.0	D	0.518		
13-Jul-89	194	1693	86	12.0	12.0	A	0.379		
14-Jul-89	195	1728	114	19.0	19.0	C	0.254		
14-Jul-89	195	1729	650	19.0	20.0	D	0.251		
17-Jul-89	198	1736	501	12.0	12.0	D	1.156		
18-Jul-89	199	1771	691	12.0	14.0	A	0.438		
19-Jul-89	200	1770	7	12.0	12.0	C	0.594		
20-Jul-89	201	1841	658	12.0	14.0	D	0.499		
21-Jul-89	202	1831	705	12.0	13.0	A	0.961		
24-Jul-89	205	1880	628	12.0	14.0	C	0.809		
26-Jul-89	207	1917	784	12.0	14.0	A	0.514		
27-Jul-89	208	1954	150	12.0	12.0	C	0.817		
28-Jul-89	209	1944	14		12.0	B	1.495		
03-Aug-89	215	2076	72	12.0	13.0	C	1.390		
04-Aug-89	216	2079	112	12.0	11.0	A	1.248		
07-Aug-89	219	2105	172	12.0	13.0	D	0.446		
08-Aug-89	220	2152	688	19.0	20.0	D	0.244		
10-Aug-89	222	2213	161	12.0	13.0	B	0.298		
11-Aug-89	223	2218	90	12.0	13.0	C	0.640		

TABLE C-11. SUMMARY OF THE 1989 NMOC DATA FOR HOUSTON, TX (H1TX)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Conister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
14-Aug-89	226	2246	185	12.0	12.0	D	1.093		
14-Aug-89	226	2270	814	12.0	12.0	D	0.873		
16-Aug-89	228	2300	178	12.0	12.5	C	1.449		
17-Aug-89	229	2323	920	12.0	12.0	C	1.193		
18-Aug-89	230	2332	900	12.0	12.5	D	1.643		
21-Aug-89	233	2370	68	12.0	13.0	D	1.880	1.973	1.792
22-Aug-89	234	2404	688	13.0	14.0	C	0.873		
23-Aug-89	235	2428	765	12.0	14.0	A	0.655		
24-Aug-89	236	2426	780	12.0	13.0	D	0.497		
25-Aug-89	237	2469	20	19.0	19.0	A	1.811		
25-Aug-89	237	2470	182	19.0	19.0	C	1.807		
28-Aug-89	240	2564	635		13.0	C	1.084		
29-Aug-89	241	2501	676	12.0	13.0	A	0.834	0.869	
30-Aug-89	242	2549	71	12.0	12.0	C	0.401		
31-Aug-89	243	2580	927	12.0	12.0	B	0.470		
01-Sep-89	244	2594	828	12.0	12.0	B	0.933		
05-Sep-89	248	2631	21	12.0	12.0	C	1.024		
07-Sep-89	250	2646	637	20.0	20.0	A	1.303		
07-Sep-89	250	2647	696	20.0	20.0	C	1.357		
08-Sep-89	251	2700	854	12.0	12.0	D	2.614	2.[illegible]7	
11-Sep-89	254	2752	618	12.0	14.0	B	1.247		
12-Sep-89	255	2769	45	12.0	11.0	D	1.063		
12-Sep-89	255	2749	776	12.0	12.0	C	0.741		
14-Sep-89	257	2799	783	12.0	12.0	D	0.329		
15-Sep-89	258	2835	660	12.0	12.0	A	0.545		
18-Sep-89	261	2856	625		12.0	D	0.939		
19-Sep-89	262	2899	106	12.0	12.0	B	0.244		
20-Sep-89	263	2913	43	11.0	12.0	B	0.746		
21-Sep-89	264	2936	724	19.0	20.0	A	0.532		
21-Sep-89	264	2937	854	19.0	20.0	A	0.267		
22-Sep-89	265	2959	770	12.0	13.0	B	0.982		
25-Sep-89	268	2999	407	12.0	13.0	B	0.227		
26-Sep-89	269	3010	794	12.0	12.0	A	0.497		
27-Sep-89	270	3023	645	19.0	18.0	B	0.602		
27-Sep-89	270	3022	672	19.0	19.0	B	0.562		
28-Sep-89	271	3037	683	12.0	13.0	C	0.986		
29-Sep-89	272	3076	175	12.0	12.0	C	0.481		

TABLE C-12. SUMMARY OF THE 1989 NMOC DATA FOR LONG BEACH, CA (LBCA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1039	776	6.0	5.0	C	0.797		
07-Jun-89	158	1057	92	14.0	14.0	B	0.606		
08-Jun-89	159	1082	107	16.0	16.0	A	0.746		
09-Jun-89	160	1106	155	16.0	10.0	B	2.253		
13-Jun-89	164	1165	54	9.0	9.0	B	0.700		
13-Jun-89	164	1163	839	19.0	18.0	A	0.697		
14-Jun-89	165	1195	61	12.0	12.0	D	1.112		
15-Jun-89	166	1226	118	12.0	14.0	B	0.932		
16-Jun-89	167	1244	129	13.0	10.0	D	0.875		
20-Jun-89	171	1276	107	17.0	17.0	C	1.786		
20-Jun-89	171	1275	762	19.0	19.0	A	1.732		
21-Jun-89	172	1318	171	13.0	12.0	D	0.639		
22-Jun-89	173	1355	10	13.5	10.0	A	0.851	0.921	
23-Jun-89	174	1346	84	13.5	13.0	C	0.377		
27-Jun-89	178	1409	907	17.5	17.0	A	0.785		
28-Jun-89	179	1432	99	13.0	13.0	A	0.391		
29-Jun-89	180	1459	64	16.3	16.0	C	1.101		
30-Jun-89	181	1488	197	15.0	14.0	D	0.443		
05-Jul-89	186	1543	630	22.0	20.0	C	1.538		
06-Jul-89	187	1565	166	12.0	12.0	D	0.527		
07-Jul-89	188	1577	138	12.0	12.0	B	0.587		
10-Jul-89	191	1619	920	12.7	14.0	A	0.472		
13-Jul-89	194	1688	90	12.4	12.0	A	0.982		
14-Jul-89	195	1712	839	13.0	14.0	D	0.789	0.841	
17-Jul-89	198	1737	171	12.5	16.0	C	0.394		
19-Jul-89	200	1801	106	13.0	16.0	B	0.597		
19-Jul-89	200	1800	306	13.0	16.0	B	0.336		
20-Jul-89	201	1833	183	11.7	13.0	A	0.625		
21-Jul-89	202	1853	166	11.5	12.0	D	1.001		
24-Jul-89	205	1875	11	15.0	15.0	D	0.475		
26-Jul-89	207	1916	874	15.0	15.0	B	0.508		
27-Jul-89	208	1950	70	13.5	14.0	C	0.564		
28-Jul-89	209	1974	189	17.0	16.5	B	0.570		
28-Jul-89	209	1973	928	17.0	16.5	A	0.589		
31-Jul-89	212	1996	25	13.0	16.0	C	0.340		
02-Aug-89	214	2052	689	12.5	14.0	A	0.775		
03-Aug-89	215	2069	123	11.5	13.0	D	0.401		
04-Aug-89	216	2095	868	11.7	14.0	D	0.630	0.684	
07-Aug-89	219	2134	680	12.0	14.0	C	0.564		
09-Aug-89	221	2182	668	12.0	13.0	D	0.701		
11-Aug-89	223	2212	89	14.0	14.0	A	0.877		
14-Aug-89	226	2252	696	13.0	16.0	A	0.694		
16-Aug-89	228	2298	666	12.5	15.0	C	0.427		
17-Aug-89	229	2330	28	11.5	11.0	B	0.313		
18-Aug-89	230	2360	860	13.0	14.0	C	0.394		
18-Aug-89	230	2361	828	13.0	16.0	C	0.475		

TABLE C-12. SUMMARY OF THE 1989 NMOC DATA FOR LONG BEACH, CA (LBCA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
21-Aug-89	233	2382	767	15.0	16.0	C	0.670		
23-Aug-89	235	2432	165	14.0	14.0	B	0.479		
24-Aug-89	236	2460	621	13.0	12.0	B	0.242		
25-Aug-89	237	2494	854	13.0	13.0	A	0.397		
28-Aug-89	240	2483	178	18.9	17.0	D	0.747		
28-Aug-89	240	2482	157	18.9	18.0	A	0.741		
31-Aug-89	243	2595	663	12.0	14.0	D	0.464		
01-Sep-89	244	[illegible]83	121	11.5	12.0	D	0.846		
06-Sep-89	249	[illegible]665	155	20.0	22.0	A	2.860		
07-Sep-89	250	2703	17	11.5	13.0	D	0.903		
08-Sep-89	251	2698	180	11.5	13.0	C	0.718		
11-Sep-89	254	2753	407	12.5	13.0	D	0.554		
13-Sep-89	256	2813	37	12.0	13.0	C	0.778		
14-Sep-89	257	2820	156	11.9	12.0	D	1.541		
15-Sep-89	258	2822	900	11.5	13.0	C	2.181		
18-Sep-89	261	2868	686	12.7	15.0	A	0.514		
20-Sep-89	263	2880	702	17.0	17.0	D	1.961		
20-Sep-89	263	2879	620	17.0	18.0	D	1.945		
21-Sep-89	264	[illegible]948	856	11.5	11.0	C	2.557		
22-Sep-89	265	2966	792	12.0	14.0	B	1.645		
25-Sep-89	268	2995	14	12.0	15.0	C	1.970		
27-Sep-89	270	3042	895	12.0	14.0	A	0.579		
28-Sep-89	271	3069	807	12.0	14.0	A	1.240		
29-Sep-89	272	3101	147	11.5	13.0	C	1.373		
02-Oct-89	275	3115	607	12.8	16.0	C	0.661		

TABLE C-13. SUMMARY OF THE 1989 NMOC DATA FOR LEXINGTON, KY (LXKY)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1012	15	13.0	13.0	B	0.249		
06-Jun-89	157	1075	853	13.0	13.0	D	0.192	0.240	
07-Jun-89	158	1099	622	14.0	14.0	A	1.032		
08-Jun-89	159	1156	630	15.0	14.0	A	0.723		
09-Jun-89	160	1153	100	13.0	11.0	C	0.123		
12-Jun-89	163	1144	654	18.0	19.0	A	0.184		
12-Jun-89	163	1143	677	19.0	19.0	A	0.191		
13-Jun-89	164	1167	640	14.0	13.0	D	0.335		
14-Jun-89	165	1199	179	13.0	12.5	C	0.216		
15-Jun-89	166	1210	776	14.0	14.0	B	0.113	0.165	
16-Jun-89	167	1264	165	13.0	10.0	C	0.138		
19-Jun-89	170	1262	672	14.0	11.0	A	0.213		
20-Jun-89	171	1287	136	13.0	12.0	D	0.240		
21-Jun-89	172	1322	652	13.0	13.0	C	0.157		
22-Jun-89	173	1362	51	13.0	13.5	C	0.309		
23-Jun-89	174	1393	119	13.0	12.0	C	0.432		
26-Jun-89	177	1394	687	14.0	14.0	D	0.808		
27-Jun-89	178	1466	775	14.0	13.0	D	0.473		
28-Jun-89	179	1446	169	13.0	13.0	A	0.232	0.279	
29-Jun-89	180	1484	844	13.0	13.0	D	0.119		
30-Jun-89	181	1494	662	14.0	14.0	C	0.201		
03-Jul-89	184	1524	780	14.0	12.0	A	0.113		
05-Jul-89	186	1546	301	13.0	11.0	B	0.081		
06-Jul-89	187	1591	695	14.0	12.0	D	0.512		
07-Jul-89	188	1586	10	18.0	16.0	B	0.518		
07-Jul-89	188	1585	663	18.0	16.0	B	0.502		
10-Jul-89	191	1613	813	14.0	12.0	D	0.267		
11-Jul-89	192	1641	3	13.0	12.0	B	0.281		
12-Jul-89	193	1673	98	13.0	12.0	A	0.183		
13-Jul-89	194	1684	681	14.0	12.0	D	0.207	0.253	
14-Jul-89	195	1741	188	13.0	13.0	C	0.204		
17-Jul-89	198	1775	50	13.0	13.0	B	0.425		
18-Jul-89	199	1785	793	14.0	14.0	A	1.545	1.601	
19-Jul-89	200	1792	872	13.0	12.5	D	0.192		
20-Jul-89	201	1826	404	13.0	12.0	C	0.288		
21-Jul-89	202	1848	704	14.0	14.0	A	0.322	0.335	
24-Jul-89	205	1893	778	14.0	14.0	D	0.188		
25-Jul-89	206	1919	22	13.0	12.0	B	0.866		
26-Jul-89	207	1955	32	13.0	14.0	D	0.892		
27-Jul-89	208	1956	894	18.0	17.0	A	0.362		
27-Jul-89	208	1957	41	18.0	18.0	A	0.361		
28-Jul-89	209	1981	142	13.0	12.5	C	0.270		
31-Jul-89	212	1991	38	13.0	13.0	B	0.248		
01-Aug-89	213	2033	114	13.0	12.0	D	0.185		
02-Aug-89	214	2071	621	14.0	14.0	A	0.426		
03-Aug-89	215	2073	819	13.0	13.0	D	0.587		

TABLE C-13. SUMMARY OF THE 1989 NMOC DATA FOR LEXINGTON, KY (LXKY)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
04-Aug-89	216	2107	100	13.0	12.0	D	0.203		
07-Aug-89	219	2131	98	18.0	18.0	D	0.085		
07-Aug-89	219	2130	687	18.0	18.0	C	0.088		
08-Aug-89	220	2165	97	13.0	12.0	D	0.320		
09-Aug-89	221	2184	501	13.0	12.5	D	1.010		
10-Aug-89	222	2203	671	14.0	14.0	D	0.331		
11-Aug-89	223	2235	25	13.0	13.0	C	0.477		
14-Aug-89	226	2244	637	14.0	14.0	C	1.091		
15-Aug-89	227	2313	10	18.0	18.0	B	1.796		
15-Aug-89	227	2312	301	18.0	18.0	B	1.771		
16-Aug-89	228	2306	642	14.0	14.0	D	0.409		
17-Aug-89	229	2326	66	13.5	12.5	C	0.372		
18-Aug-89	230	2352	60	13.0	12.5	D	0.195	0.217	
21-Aug-89	233	2384	631	14.0	13.0	D	0.256		
22-Aug-89	234	2427	166	13.0	13.0	D	0.369		
23-Aug-89	235	2467	407	13.0	13.0	D	0.312		
24-Aug-89	236	2478	18	13.0	12.0	C	0.413		
25-Aug-89	237	2474	96	13.0	12.0	C	0.166		
28-Aug-89	240	2567	642	14.0	14.0	C	0.449		
29-Aug-89	241	2510	84	13.0	13.0	C	0.332		
30-Aug-89	242	2533	175	18.0	18.0	C	0.279		
30-Aug-89	242	2534	722	18.0	18.0	B	0.308		
31-Aug-89	243	2576	620	14.0	14.0	A	0.315		
01-Sep-89	244	2641	669	13.0	13.0	C	0.220		
05-Sep-89	248	2632	172	14.0	13.0	B	0.213	0.659	
06-Sep-89	249	2717	870	13.0	13.0	C	0.346		
07-Sep-89	250	2720	823	13.0	13.0	A	0.399		
08-Sep-89	251	2724	677	14.0	14.0	B	0.213		
11-Sep-89	254	2770	724	14.0	13.0	D	0.111		
12-Sep-89	255	2784	186	18.0	18.0	D	0.184		
12-Sep-89	255	2783	778	18.0	18.0	A	0.194		
13-Sep-89	256	2806	147	13.0	12.0	D	0.169		
14-Sep-89	257	2829	68	12.0	12.0	B	0.222		
15-Sep-89	258	2842	726	14.0	14.0	B	0.242		
18-Sep-89	261	2857	109	17.0	11.0	A	1.397		
19-Sep-89	262	2915	695	14.0	14.0	C	0.170		
20-Sep-89	262	2916	115	13.0	14.0	D	0.221		
21-Sep-89	264	2962	64	13.0	13.0	B	0.152		
22-Sep-89	265	2963	303	13.0	13.0	A	0.134		
25-Sep-89	268	2978	675	18.0	18.0	D	0.308		
25-Sep-89	268	2977	129	18.0	19.0	C	0.298		
26-Sep-89	269	3009	32	13.0	12.0	C	0.325		
27-Sep-89	270	3029	625	14.0	14.0	B	0.126		
28-Sep-89	271	3062	715	14.0	15.0	A	0.322		
29-Sep-89	277	3094	899	13.0	14.0	C	0.359		

TABLE C-14. SUMMARY OF THE 1989 NMOC DATA FOR NEW YORK, NY (M1NY)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
06-Jun-89	157	1045	812	23.0	22.0	B	0.630		
06-Jun-89	157	1046	921	23.0	22.0	D	0.608		
07-Jun-89	158	1065	165	13.0	13.0	B	0.515		
08-Jun-89	159	1090	810	14.0	14.0	D	1.387		
09-Jun-89	160	1119	794	14.0	14.5	B	0.727		
12-Jun-89	163	1139	304	14.0	14.0	C	0.594		
13-Jun-89	164	1166	927	16.0	14.0	B	0.803		
14-Jun-89	165	1186	36	14.0	13.0	C	0.307		
15-Jun-89	166	1213	920	14.0	14.0	D	0.262		
16-Jun-89	167	1235	720	14.0	12.0	C	0.864		
19-Jun-89	170	1251	875	14.0	12.0	D	0.751	0.785	
20-Jun-89	171	1282	925	14.0	15.0	D	1.235		
21-Jun-89	172	1316	72	14.0	13.0	C	0.570		
22-Jun-89	173	1337	883	14.0	14.0	D	0.944		
23-Jun-89	174	1360	789	14.0	14.0	A	0.928		
26-Jun-89	177	1378	404	26.0	26.0	B	0.791		
26-Jun-89	177	1379	621	26.0	26.0	C	0.799		
27-Jun-89	178	1405	788	14.0	14.0	A	0.822		
28-Jun-89	179	1420	406	14.0	13.0	B	0.515	0.567	
29-Jun-89	180	1445	31	14.0	14.0	C	0.255		
30-Jun-89	181	1487	306	14.0	14.0	A	0.414		
03-Jul-89	184	1509	303	14.0	14.0	D	0.601	0.670	
05-Jul-89	186	1528	72	14.0	14.0	C	0.339	0.403	
07-Jul-89	188	1589	53	25.0	24.0	B	0.603		
07-Jul-89	188	1590	688	25.0	24.0	A	0.526		
10-Jul-89	191	1612	774	14.5	16.0	D	0.397		
11-Jul-89	192	1629	687	18.0	16.0	B	0.394		
12-Jul-89	193	1678	35	17.0	17.0	A	0.392		
13-Jul-89	194	1695	784	17.5	17.0	B	0.775		
14-Jul-89	195	1722	623	17.5	18.0	B	1.114		
17-Jul-89	198	1758	146	17.0	18.0	A	0.309		
18-Jul-89	199	1752	870	17.0	18.0	C	0.681		
19-Jul-89	200	1799	895	16.5	17.0	B	0.721		
20-Jul-89	201	1835	112	17.0	17.0	C	0.573		
21-Jul-89	202	1862	92	24.0	24.0	B	0.282		
21-Jul-89	202	1863	807	24.0	24.0	D	0.301		
24-Jul-89	205	1872	33	14.0	15.0	C	0.554		
25-Jul-89	206	1904	921	14.0	14.0	C	0.850		
26-Jul-89	207	1938	765	14.5	14.0	A	0.417		
27-Jul-89	208	1960	770	14.5	15.0	D	0.873		
28-Jul-89	209	1976	695	14.0	14.0	C	0.645		
31-Jul-89	212	2011	8	14.0	14.0	C	0.520		
01-Aug-89	213	2013	678	14.0	14.0	B	0.353		
02-Aug-89	214	2055	637	14.0	15.0	D	0.630		
03-Aug-89	215	2081	807		15.0	B	0.640		
04-Aug-89	216	2110	404	14.0	14.0	B	0.773		

TABLE C-14. SUMMARY OF THE 1989 NMOC DATA FOR NEW YORK, NY (M1NY)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
07-Aug-89	219	2126	6	14.0	13.0	C	0.308		
08-Aug-89	220	2157	766	27.0	27.0	D	0.345		
08-Aug-89	220	2156	848	27.0	27.0	D	0.342		
09-Aug-89	221	2175	19	17.0	17.0	C	0.356		
10-Aug-89	222	2196	181	17.0	17.0	C	0.799		
11-Aug-89	223	2236	137	16.5	17.0	C	0.220		
14-Aug-89	226	2254	686	18.0	18.0	A	1.107		
15-Aug-89	227	2287	52	16.0	17.0	A	2.043		
16-Aug-89	228	2301	135	16.0	17.0	D	0.795		
17-Aug-89	229	2348	692	28.0	28.0	B	0.359		
17-Aug-89	229	2349	670	28.0	28.0	D	0.312		
18-Aug-89	230	2363	651	15.0	14.0	A	0.318		
21-Aug-89	233	2377	834	14.0	13.0	C	0.739		
22-Aug-89	234	2411	197	14.0	14.0	A	0.456		
23-Aug-89	235	2442	93	14.0	14.0	D	0.614		
24-Aug-89	236	2450	659	14.0	15.0	C	0.315	0.333	
25-Aug-89	237	2488	646	14.5	15.0	C	0.258		
28-Aug-89	240	2528	848	14.0	14.0	B	0.396		
29-Aug-89	241	2522	668	14.0	15.0	D	0.538		
30-Aug-89	242	2553	66	14.0	14.0	D	0.807		
31-Aug-89	243	2603	113	27.0	28.0	B	0.335		
31-Aug-89	243	2604	45	27.0	29.0	D	0.334		
01-Sep-89	244	2626	91	14.0	14.0	A	0.912		
05-Sep-89	248	2620	70	14.0	14.0	B	0.406		
06-Sep-89	249	2659	25	14.0	14.0	B	0.211		
07-Sep-89	250	2697	305	14.0	15.0	D	0.967		
08-Sep-89	251	2723	634	14.5	15.0	B	1.329		
11-Sep-89	254	2740	689	14.0	14.0	D	0.524		
12-Sep-89	255	2771	777	12.0	13.0	C	0.339		
13-Sep-89	256	2782	112	14.0	14.0	C	0.471		
14-Sep-89	257	2810	860	13.0	13.0	B	0.349		
18-Sep-89	261	2869	825	14.0	14.0	B	0.392		
19-Sep-89	262	2882	171	28.0	28.0	D	0.263		
19-Sep-89	262	2881	305	28.0	28.0	C	0.241		
20-Sep-89	263	2912	624	18.0	19.0	B	0.434		
21-Sep-89	264	2931	707	18.0	18.0	D	1.968		
22-Sep-89	265	2957	632	16.0	16.0	D	0.416		
25-Sep-89	268	2988	75	18.0	18.0	D	0.398		
26-Sep-89	269	3012	96	16.0	16.0	C	0.513		
27-Sep-89	270	3039	72	17.5	18.0	C	0.360		
28-Sep-89	271	3055	669	27.0	28.0	C	0.551		
28-Sep-89	271	3054	842	27.0	28.0	D	0.568		
29-Sep-89	272	3103	924	14.0	14.0	A	0.780		

TABLE C-15. SUMMARY OF THE 1989 NMOC DATA FOR MONTGOMERY, AL (MGAL)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1014	406	14.0	14.0	A	0.186		
06-Jun-89	157	1032	856	14.0	12.0	A	0.231		
07-Jun-89	158	1063	777	14.5	14.0	A	0.220		
08-Jun-89	159	1128	807	14.5	14.0	C	0.181		
09-Jun-89	160	1114	621	14.5	14.0	D	0.184		
09-Jun-89	160	1113	641	14.5	14.0	D	0.207		
12-Jun-89	163	1164	629	14.5	14.0	B	0.232		
13-Jun-89	164	1171	848	14.0	13.0	C	0.197		
14-Jun-89	165	1219	659	14.4	10.0	C	0.198		
16-Jun-89	167	1225	773	14.3	10.0	B	0.190		
19-Jun-89	170	1300	638	18.0	15.5	A	0.144		
20-Jun-89	171	1314	138	14.0	12.0	A	0.197		
21-Jun-89	172	1313	808	14.2	13.0	D	0.189		
22-Jun-89	173	1342	400	14.1	12.0	A	0.299		
27-Jun-89	178	1468	670	13.9	12.0	C	0.221		
28-Jun-89	179	1443	680	14.1	12.0	B	0.292		
29-Jun-89	180	1454	791	13.9	13.0	C	0.201		
29-Jun-89	180	1455	814	14.0	13.0	D	0.159		
30-Jun-89	181	1520	786	14.1	16.0	C	0.238		
03-Jul-89	184	1526	131	15.5	12.0	B	0.124		
05-Jul-89	186	1527	96	16.9	14.0	D	0.187	0.240	
06-Jul-89	187	1576	70	16.0	13.0	D	0.170		
07-Jul-89	188	1622	28	16.0	15.0	C	0.222		
10-Jul-89	191	1642	705	16.2	15.0	A	0.210		
11-Jul-89	192	1671	99	16.0	14.0	B	0.378		
12-Jul-89	193	1683	62	16.0	13.0	C	0.349	0.405	
13-Jul-89	194	1690	302	15.9	12.0	D	0.191		
14-Jul-89	195	1764	121	16.0	12.5	B	0.395	0.453	
17-Jul-89	198	1773	634	16.1	16.0	D	0.153		
18-Jul-89	199	1763	301	15.9	15.0	D	0.186	0.225	
19-Jul-89	200	1808	36	12.6	12.0	B	0.203		
19-Jul-89	200	1809	857	12.6	12.0	B	0.144		
20-Jul-89	201	1832	663	16.0	15.0	D	0.216		
21-Jul-89	202	1849	640	16.2	16.0	D	0.146	0.154	
24-Jul-89	205	1883	868	16.0	16.0	D	0.113		
25-Jul-89	206	1924	57	16.1	16.0	C	0.316		
26-Jul-89	207	1914	796	16.0	16.0	C	0.122		
27-Jul-89	208	1952	645	16.2	14.0	A	0.184		
28-Jul-89	209	2022	176	14.0	13.0	C	0.446		
28-Jul-89	209	2021	726	14.0	13.0	D	0.397		
31-Jul-89	212	2023	131	16.2	16.0	D	0.252		
01-Aug-89	213	2068	808	16.7	16.0	D	0.158	0.214	
02-Aug-89	214	2066	28	16.3	16.0	B	0.260		
03-Aug-89	215	2106	767	16.5	16.0	B	0.280		
04-Aug-89	216	2102	774	16.3	16.0	A	0.262		
07-Aug-89	219	2135	102	16.1	15.0	D	0.190		

TABLE C-15. SUMMARY OF THE 1989 NMOC DATA FOR MONTGOMERY, AL (MGAL)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
08-Aug-89	220	2172	663	16.0	16.0	C	0.089	0.135	
09-Aug-89	221	2205	646	16.4	16.0	D	0.133		
10-Aug-89	222	2221	806	17.3	16.0	D	1.075		
11-Aug-89	223	2228	726	14.0	12.0	C	0.106		
11-Aug-89	223	2227	660	14.0	14.0	A	0.130		
14-Aug-89	226	2271	689	16.3	15.0	B	0.100		
15-Aug-89	227	2275	667	16.8	16.0	C	0.134		
16-Aug-89	228	2304	783	16.3	15.0	D	0.231		
17-Aug-89	229	2334	645	16.4	15.0	A	0.315		
18-Aug-89	230	2354	871	16.1	15.0	B	0.104		
21-Aug-89	233	2408	33	16.0	15.0	B	0.124		
22-Aug-89	234	2403	305	16.0	15.0	D	0.243		
23-Aug-89	235	2471	63	14.0	14.0	C	0.206		
24-Aug-89	236	2462	637	16.8	15.0	C	0.230		
25-Aug-89	237	2570	131	15.9	15.0	B	0.240		
28-Aug-89	240	2502	27	16.0	14.5	C	0.142	0.178	
29-Aug-89	241	2523	61	13.1	13.0	B	279		
29-Aug-89	241	2524	3	13.3	13.0	A	0.321		
30-Aug-89	242	2579	767	16.1	15.0	D	0.220		
31-Aug-89	243	2600	857	16.1	14.0	D	0.219	0.247	
01-Sep-89	244	2704	164	16.3	16.0	B	1.133		
05-Sep-89	248	2726	868	16.3	16.0	B	0.164		
06-Sep-89	249	2719	33	16.0	15.0	D	0.093		
07-Sep-89	250	2713	807	16.0	15.0	D	0.166		
08-Sep-89	251	2716	36	16.9	14.0	C	0.167		
11-Sep-89	254	2736	131	13.2	8.0	C	0.185		
11-Sep-89	254	2737	18	13.3	11.0	D	0.195		
12-Sep-89	255	2786	656	15.2	14.0	C	0.126		
13-Sep-89	256	2846	126	14.5	14.0	C	0.138		
14-Sep-89	257	2815	828	14.5	15.0	B	0.238		
15-Sep-89	258	2811	183	15.0	13.0	A	0.193		
18-Sep-89	261	2896	192	15.0	14.0	A	0.098		
19-Sep-89	262	2914	661	15.5	15.0	C	0.149		
20-Sep-89	263	2934	93	13.9	13.0	C	0.147		
21-Sep-89	264	2932	916	13.5	13.0	D	0.124		
22-Sep-89	265	2953	138	13.5	12.0	B	0.268		
22-Sep-89	265	2954	157	13.5	12.0	C	0.271		
25-Sep-89	268	2996	186	15.6	14.0	C	0.087		
28-Sep-89	276	3091	921	15.0	15.0	A	0.091		
29-Sep-89	272	3104	21	15.0	14.0	C	0.143		

TABLE C-16. SUMMARY OF THE 1989 NMOC DATA FOR NEW YORK, NY (MNY)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1018	172	19.5	18.0	B	0.618		
05-Jun-89	156	1019	45	19.5	19.0	C	0.620		
09-Jun-89	160	1112	84	16.0	15.0	C	0.568		
12-Jun-89	163	1140	856	16.0	16.0	D	0.658		
13-Jun-89	164	1168	106	15.0	15.0	C	0.716		
14-Jun-89	165	1185	687	16.5	16.5	B	0.312		
15-Jun-89	166	1214	169	16.0	16.0	C	0.436		
16-Jun-89	167	1236	635	16.0	14.0	D	0.687	0.718	
19-Jun-89	170	1250	89	16.0	13.0	C	0.718	0.736	
20-Jun-89	171	1281	807	17.0	16.0	D	0.951		
21-Jun-89	172	1312	161	16.0	16.0	B	1.424		
23-Jun-89	174	1357	100	18.0	18.0	B	1.010		
23-Jun-89	174	1358	823	18.0	18.0	C	1.140		
27-Jun-89	178	1406	150	16.0	14.0	D	0.514		
28-Jun-89	179	1419	828	16.0	15.0	A	0.518	0.476	
29-Jun-89	180	1448	776	17.0	16.0	D	0.222		
30-Jun-89	181	1497	188	20.0	17.0	A	0.447		
30-Jun-89	181	1498	15	20.0	18.0	A	0.378		
03-Jul-89	184	1508	660	16.0	16.0	D	0.553		
05-Jul-89	186	1548	870	14.0	14.0	C	0.316		
06-Jul-89	187	1551	834	14.0	12.0	C	0.492		
07-Jul-89	188	1581	646	15.0	12.0	A	0.789		
10-Jul-89	191	1611	97	14.0	14.0	A	0.568		
11-Jul-89	192	1630	907	14.5	14.0	B	0.628		
12-Jul-89	193	1679	864	14.5	14.0	B	0.407		
13-Jul-89	194	1694	698	16.0	16.0	A	0.606		
14-Jul-89	195	1723	677	16.0	16.0	D	0.793		
17-Jul-89	198	1757	87	14.0	14.0	D	0.216		
18-Jul-89	199	1753	883	14.0	14.0	D	0.515		
19-Jul-89	200	1798	722	15.0	16.0	D	0.778		
20-Jul-89	201	1821	147	18.0	18.0	B	0.409		
20-Jul-89	201	1822	834	18.0	18.0	D	0.447		
21-Jul-89	202	1828	767	16.0	16.0	D	0.393		
24-Jul-89	205	1885	37	15.5	16.0	A	0.730		
25-Jul-89	206	1903	182	16.0	16.0	B	0.886		
26-Jul-89	207	1937	814	16.0	16.0	B	0.306		
27-Jul-89	208	1961	878	16.0	15.0	C	0.803		
28-Jul-89	209	1975	1	15.0	15.0	D	0.511		
31-Jul-89	212	2010	860	16.0	16.0	D	0.448		
01-Aug-89	213	2012	184	15.0	15.0	C	0.236	0.332	
02-Aug-89	214	2062	10	18.0	18.0	B	0.710		
03-Aug-89	215	2083	853	24.0	24.0	B	0.529		
04-Aug-89	216	2109	409	15.0	14.0	B	0.295		
07-Aug-89	219	2127	147	14.0	14.0	A	0.333		
08-Aug-89	220	2159	182	16.0	14.0	C	0.279		
09-Aug-89	221	2176	171	15.0	14.0	B	0.127		

TABLE C-16. SUMMARY OF THE 1989 NMOC DATA FOR NEW YORK, NY (MNY)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
10-Aug-89	222	2197	3	15.0	15.0	D	0.603		
11-Aug-89	223	2230	681	16.0	14.0	C	0.281		
14-Aug-89	226	2253	718	16.0	15.0	D	0.912		
15-Aug-89	227	2286	186	14.0	14.0	D	1.006		
16-Aug-89	228	2285	112	17.0	15.0	C	0.556		
16-Aug-89	228	2284	151	17.0	17.0	B	0.566		
17-Aug-89	229	2358	813	15.0	15.0	D	0.405		
18-Aug-89	230	2362	92	14.0	14.0	D	0.259		
21-Aug-89	233	2376	91	14.0	13.0	B	0.828		
22-Aug-89	234	2412	41	14.0	13.0	B	0.230		
23-Aug-89	235	2441	105	13.5	12.0	C	0.617		
24-Aug-89	236	2451	30	13.0	12.5	B	0.376		
25-Aug-89	237	2489	677	14.0	14.0	D	0.192		
28-Aug-89	240	2559	689	14.0	14.0	C	0.305		
29-Aug-89	241	2521	31	13.0	12.0	C	0.433		
30-Aug-89	242	2532	181	15.0	12.5	C	0.571		
30-Aug-89	242	2531	794	15.0	14.0	B	0.501		
31-Aug-89	243	2593	860	14.0	13.0	D	0.301		
01-Sep-89	244	2625	645	14.0	[illegible]	B	0.377		
05-Sep-89	248	2619	814	14.0		D	0.328		
06-Sep-89	249	2666	105	14.0	[illegible]	D	0.453		
07-Sep-89	250	2696	50	14.0	13.0	C	1.210		
08-Sep-89	251	2725	635	14.0	14.0	D	1.609		
11-Sep-89	254	2741	687	14.0	12.0	C	0.538		
12-Sep-89	255	2775	722	14.0	13.0	C	0.336		
13-Sep-89	256	2785	188	13.0	12.0	C	0.528		
14-Sep-89	257	2809	875	13.0	12.0	D	0.605		
18-Sep-89	261	2864	649	16.0	14.5	C	0.273		
18-Sep-89	261	2863	715	16.0	14.5	C	0.322		
19-Sep-89	262	2895	100	12.0	12.0	B	0.154		
20-Sep-89	263	2911	180	12.0	12.0	C	0.378		
21-Sep-89	264	2929	718	12.0	12.0	C	1.164		
22-Sep-89	265	2976	772	13.0	13.0	A	0.458		
25-Sep-89	268	2987	31	13.0	12.0	A	0.355		
26-Sep-89	269	3013	16	12.0	11.0	C	0.318		
27-Sep-89	270	[illegible]032	143	14.0	12.0	C	1.032		
28-Sep-89	271	[illegible]053	155	16.0	16.0	C	0.680		
28-Sep-89	271	3052	825	16.0	16.0	B	0.565		
29-Sep-89	272	3102	43	12.0	12.0	D	0.706		

TABLE C-17. SUMMARY OF THE 1989 NMOC DATA FOR NEWARK, NJ (NWNJ)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1034	162	15.4	14.0	B	0.297		
06-Jun-89	157	1054	689	15.6	15.0	B	0.562		
07-Jun-89	158	1078	1	6.5	6.0	C	0.607		
07-Jun-89	158	1079	831	17.2	16.0	C	0.521		
08-Jun-89	159	1096	823	14.5	14.0	A	0.678		
09-Jun-89	160	1137	400	15.0	15.0	C	0.720		
12-Jun-89	163	1138	62	15.2	15.0	B	0.624		
13-Jun-89	164	1188	164	18.4	18.0	B	3.699		
14-Jun-89	165	1189	7	15.0	14.0	D	0.240		
15-Jun-89	166	1211	11	14.5	15.0	A	0.305		
16-Jun-89	167	1212	121	15.2	14.0	B	1.090		
19-Jun-89	170	1271	660	16.4	16.0	B	0.505	0.844	
20-Jun-89	171	1308	131	15.0	14.0	D	1.361		
21-Jun-89	172	1307	838	14.9	14.0	C	0.379		
22-Jun-89	173	1341	145	15.0	14.0	C	0.505		
23-Jun-89	174	1380	658	16.0	16.0	D	0.507		
26-Jun-89	177	1381	104	15.0	14.0	D	0.363		
27-Jun-89	178	1376	175	18.5	18.0	C	0.636		
27-Jun-89	178	1377	698	18.5	18.0	C	0.640		
28-Jun-89	179	1482	122	14.2	14.0	C	0.433		
29-Jun-89	180	1480	719	16.0	14.0	C	0.158		
30-Jun-89	181	1512	39	15.5	15.0	D	0.239		
03-Jul-89	184	1553	691	15.9	14.0	D	0.630		
05-Jul-89	186	1552	305	16.2	14.0	D	0.255		
06-Jul-89	187	1607	143	15.6	10.0	D	0.282		
07-Jul-89	188	1608	175	15.0	15.0	A	0.569		
10-Jul-89	191	1677	66	16.8	14.0	D	0.658		
11-Jul-89	192	1707	198	15.2	14.0	B	0.509		
12-Jul-89	193	1706	707	15.9	16.0	A	0.353		
13-Jul-89	194	1759	407	15.0	15.0	C	0.417		
14-Jul-89	195	1760	768	16.0	16.0	D	1.112		
17-Jul-89	198	1779	30	16.0	16.0	C	0.197		
18-Jul-89	199	1802	109	16.2	16.0	C	2.302	2.174	
19-Jul-89	200	1803	53	14.8	14.0	C	0.606		
20-Jul-89	201	1857	773	16.0	15.0	D	0.524		
21-Jul-89	202	1902	185	15.2	15.0	D	0.235		
24-Jul-89	205	1901	179	16.0	16.0	A	1.167		
25-Jul-89	206	1935	164	17.3	18.0	B	0.594		
26-Jul-89	207	1936	631	16.1	16.0	B	0.852		
27-Jul-89	208	2008	52	14.6	14.0	D	0.935		
28-Jul-89	209	2009	838	15.0	14.0	D	0.417		
31-Jul-89	212	2014	691	16.1	16.0	B	0.510	0.555	
01-Aug-89	213	2026	301	15.0	15.0	A	0.337		
02-Aug-89	214	2057	899	14.9	14.5	A	0.917		
03-Aug-89	215	2113	623	15.3	16.0	C	0.520		
04-Aug-89	216	2114	885	14.5	14.0	A	0.637		

TABLE C-17. SUMMARY OF THE 1989 NMOC DATA FOR NEWARK, NJ (NWNJ)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
08-Aug-89	220	2199	875	15.0	15.0	C	0.254		
09-Aug-89	221	2169	126	18.2	17.0	B	0.319		
09-Aug-89	221	2170	927	18.2	18.0	D	0.298		
10-Aug-89	222	2263	857	15.0	16.0	B	1.097		
11-Aug-89	223	2264	22	15.0	15.0	C	0.263		
14-Aug-89	226	2265	36	14.5	14.0	B	1.356		
15-Aug-89	227	2297	872	15.0	14.5	D	1.981		
16-Aug-89	228	2364	404	15.5	15.0	C	0.551		
17-Aug-89	229	2365	685	15.9	16.0	A	0.586		
18-Aug-89	230	2419	83	17.6	17.5	C	0.324		
18-Aug-89	230	2420	669	17.6	18.0	C	0.296		
21-Aug-89	233	2388	501	15.6	14.0	C	0.216		
22-Aug-89	234	2448	766	14.9	15.0	D	0.307		
23-Aug-89	235	2449	878	14.4	14.0	D	0.497		
24-Aug-89	236	2433	42	15.7	15.0	B	0.315		
25-Aug-89	237	2480	890	17.9	17.0	C	0.248		
25-Aug-89	237	2479	153	17.9	18.0	A	0.177		
28-Aug-89	240	2503	852	15.0	14.5	D	0.979		
29-Aug-89	241	2542	788	16.0	15.0	C	0.450		
30-Aug-89	242	2541	774	15.8	15.0	A	0.740		
31-Aug-89	243	2587	107	15.0	14.0	A	0.370		
01-Sep-89	244	2649	666	19.0	16.0	C	0.788		
01-Sep-89	244	2648	74	19.0	19.0	C	0.839		
05-Sep-89	248	2655	657	16.5	17.0	D	0.272		
06-Sep-89	249	2688	688	16.7	17	C	0.600		
07-Sep-89	250	2686	109	17.1	13.	C	1.708		
08-Sep-89	251	2780	833	15.4	15.0	D	1.679		
11-Sep-89	254	2794	680	16.0	15.0	D	0.470		
12-Sep-89	255	2793	652	16.2	16.0	C	0.329		
13-Sep-89	256	2834	676	16.1	16.0	C	0.491		
15-Sep-89	258	2860	172	15.0	13.0	C	0.532		
18-Sep-89	261	2909	924	15.0	15.0	A	0.614		
19-Sep-89	262	2910	890	15.8	16.0	A	0.299		
20-Sep-89	263	2941	70	18.0	18.0	D	0.463		
20-Sep-89	263	2940	831	18.0	18.0	D	0.518		
21-Sep-89	264	2980	777	15.8	16.0	[illegible]	2.124		
22-Sep-89	265	2979	783	15.8	15.0	B	1.042		
25-Sep-89	268	3014	778	17.5	16.0	D	0.270		
26-Sep-89	269	3077	885	15.2	14.5	D	0.602		
27-Sep-89	270	3079	671	17.0	17.0	A	0.205		
29-Sep-89	272	3114	624	16.1	16.0	C	0.522		
29-Sep-89	272	3118	686	17.2	17.0	D	0.814		

TABLE C-18. SUMMARY OF THE 1989 NMOC DATA FOR PLAINFIELD, NJ (PLNJ)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1040	806	15.4	18.0	A	0.407		
06-Jun-89	157	1097	198	14.0	16.0	B	0.384		
07-Jun-89	158	1105	715	15.4	17.0	C	0.438		
08-Jun-89	159	1076	895	13.4	16.0	C	0.377		
08-Jun-89	159	1077	176	13.4	16.0	D	0.370		
09-Jun-89	160	1148	890	14.1	16.0	B	0.524		
12-Jun-89	163	1147	842	14.1	16.0	D	0.184		
13-Jun-89	164	1179	33	13.9	11.0	C	0.524		
14-Jun-89	165	1178	719	15.4	15.0	D	0.249	0.297	
15-Jun-89	166	1256	834	14.4	14.0	A	0.368		
16-Jun-89	167	1257	777	15.2	15.0	D	1.077		
19-Jun-89	170	1272	825	14.2	16.5	A	0.723	0.721	
20-Jun-89	171	1349	897	14.4	17.0	D	0.686		
21-Jun-89	172	1350	646	15.5	18.0	C	0.327		
22-Jun-89	173	1343	172	14.7	16.0	D	0.664		
23-Jun-89	174	1403	839	14.2	16.0	A	0.968		
26-Jun-89	177	1404	115	14.0	16.0	D	0.241		
27-Jun-89	178	1475	8	13.5	16.0	A	0.757		
28-Jun-89	179	1451	666	14.0	17.0	C	0.287		
28-Jun-89	179	1450	723	14.0	17.0	D	0.235		
29-Jun-89	180	1474	11	14.2	15.0	C	0.072		
30-Jun-89	181	1513	676	15.9	18.0	C	0.170		
03-Jul-89	184	1530	808	15.1	18.0	B	0.273		
05-Jul-89	186	1529	106	14.8	18.0	A	0.288		
10-Jul-89	191	1631	57	14.1	14.0	A	0.316		
11-Jul-89	192	1676	119	14.1	16.0	B	0.128		
12-Jul-89	193	1646	778	15.3	18.0	C	0.218		
14-Jul-89	195	1756	801		18.0	C	0.550		
17-Jul-89	198	1858	676	15.3	17.5	D	0.104		
18-Jul-89	199	1783	4	14.1	17.0	D	0.457		
18-Jul-89	199	1782	724	14.1	17.0	A	0.304		
19-Jul-89	200	1859	186	14.3	17.0	A	0.610		
20-Jul-89	201	1860	28	15.6	17.5	A	1.796		
21-Jul-89	202	1907	143	15.6	18.0	A	1.334		
24-Jul-89	205	1908	652	15.7	14.5	C	0.734		
25-Jul-89	206	1959	790	15.5	18.0	D	1.189		
26-Jul-89	207	1958	697	15.2	18.0	B	0.203		
27-Jul-89	208	2006	137	14.0	14.0	A	0.327		
28-Jul-89	209	2007	681	15.0	18.0	C	0.226		
31-Jul-89	212	2015	872	14.1	17.0	D	0.500		
01-Aug-89	213	2025	18	14.1	17.0	C	0.201		
02-Aug-89	214	2056	920	14.0	16.0	D	0.753		
03-Aug-89	215	2151	914	14.0	16.0	C	0.493		
04-Aug-89	216	2153	834	14.0	16.0	A	0.359		
07-Aug-89	219	2167	629	14.8	17.0	A	0.290		
08-Aug-89	220	2198	35	14.3	15.0	D	0.104		

TABLE C-18. SUMMARY OF THE 1989 NMOC DATA FOR PLAINFIELD, NJ (PLNJ)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
09-Aug-89	221	2193	698	15.8	15.0	B	0.525		
10-Aug-89	222	2255	684	15.8	19.0	B	0.969		
11-Aug-89	223	2256	895	14.1	17.0	D	0.160		
14-Aug-89	226	2314	777	13.9	16.0	A	0.764		
14-Aug-89	226	2315	184	13.9	17.0	D	0.758		
15-Aug-89	227	2303	193	14.2	17.0	C	0.888		
16-Aug-89	228	2343	885	14.0	14.0	C	0.405		
17-Aug-89	229	2342	121	14.1	12.0	C	0.274		
18-Aug-89	230	2409	655	15.7	18.0	A	0.294		
21-Aug-89	233	2413	6	13.3	16.0	C	0.353		
21-Aug-89	233	2414	304	13.3	16.0	D	0.351		
22-Aug-89	234	2453	704	13.0	16.0	D	0.161		
23-Aug-89	235	2454	803	14.8	18.0	C	0.425		
25-Aug-89	237	2525	79	14.3	17.0	C	0.152		
28-Aug-89	240	2513	53	13.6	16.0	A	0.607		
28-Aug-89	240	2514	176	13.6	16.0	D	0.638		
29-Aug-89	241	2607	856	14.2	17.0	A	0.565		
30-Aug-89	242	2608	87	13.9	16.0	C	0.371		
31-Aug-89	243	2586	875	14.3	15.0	A	0.105		
01-Sep-89	244	2660	815	14.2	17.0	C	1.147		
05-Sep-89	248	2670	773	14.8	18.0	D	0.268		
06-Sep-89	249	2680	662	15.9	18.0	C	0.540		
07-Sep-89	250	2681	624	15.9	18.0	B	1.508		
08-Sep-89	251	2781	142	14.2	16.0	A	1.479		
12-Sep-89	255	2789	303	14.3	16.0	D	0.168		
13-Sep-89	256	2824	713	15.5	15.0	C	0.359		
14-Sep-89	257	2872	52	13.9	16.0	A	0.451		
15-Sep-89	258	2875	663	15.0	16.0	C	0.267		
18-Sep-89	261	2927	150	14.2	16.0	D	0.163		
19-Sep-89	262	2933	66	15.3	16.0	D	0.513		
20-Sep-89	263	2930	696	15.4	18.0	C	0.431		
21-Sep-89	264	2985	848	13.5	15.0	B	0.982		
21-Sep-89	264	2986	102	13.6	16.0	C	1.018		
22-Sep-89	265	3026	165	14.0	16.0	C	1.134		
26-Sep-89	269	3040	189	14.3	17.0	C	0.541		
27-Sep-89	270	3051	643	14.8	18.0	B	0.162		
27-Sep-89	270	3050	656	14.8	18.0	B	0.134		
28-Sep-89	271	3056	819	14.2	18.0	B	1.503		
28-Sep-89	271	3057	852	14.4	18.0	C	1.570		
29-Sep-89	272	3110	692	15.2	17.0	B	0.542		
29-Sep-89	272	3111	640	15.2	18.0	D	0.557		

TABLE C-19. SUMMARY OF THE 1989 NMOC DATA FOR RALEIGH, NC (RLNC)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1009	698	17.0	17.0	C	0.286	0.291	
06-Jun-89	157	1010	179	16.0	16.0	D	0.166		
07-Jun-89	158	1049	136	15.0	15.0	B	0.190		
08-Jun-89	159	1050	12	17.0	17.0	D	0.108		
09-Jun-89	160	1071	833	17.0	17.0	D	0.158		
12-Jun-89	163	1125	878	17.0	17.0	D	0.150		
13-Jun-89	164	1126	697	16.0	15.0	A	0.252		
13-Jun-89	164	1127	809	16.0	15.0	A	0.228		
14-Jun-89	165	1176	913	18.0	19.0	C	0.344		
15-Jun-89	166	1177	192	17.0	17.0	B	0.177		
16-Jun-89	167	1249	916	17.0	14.0	C	0.228		
19-Jun-89	170	1246	914	17.0	14.0	D	0.206		
20-Jun-89	171	1248	801	17.0	15.0	A	0.138		
21-Jun-89	172	1295	810	17.0	18.0	C	0.110		
22-Jun-89	173	1296	179	17.0	16.5	B	0.193	0.279	
23-Jun-89	174	1370	671	17.0	17.0	A	0.104		
26-Jun-89	177	1371	834	17.0	16.0	B	0.551		
27-Jun-89	178	1372	45	16.0	16.0	D	0.321		
29-Jun-89	180	1502	74	16.0	17.0	A	0.158		
30-Jun-89	181	1503	108	17.0	17.0	C	0.059		
05-Jul-89	186	1506	767	16.0	16.0	C	0.110		
05-Jul-89	186	1547	804	16.0	16.0	A	0.116		
06-Jul-89	187	1571	84	15.0	14.0	C	0.136		
07-Jul-89	188	1570	684	17.0	17.0	D	0.156		
10-Jul-89	191	1597	33	16.0	14.0	D	0.276		
11-Jul-89	192	1650	52	17.0	16.0	D	0.325		
12-Jul-89	193	1651	685	17.0	17.0	B	0.268		
13-Jul-89	194	1649	875	17.0	15.0	C	0.126		
14-Jul-89	195	1730	91	16.0	16.0	C	0.097		
17-Jul-89	198	1731	136	16.0	16.0	D	0.052		
18-Jul-89	199	1732	184	16.0	16.0	B	0.066	0.101	
19-Jul-89	200	1777	138	17.0	17.0	A	0.169		
20-Jul-89	201	1812	667	18.0	16.0	A	0.087		
21-Jul-89	202	1815	309	16.0	15.0	C	0.386	0.419	
24-Jul-89	205	1864	899	0.0	15.0	C	0.153		
24-Jul-89	205	1865	135	14.0	14.0	A	0.208		
25-Jul-89	206	1886	803	16.0	16.0	C	0.258		
26-Jul-89	207	1896	649	15.0	16.0	D	0.386		
27-Jul-89	208	1913	192	18.0	16.0	A	0.089		
31-Jul-89	212	1970	185	16.5	16.0	B	0.204	0.249	
01-Aug-89	213	2004	84	15.0	15.0	B	0.054		
01-Aug-89	213	2005	684	15.0	15.0	B	0.043		
02-Aug-89	214	2038	192	16.0	16.0	B	0.113		
03-Aug-89	215	2041	57	15.0	16.0	D	0.277		
04-Aug-89	216	2080	107	15.0	16.0	C	0.269		
05-Aug-89	217	2082	198	16.0	16.0	D	0.120	0.175	

TABLE C-19. SUMMARY OF THE 1989 NMOC DATA FOR RALEIGH, NC (RLNC)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
06-Aug-89	218	2084	38	16.0	16.0	A	0.079		
07-Aug-89	219	2141	14	16.0	15.0	A	0.099		
08-Aug-89	220	2142	130	16.0	13.0	B	0.054		
09-Aug-89	221	2147	720	18.0	12.5	D	0.046		
11-Aug-89	223	2189	162	16.0	17.0	D	0.074		
12-Aug-89	224	2191	166	16.0	16.0	D	0.083		
14-Aug-89	226	2241	627	16.0	16.0	A	0.201		
15-Aug-89	227	2242	72	16.0	16.0	B	0.056	0.075	
16-Aug-89	228	2288	46	15.0	15.0	B	0.405		
16-Aug-89	228	2289	100	15.0	15.0	C	0.391		
17-Aug-89	229	2311	37	16.0	16.0	C	0.116		
18-Aug-89	230	2319	157	16.0	16.0	D	0.056		
21-Aug-89	233	2393	857	17.0	16.0	A	0.146		
22-Aug-89	234	2394	180	19.0	18.0	C	0.198		
23-Aug-89	235	2395	667	17.0	17.0	B	0.176		
24-Aug-89	236	2571	18	19.0	18.0	A	0.183		
25-Aug-89	237	2671	395	17.0	17.0	B	0.083		
28-Aug-89	240	2672	106	17.0	17.0	A	0.142		
29-Aug-89	241	2572	871	17.0	16.0	A	0.220		
30-Aug-89	242	2573	900	17.0	16.0	B	0.210		
31-Aug-89	243	2575	658	17.0	16.0	D	0.080		
31-Aug-89	243	2574	698	17.0	16.0	B	0.086		
01-Sep-89	244	2597	98	18.0	16.0	B	0.265	0.310	
05-Sep-89	248	2673	622	19.0	19.0	B	0.052		
06-Sep-89	249	3085	839	16.0	16.0	C	0.050		
06-Sep-89	249	2674	790	18.0	18.0	D	0.054		
07-Sep-89	250	2675	899	18.0	18.0	C	0.092		
08-Sep-89	251	2676	890	18.0	17.0	A	0.226		
11-Sep-89	254	2751	61	17.0	17.0	D	0.525		
12-Sep-89	255	2750	86	17.0	17.0	C	0.163		
13-Sep-89	256	2759	834	16.0	14.0	B	0.098		
13-Sep-89	256	2758	871	16.0	15.0	B	0.083		
14-Sep-89	257	2852	794	17.0	17.0	D	0.135		
15-Sep-89	258	2853	72	17.0	17.0	A	0.137		
18-Sep-89	261	2851	169	17.0	17.0	A	0.092		
19-Sep-89	262	2855	197	17.0	14.5	A	0.065		
20-Sep-89	263	3084	36	16.0	16.0	C	0.068		
21-Sep-89	264	3080	635	17.0	18.0	A	0.053		
22-Sep-89	265	3086	868	17.0	16.0	A	0.065		
25-Sep-89	268	3083	37	17.0	16.0	D	0.046		
26-Sep-89	269	3087	894	16.0	16.0	C	0.086		
27-Sep-89	270	3088	68	17.0	18.0	B	0.049		
28-Sep-89	271	3082	27		18.0	D	0.056		
29-Sep-89	272	3081	875	18.0	17.0	D	0.232		

TABLE C-20. SUMMARY OF THE 1989 NMOC DATA FOR RESEDA, CA (RSCA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
20-Jun-89	171	1292	4	18.0	14.0	C	1.876		
22-Jun-89	173	1336	193	18.0	14.0	B	1.102		
22-Jun-89	173	1335	853	18.0	14.0	B	1.102		
23-Jun-89	174	1356	113	18.0	12.0	B	0.340	0.408	
04-Jul-89	185	1561	642	18.0	12.0	B	1.134		
06-Jul-89	187	1559	123	17.0	12.0	D	1.238		
07-Jul-89	188	1596	658	14.0	8.0	C	0.842		
07-Jul-89	188	1579	924	14.0	10.0	B	0.820		
10-Jul-89	191	1616	135	17.0	12.0	C	0.323		
11-Jul-89	192	1645	79	17.0	14.0	D	0.314		
13-Jul-89	194	1687	181	17.0	12.0	A	1.236		
14-Jul-89	195	1716	806	17.0	15.0	D	1.414		
17-Jul-89	198	1735	107	17.0	14.0	D	0.483		
18-Jul-89	199	1765	860	17.0	14.0	D	0.571		
20-Jul-89	201	1837	122	17.0	14.0	C	1.289		
21-Jul-89	202	1819	99	13.0	13.0	B	1.262		
21-Jul-89	202	1820	119	13.0	13.0	D	1.275		
24-Jul-89	205	1879	684	18.0	15.0	A	0.399	0.446	
25-Jul-89	206	1895	172	17.0	14.0	C	0.555		
27-Jul-89	208	1941	646	17.0	14.0	D	1.100	1.143	
28-Jul-89	209	1980	916	17.0	14.0	D	1.209		
31-Jul-89	212	2002	718	18.0	15.0	B	0.904		
01-Aug-89	213	2030	86	17.0	16.0	D	0.912		
03-Aug-89	215	2078	833	17.0	14.0	D	1.125		
04-Aug-89	216	2108	121	17.0	14.0	D	1.260		
07-Aug-89	219	2132	145	17.0	14.0	C	0.863		
08-Aug-89	220	2146	183	17.0	13.0	A	0.417		
10-Aug-89	222	2207	662	18.0	15.0	D	0.455		
11-Aug-89	223	2211	70	17.0	14.0	D	0.913		
14-Aug-89	226	2248	43	16.5	14.0	D	1.002		
15-Aug-89	227	2267	114	18.0	15.0	A	0.648	0.666	
17-Aug-89	229	2329	56	19.0	15.0	C	0.417		
18-Aug-89	230	2366	113	12.5	10.0	C	0.635		
18-Aug-89	230	2367	155	13.0	12.0	C	0.536		
21-Aug-89	233	2381	722	19.5	19.0	C	0.209		
22-Aug-89	234	2410	842	19.0	16.0	A	0.879		
24-Aug-89	236	2457	921	19.0	16.0	B	0.380		
28-Aug-89	240	2490	718	19.5	16.0	A	1.370		
29-Aug-89	241	2519	145	18.0	15.0	B	1.735		
29-Aug-89	241	2520	899	18.0	15.0	D	1.703		
31-Aug-89	243	2599	32	18.0	15.0	C	1.843	1.729	1.799
01-Sep-89	244	2614	806	25.0	21.0	A	3.990		
05-Sep-89	248	2640	183	17.0	14.0	B	1.930		
07-Sep-89	250	2677	697	19.0	16.0	D	1.630		
08-Sep-89	251	2718	56	18.0	15.0	C	1.258		
11-Sep-89	254	2747	403	19.0	15.0	C	1.470		

TABLE C-20. SUMMARY OF THE 1989 NMOC DATA FOR RESEDA, CA (RSCA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
12-Sep-89	255	2766	185	18.0	14.0	D	0.550		
12-Sep-89	255	2765	770	18.0	14.0	A	0.535		
14-Sep-89	257	2816	140	18.0	15.0	A	1.867		
15-Sep-89	258	2848	810	19.0	15.0	C	3.000		
18-Sep-89	261	2871	852	19.0	14.0	C	0.593		
18-Sep-89	261	2866	698	19.0	15.0	B	0.424		
21-Sep-89	264	2946	10	18.0	15.0	B	2.839		
21-Sep-89	264	2945	634	18.0	15.0	B	2.800		
22-Sep-89	265	2970	788	19.0	16.0	C	3.222		
25-Sep-89	268	2991	762	19.0	16.0	D	1.890		
26-Sep-89	269	3011	928	19.0	16.0	B	2.327		
28-Sep-89	271	3107	657	19.0	16.0	C	2.216		
29-Sep-89	272	3089	403	18.0	15.0	B	1.420		
29-Sep-89	272	3090	145	18.0	17.0	D	1.407		

TABLE C-21. SUMMARY OF THE 1989 NMOC DATA FOR ST. LOUIS, MO (S2MO)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
06-Jun-89	157	1027	166	16.0	16.0	A	0.951		
07-Jun-89	158	1056	650	16.0	15.0	A	1.967		
08-Jun-89	159	1120	864	15.0	15.0	B	0.870		
09-Jun-89	160	1121	184	15.0	15.0	D	0.240		
12-Jun-89	163	1129	774	16.0	16.0	D	0.269	0.345	
13-Jun-89	164	1187	183	15.0	14.0	C	0.303		
14-Jun-89	165	1203	90	16.0	16.0	A	0.519		
14-Jun-89	165	1204	696	16.0	16.0	C	0.524		
15-Jun-89	166	1227	775	15.0	12.0	B	0.303		
16-Jun-89	167	1247	666	16.0	12.0	C	0.848		
19-Jun-89	170	1266	661	16.0	12.0	D	0.364		
20-Jun-89	171	1288	135	14.0	14.0	D	0.661		
21-Jun-89	172	1319	872	14.0	14.0	D	0.791		
22-Jun-89	173	1361	778	16.0	16.0	D	1.048		
23-Jun-89	174	1369	68	16.0	14.0	C	0.691		
23-Jun-89	174	1368	842	16.0	15.0	B	0.724		
26-Jun-89	177	1397	304	14.0	13.0	A	0.932	0.964	
27-Jun-89	178	1413	801	15.0	14.0	A	0.338		
28-Jun-89	179	1458	657	14.0	13.0	D	0.682		
29-Jun-89	180	1444	916	10.5	11.0	A	0.334		
03-Jul-89	184	1525	17	16.0	15.0	C	0.187		
05-Jul-89	186	1541	56	16.0	15.0	D	0.490		
06-Jul-89	187	1558	185	17.0	16.0	A	1.415		
07-Jul-89	188	1621	789	17.0	16.0	D	1.034		
10-Jul-89	191	1617	627	16.0	16.0	C	0.388		
11-Jul-89	192	1652	405	16.0	14.0	B	0.900	0.805	
12-Jul-89	193	1656	15	15.0	15.0	A	0.481		
13-Jul-89	194	1727	776	16.0	16.0	D	0.659		
13-Jul-89	194	1726	828	16.0	16.0	C	0.706		
14-Jul-89	195	1713	854	16.5	16.0	A	0.432		
17-Jul-89	198	1744	157	16.5	16.0	C	1.049		
18-Jul-89	199	1772	400	16.5	16.0	C	2.132		
19-Jul-89	200	1810	696	17.0	16.0	B	0.335		
19-Jul-89	200	1811	786	17.0	16.0	B	0.210		
20-Jul-89	201	1843	688	16.5	16.0	D	0.350		
21-Jul-89	202	1850	685	16.5	16.0	B	0.498		
24-Jul-89	205	1878	657	17.0	17.0	B	0.596		
25-Jul-89	206	1900	680	17.5	17.0	A	0.850		
26-Jul-89	207	1925	90	16.0	16.0	B	0.821		
27-Jul-89	208	1948	723	17.0	17.0	C	0.453		
28-Jul-89	209	1972	696	16.5	16.5	C	0.404	0.434	
31-Jul-89	212	2003	15	16.0	15.0	C	1.653		
01-Aug-89	213	2051	106	16.0	15.0	D	0.685		
02-Aug-89	214	2048	186	16.0	16.0	C	2.090		
03-Aug-89	215	2067	652	17.0	16.0	C	0.622		
04-Aug-89	216	2100	631	17.0	16.0	A	0.447		

TABLE C-21. SUMMARY OF THE 1989 NMOC DATA FOR ST. LOUIS, MO (S2MO)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
07-Aug-89	219	2139	179	16.0	15.0	D	0.311		
08-Aug-89	220	2149	105	16.0	16.0	B	0.470		
08-Aug-89	220	2150	921	16.0	16.0	C	0.508		
09-Aug-89	221	2185	620	16.5	16.0	D	2.323		
10-Aug-89	222	2219	874	16.0	16.0	A	1.868		
11-Aug-89	223	2239	192	15.0	16.0	D	0.608		
14-Aug-89	226	2247	831	12.0	12.0	C	1.670		
15-Aug-89	227	2292	640	16.0	15.0	A	0.849		
16-Aug-89	228	2322	852	16.0	14.0	A	0.420		
17-Aug-89	229	2327	825	16.0	14.0	A	0.568		
18-Aug-89	230	2324	98	80.0	18.0	C	0.647		
21-Aug-89	233	2373	147	16.0	16.0	D	0.419		
21-Aug-89	233	2372	403	16.0	16.0	C	0.412		
22-Aug-89	234	2405	768	16.5	16.0	C	0.626		
23-Aug-89	235	2425	874	15.0	15.0	C	0.639		
24-Aug-89	236	2466	43	15.5	15.0	C	0.727		
25-Aug-89	237	2481	634	16.0	16.0	A	0.520		
28-Aug-89	240	2496	924	15.5	16.0	C	0.861		
29-Aug-89	241	2508	10	16.0	15.0	D	0.271		
30-Aug-89	242	2545	837	15.0	14.0	A	0.494		
31-Aug-89	243	2584	62	15.0	14.0	D	0.606		
01-Sep-89	244	2624	15	16.0	15.5	C	0.303		
05-Sep-89	248	2630	765	17.0	15.0	D	0.684		
06-Sep-89	249	2668	878	16.0	15.0	B	0.666		
07-Sep-89	250	2683	684	17.0	17.0	A	0.524		
07-Sep-89	250	2682	707	17.0	17.0	A	0.546		
08-Sep-89	251	2727	145	15.0	15.0	C	0.632		
11-Sep-89	254	2744	658	16.0	15.0	D	0.665		
12-Sep-89	255	2802	181	15.0	15.0	D	0.304		
13-Sep-89	256	2803	767	16.0	16.0	D	0.275		
14-Sep-89	257	2831	921	15.0	15.0	A	0.282		
15-Sep-89	258	2845	89	15.0	15.0	C	0.360		
18-Sep-89	261	2890	796	16.0	15.0	B	0.871		
19-Sep-89	262	2893	720	16.0	16.0	A	0.556		
20-Sep-89	263	2968	83	15.0	15.0	C	0.519		
22-Sep-89	265	2961	871	15.0	15.0	D	0.836		
25-Sep-89	268	2994	151	15.0	15.0	A	1.110		
26-Sep-89	269	3004	858	15.0	14.0	D	0.367		
26-Sep-89	269	3003	828	15.0	15.0	A	0.367		
27-Sep-89	270	3059	109	17.0	11.0	B	5.013		
28-Sep-89	271	3067	142	15.0	15.0	D	0.828		
29-Sep-89	276	3093	649	16.0	15.0	A	0.963		

TABLE C-22. SUMMARY OF THE 1989 NMOC DATA FOR SACRAMENTO, CA (S3CA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1022	157	9.5	10.0	B	0.333		
06-Jun-89	157	1029	661	10.0	11.0	C	0.221		
07-Jun-89	158	1070	784	10.0	11.0	A	0.208		
08-Jun-89	159	1124	673	18.5	20.0	C	0.161		
09-Jun-89	160	1115	793	13.5	14.0	C	0.180		
12-Jun-89	163	1150	126	12.0	14.0	C	0.115		
13-Jun-89	164	1159	42	18.0	18.0	A	0.164		
13-Jun-89	164	1160	188	18.0	18.0	A	0.155		
14-Jun-89	165	1206	671	17.5	17.0	D	0.236		
16-Jun-89	167	1245	776	9.8	8.0	C	0.199		
19-Jun-89	170	1261	793	10.0	9.0	A	0.198		
20-Jun-89	171	1289	692	16.0	18.0	D	0.166		
21-Jun-89	172	1299	62	9.8	10.0	B	0.129	0.173	
23-Jun-89	174	1395	705	9.8	10.0	C	0.329		
26-Jun-89	177	1375	766	20.0	20.0	B	0.097	0.128	
27-Jun-89	178	1411	773	8.0	8.0	B	0.101		
28-Jun-89	179	1434	864	8.8	8.0	B	0.097		
29-Jun-89	180	1491	183	8.0	9.0	B	0.322		
30-Jun-89	181	1492	635	8.2	8.0	D	0.116		
03-Jul-89	184	1515	186	18.0	20.0	C	0.224		
03-Jul-89	184	1514	696	18.0	20.0	A	0.216		
05-Jul-89	186	1563	60	8.0	6.0	C	0.958		
10-Jul-89	191	1624	772	18.0	18.0	B	0.281		
11-Jul-89	192	1637	652	8.0	9.0	C	0.121		
12-Jul-89	193	1655	644	8.0	9.0	D	0.095		
13-Jul-89	194	1689	406	7.8	7.0	D	0.248		
14-Jul-89	195	1745	656	10.6	13.0	B	0.242		
17-Jul-89	198	1740	813	19.0	20.0	D	0.302		
18-Jul-89	199	1774	789	8.0	10.0	B	0.183		
19-Jul-89	200	1794	642	9.0	10.0	D	0.311		
24-Jul-89	205	1882	623	11.0	13.0	A	0.171		
25-Jul-89	206	1909	61		20.0	C	0.186		
25-Jul-89	206	1910	668	18.0	19.0	D	0.206		
26-Jul-89	207	1921	620	9.0	11.0	A	0.170		
28-Jul-89	209	1978	62	18.0	18.5	C	0.191		
31-Jul-89	212	2034	638	8.5	10.0	D	0.164		
01-Aug-89	213	2017	56	7.0	8.0	B	0.264		
01-Aug-89	213	2016	831	7.0	8.0	B	0.310		
02-Aug-89	214	2047	11	8.0	9.0	C	0.299		
04-Aug-89	216	2117	762	19.0	20.0	C	0.204		
08-Aug-89	220	2144	119	18.0	16.0	B	0.207		
08-Aug-89	220	2145	39	18.0	18.0	C	0.212		
09-Aug-89	221	2171	30	7.8	9.0	D	0.134	0.175	
10-Aug-89	222	2217	789	18.0	20.0	B	0.150		
11-Aug-89	223	2237	407	8.0	9.0	C	0.162		
14-Aug-89	226	2250	773	8.0	10.0	C	0.547		

TABLE C-22. SUMMARY OF THE 1989 NMOC DATA FOR SACRAMENTO, CA (S3CA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
15-Aug-89	227	2269	790	8.8	9.0	A	0.340		
16-Aug-89	228	2296	188	18.0	18.0	D	0.111		
17-Aug-89	229	2346	672	18.3	20.0	B	0.103		
17-Aug-89	229	2347	794	18.3	20.0	[illegible]	0.105		
18-Aug-89	230	2320	734	8.0	10.0	[illegible]	0.178	0.233	
21-Aug-89	233	2371	107	8.0	8.0	C	0.177		
22-Aug-89	234	2435	695	20.0	20.0	C	0.092		
23-Aug-89	235	2439	49	20.0	17.0	A	0.163		
23-Aug-89	235	2438	838	20.0	19.0	A	0.163		
24-Aug-89	236	2459	723	11.0	11.0	B	0.128		
25-Aug-89	237	2477	778	11.0	11.0	C	0.647		
28-Aug-89	240	2497	37	20.0	19.0	B	0.160		
29-Aug-89	241	2544	719	11.0	10.0	C	0.075		
30-Aug-89	242	2540	678	20.0	20.0	C	0.354		
30-Aug-89	242	2539	762	20.0	20.0	D	0.382		
31-Aug-89	243	2551	28	11.5	10.5	D	0.986		
01-Sep-89	244	2596	301	23.0	22.0	A	0.223		
05-Sep-89	248	2616	143	12.0	11.0	D	2.452	2.434	
06-Sep-89	249	2658	304	19.0	17.0	D	0.079		
06-Sep-89	249	2657	35	19.0	19.0	D	0.094		
07-Sep-89	250	2701	10	20.0	20.0	B	0.600		
08-Sep-89	251	2693	924	6.0	6.0	C	0.174		
11-Sep-89	254	2778	64	18.0	19.0	A	1.357		
14-Sep-89	257	2827	675	20.0	20.0	A	1.046		
15-Sep-89	258	2837	306	7.0	6.0	D	0.348		
18-Sep-89	261	2870	671	20.0	19.0	C	0.150		
19-Sep-89	262	2887	35	7.0	6.0	C	0.374		
20-Sep-89	263	2891	628	20.0	20.0	D	0.690		
20-Sep-89	263	2892	728	20.0	20.0	D	0.609		
26-Sep-89	269	3047	627	14.0	15.0	D	0.392		
27-Sep-89	270	3033	774	20.0	20.0	D	0.382		
28-Sep-89	271	3066	71	12.5	14.0	C	0.729		
29-Sep-89	272	3068	406	12.0	15.0	D	0.297		

TABLE C-23. SUMMARY OF THE 1989 NMOC DATA FOR SACRAMENTO, CA (S4CA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
05-Jun-89	156	1024	121	12.0	12.0	A	0.180		
06-Jun-89	157	1023	788	16.0	18.0	B	0.154		
07-Jun-89	158	1064	870	16.0	16.0	B	0.152	0.256	
08-Jun-89	159	1142	684	16.0	18.0	B	0.125		
09-Jun-89	160	1154	66	14.0	12.0	D	0.210		
12-Jun-89	163	1130	860	15.5	17.0	C	0.127	0.135	
13-Jun-89	164	1169	53	15.5	18.0	C	0.153		
14-Jun-89	165	1192	63	17.0	18.0	C	0.217		
14-Jun-89	165	1191	148	17.0	18.0	A	0.205		
15-Jun-89	166	1221	623	16.0	12.0	D	0.144		
16-Jun-89	167	1239	723	16.0	17.0	C	0.156		
19-Jun-89	170	1265	91	16.0	14.0	C	0.114		
21-Jun-89	172	1315	691	16.5	18.0	D	0.120		
22-Jun-89	173	1338	819	15.0	17.0	B	0.281		
23-Jun-89	174	1364	677	16.0	17.0	D	0.182		
26-Jun-89	177	1391	7	15.0	17.0	B	0.066		
27-Jun-89	178	1412	302	15.0	17.0	B	0.076		
28-Jun-89	179	1481	726	16.0	18.0	B	0.064		
29-Jun-89	180	1483	157	15.5	17.0	B	0.131		
30-Jun-89	181	1500	854	16.0	16.0	D	0.138		
05-Jul-89	186	1531	626	18.0	18.0	A	0.244		
05-Jul-89	186	1532	637	18.0	19.0	C	0.273		
06-Jul-89	187	1567	12	15.0	15.0	B	0.487		
07-Jul-89	188	1584	718	16.0	16.0	C	0.591		
10-Jul-89	191	1626	689	16.0	16.0	D	0.199		
11-Jul-89	192	1644	115	15.0	18.0	C	0.124		
12-Jul-89	193	1672	692	16.0	17.0	C	0.081		
13-Jul-89	194	1721	791	16.0	18.0	B	0.172		
14-Jul-89	195	1715	666	16.0	18.0	B	0.190		
17-Jul-89	198	1743	108	15.0	17.0	A	0.202		
19-Jul-89	200	1791	97	15.0	17.0	D	1.610		
20-Jul-89	201	1814	627	16.0	15.0	D	0.131	0.200	
21-Jul-89	202	1856	929	16.0	17.0	C	0.225		
24-Jul-89	205	1873	692	16.0	19.0	A	0.142		
25-Jul-89	206	1892	842	15.0	17.0	B	0.176		
26-Jul-89	207	1929	64	17.0	19.0	D	0.190		
26-Jul-89	207	1930	105	17.0	19.0	D	0.195		
27-Jul-89	208	1947	169	15.0	17.0	C	0.327		
28-Jul-89	209	1977	75	16.0	17.0	B	0.416		
31-Jul-89	212	1990	83	17.0	17.0	D	0.092		
31-Jul-89	212	1989	813	17.0	19.0	A	0.101		
01-Aug-89	213	2031	79	15.0	17.0	C	0.129		
02-Aug-89	214	2050	665	16.0	17.0	C	0.181		
03-Aug-89	215	2070	842	15.0	16.0	C	0.274		
04-Aug-89	216	2136	406	16.0	17.0	D	0.146		
07-Aug-89	219	2138	645	16.0	17.0	C	0.166		

TABLE C-23. SUMMARY OF THE 1989 NMOC DATA FOR SACRAMENTO, CA (S4CA)

Sampling Period: 6:00 a.m. to 9:00 a.m.

Date Sampled	Julian Date Sampled	Sample ID Number	Sample Canister Number	Sample Pressure (psig)	Analysis Pressure (psig)	Radian Channel	Mean NMOC ppmC	QAD NMOC ppmc	AREAL NMOC ppmc
08-Aug-89	220	2158	155	15.0	17.0	C	0.239		
09-Aug-89	221	2181	305	15.0	16.0	C	0.139		
10-Aug-89	222	2210	778	16.0	18.0	D	[illegible]		
11-Aug-89	223	2233	643	16.0	14.0	D	[illegible]		
14-Aug-89	226	2262	106	17.0	19.0	D	0.552		
14-Aug-89	226	2261	772	17.0	19.0	A	0.571		
15-Aug-89	227	2291	104	15.0	17.0	D	0.362		
16-Aug-89	228	2302	122	15.0	14.0	A	0.165		
17-Aug-89	229	2356	62	15.0	15.0	A	0.072		
18-Aug-89	230	2368	775	16.0	18.0	A	0.122		
21-Aug-89	233	2374	21	16.0	17	A	0.093		
22-Aug-89	234	2421	90	16.0	17	B	0.072		
23-Aug-89	235	2431	657	16.0	18.0	C	0.106		
24-Aug-89	236	2464	696	16.0	18.0	C	0.139		
25-Aug-89	237	2472	801	16.0	18.0	C	0.414		
28-Aug-89	240	2491	823	15.0	14.0	D	0.178		
29-Aug-89	241	2509	171		18.0	D	0.062		
30-Aug-89	242	2552	[illegible]	15.0	16.5	D	0.139		
31-Aug-89	243	2577	[illegible]	18.0	17.0	C	0.364		
31-Aug-89	243	2578	561	18.0	17.0	B	0.199		
01-Sep-89	244	2611	197	15.0	16.0	C	0.310		
05-Sep-89	248	2650	683	16.0	18.0	B	0.233		
06-Sep-89	249	2667	720	16.0	18.0	B	0.109		
07-Sep-89	250	2694	715	16.0	18.0		0.213		
08-Sep-89	251	2714	646	16.0	18.0		0.203		
12-Sep-89	255	2764	632	16.0	17.0		0.277		
13-Sep-89	256	2798	673	16.0	18.0	C	0.700		
14-Sep-89	257	2817	925	16.0	16.0	D	1.098		
15-Sep-89	258	2838	74	17.0	18.0	B	0.313		
15-Sep-89	258	2839	105	17.0	18.0	B	0.306		
18-Sep-89	261	2865	155	16.0	9.0	D	0.103		
20-Sep-89	263	2925	914	16.0	17.0	D	0.336		
21-Sep-89	264	2947	122	16.0	17.0	B	0.967		
22-Sep-89	265	2956	833	17.0	18.0	B	1.510		
22-Sep-89	265	2955	850	17.0	18.0	A	1.534		
25-Sep-89	268	2998	646	16.0	18.0	B	0.166		
26-Sep-89	269	3007	137	16.0	16.0	B	0.211		
27-Sep-89	270	3036	53	16.0	17.0	A	0.155		
28-Sep-89	271	3078	302	16.0	18.0	A	0.596		
29-Sep-89	272	3100	99	15.0	18.0	C	0.248		

APPENDIX D

1989 NMOC MONITORING PROGRAM

INVALIDATED AND MISSING SAMPLES

APPENDIX D

1989 NMOC PROGRAM
VOID OR INVALIDATED SAMPLES - CHRONOLOGIAL

#	Site	Date	Description	Assigned
1	S2MO	06/05/89	Canister leak	Canister
2	M1NY	06/05/89	Solenoid failure	Equipment
3	C3IL	06/06/89	Pump not connected to system	Operator
4	MNY	06/06/89	Leak in system	Equipment
5	MNY	06/08/89	Leak in system	Equipment
6	MNY	06/06/89	Leak in system	Equipment
7	H1TX	06/05/89	Pressure too high	Equipment
8	RSCA	06/09/89	Bad fitting on pump	Equipment
9	RSCA	06/12/89	Bad fitting on pump	Equipment
10	RSCA	06/12/89	Bad fitting on pump	Equipment
11	RSCA	06/13/89	Bad fitting on pump	Equipment
12	BACA	06/14/89	Defective orifice	Equipment
13	MGAL	06/15/89	Power outage	Equipment
14	RSCA	06/15/89	Bad fitting on pump	Equipment
15	GRMI	06/16/89	Sampled room air	Operator
16	BACA	06/15/89	Collection missed	Operator
17	RSCA	06/16/89	Bad fitting on pump	Equipment
18	S3CA	06/09/89	Wrong orifice used	Operator
19	MGAL	06/23/89	Sampled room air	Operator
20	MNY	06/28/89	No pressure	Canister
21	MGAL	06/26/89	Pump malfunction	Equipment
22	S2MO	06/30/89	Pump malfunction	Equipment
23	RSCA	06/30/89	No pressure	Canister
24	S4CA	07/03/89	Timer misprogrammed	Operator
25	RSCA	07/03/89	Canister valve not opened	Operator
26	M1NY	07/06/89	Canister valve not opened	Operator
27	S3CA	07/07/89	Sampled room air	Operator
28	C3IL	07/06/89	Defective orifice	Equipment
29	PLNJ	07/07/89	Double collection	Operator
30	PLNJ	07/06/89	Double collection	Operator
31	LBCA	07/12/89	Timer left in manual mode	Operator
32	PLNJ	07/13/89	No pressure	Canister
33	NWNJ	07/17/89	Unknown	Unknown
34	ELCA	07/18/89	Canister valve not opened	Operator
35	S4CA	07/18/89	Timer misprogrammed	Operator
36	S3CA	07/19/89	Orifice improperly installed	Operator
37	C6IL	07/20/89	Timer in manual mode	Operator
38	ELCA	07/21/89	Defective orifice	Equipment
39	H1TX	07/25/89	No pressure	Canister
40	S3CA	07/27/89	Canister valve not opened	Operator
41	C6IL	07/25/89	Collection missed	Operator
42	ALCA	07/27/89	Rotameter improperly installed	Operator
43	C3IL	07/25/89	Collection missed	Operator
44	BACA	07/25/89	Unknown	Unknown
45	H1TX	07/31/89	Canister valve not opened	Operator
46	ELCA	08/01/89	Canister valve not opened	Operator
47	GRMI	07/27/89	No pressure	Equipment

APPENDIX D

1989 NMOC PROGRAM
VOID OR INVALIDATED SAMPLES - CHRONOLOGIAL

#	Site	Date	Description	Assigned
48	H1TX	08/02/89	No pressure	Equipment
49	S3CA	08/03/89	Timer in manual mode	Operator
50	S3CA	08/07/89	Canister not connected	Operator
51	NWNJ	08/07/89	Power outage	Equipment
52	H1TX	08/08/89	No pressure	Operator
53	RLNC	08/10/89	Final pressure to high	Equipment
54	H1TX	08/09/89	Final pressure to high	Equipment
55	ELCA	08/29/89	Timer misprogrammed	Operator
56	BMTX	08/24/89	Cracked fitting	Canister
57	BACA	08/29/89	Defective orifice	Equipment
58	BACA	08/30/89	Canister not connected	Operator
59	FECA	08/15/89	Sampled room air	Operator
60	BACA	08/14/89	Timer malfunction	Operator
61	BACA	08/11/89	Canister valve not opened	Operator
62	GRMI	08/18/89	Canister valve not opened	Operator
63	H1TX	09/06/89	Power outage	Equipment
64	FECA	09/11/89	Timer misprogrammed	Operator
65	FECA	09/12/89	Timer in manual mode	Operator
66	C6IL	09/13/89	Canister valve not opened	Operator
67	S3CA	09/13/89	Unknown	Unknown
68	S3CA	09/13/89	Unknown	Unknown
69	M1NY	09/15/89	Power outage	Equipment
70	C3IL	09/15/89	Duplicate orifice not used	Operator
71	C3IL	09/15/89	Duplicate orifice not used	Operator
72	C6IL	09/15/89	Duplicate orifice not used	Operator
73	C6IL	09/15/89	Duplicate orifice not used	Operator
74	C6IL	09/18/89	Canister valve not opened	Operator
75	S4CA	09/19/89	No pressure	Canister
76	BACA	09/19/89	No pressure	Canister
77	C6IL	09/19/89	Canister valve not opened	Operator
78	S3CA	09/22/89	Oriface cleaned with alcohol	Operator
79	S2MO	09/21/89	Stripped thread on canister valve	Canister
80	S3CA	09/21/89	Oriface cleaned with alcohol	Operator
81	S3CA	09/25/89	Oriface cleaned with alcohol	Operator
82	FECA	09/25/89	No pressure	Operator
83	PLNJ	09/25/89	Power outage	Equipment
84	BMTX	09/28/89	Defective fitting	Equipment
85	MGAL	09/26/89	Double collection	Operator
86	MGAL	09/27/89	Double collection	Operator

APPENDIX E

PDFID INTEGRATOR PROGRAMMING INSTRUCTIONS

INTEGRATOR PROGRAMMING INSTRUCTIONS

Instructions for programming the integrators are as follows.
Be sure to press **ENTER** after each key sequence.

Control Integrator

Oven Temp 90
Oven Temp Limit 405
Oven Temp ON
Oven Temp OFF
List Oven Temp
(A listing should say OvenTemp X^{o}C Setpt 90^{o}C Limit 405^{o}C)
Oven Temp Initial Time 0.20
Oven Temp Initial Value 90
Oven Temp Pgrm Rate 30.00
Oven Temp Final Value 90.00
Oven Temp Final Time 4.00
Oven Temp Equil Time 1.00

Detector A ON
Signal A
Chart speed 4.00
%Offset 10
Zero
Attn 2^ 4

Run Time Annotation ON
Run Table Annotation ON
Clock Table Annotation OFF
Program Annotation OFF
Oven Temp Annotation OFF
Report Annotation OFF

Slave Integrator

Detector B ON
Signal B
Chart speed 4.00
%Offset 10
Zero
Attn 2^ 4

Run Time Annotation ON
Run Table Annotation ON
Clock Table Annotation OFF
Program Annotation OFF
Oven Temp Annotation OFF
(should say ***Warning***Oven Temp now owned by Chnl 2)
Report Annotation OFF

INTEGRATOR PROGRAMMING INSTRUCTIONS (Continued)

Control Integrator

Oven Temp Annotation OFF
(should say ***Warning***Oven Temp now owned by Chnl 1)
Run Time 0.01 Intg OFF
Run Time 0.01 Valve 5 ON
Run Time 0.01 Page
Run Time 0.02 List Attn2^
Run Time 0.04 Oven Temp ON
Run Time 0.20 Valve 2 ON
Run Time 0.21 Valve 2 OFF
Run Time 0.22 Intg ON
Run Time 0.23 Set BL
Run Time 0.23 List Intg
Rum Time 1.87 Set BL
Run Time 1.88 Intg OFF
Run Time 1.89 List Intg
Run Time 1.90 Chart Spped 1.5
Run Time 3.44 Valve 2 ON
Run Time 3.45 Valve 2 OFF
Run Time 3.46 Valve 2 ON
Run Time 3.47 Valve 2 OFF
Run Time 3.48 Valve 2 ON
Run Time 3.49 Valve 2 OFF
Run Time 3.50 STOP

Slave Integrator

Run Time 0.01 Intg OFF
Run Time 0.01 Page
Run Time 0.02 List Attn2^
Run Time 0.22 Intg ON
Run Time 0.23 Set BL
Run Time 0.23 List Intg
Rum Time 1.87 Set BL
Run Time 1.88 Intg OFF
Run Time 1.89 List Intg
Run Time 1.90 Chart Spped 1.5
Run Time 3.50 STOP

Control Integrator

Det 1 Temp 250
Det 1 Temp Limit 405
Inj 1 Temp 31
Inj 1 Temp Limit 405
Aux 1 Temp 90
Aux 1 Temp Limit 405
Flow A 30
Flow A Limit 500

INTEGRATOR PROGRAMMING INSTRUCTIONS (Continued)

Slave Integrator

Flow B 30
Flow B Limit 500

Control Integrator

Valve 1 OFF
Valve 2 OFF
Valve 3 OFF
Valve 4 OFF
Valve 5 ON
Valve 6 OFF
Valve 7 OFF
Valve 8 OFF
Valve 9 OFF
Valve 10 OFF
Valve 11 OFF
Valve 12 OFF

Threshold 1
Peak Width 0.04

Slave Integrator

Threshold 1
Peak Width 0.04

Control Integrator

20 Valve 5 OFF
25 List Valve 5
30 Oven Temp Initial Value 30
35 Oven Temp OFF
40 Wait 2
60 Start
70 Oven Temp 90
80 Vale 5 ON

Sync ON

APPENDIX F

1989 NMOC DAILY CALIBRATION DATA

TABLE F-1. DAILY CALIBRATION DATA SUMMARY (CHANNEL A)

Cal Date	Julian Cal Date	Intial Zero A.C.	Final Zero A.C.	Initial Zero ppmC	Final Zero ppmC	Initial Cal Factor	Final Cal Factor	Cal Factor Drift	Cal Factor % Drift
06/05/89	156	10.900	10.900	0.003284	0.003284	0.000301	0.000301	0.000000	0.000000
06/06/89	157	10.615	10.615	0.003226	0.003226	0.000304	0.000304	0.000000	0.000000
06/07/89	158	2.935	10.930	0.000889	0.003290	0.000303	0.000301	0.000002	0.561288
06/08/89	159	14.190	6.055	0.004325	0.001844	0.000305	0.000304	0.000000	0.097962
06/09/89	160	10.275	10.000	0.003107	0.003037	0.000302	0.000304	-0.000001	-0.435600
06/12/89	163	5.070	5.070	0.001551	0.001551	0.000306	0.000306	0.000000	0.000000
06/13/89	164	3.995	6.170	0.001212	0.001878	0.000303	0.000304	-0.000001	-0.341099
06/14/89	165	5.985	9.890	0.001825	0.003049	0.000305	0.000308	-0.000003	-1.088544
06/15/89	166	4.860	4.335	0.001489	0.001333	0.000306	0.000307	-0.000001	-0.329681
06/16/89	167	9.130	9.130	0.002809	0.002809	0.000308	0.000308	0.000000	0.000000
06/19/89	170	5.070	7.480	0.001535	0.002268	0.000303	0.000303	-0.000000	-0.129774
06/20/89	171	8.210	8.875	0.002487	0.002691	0.000303	0.000303	-0.000000	-0.080692
06/21/89	172	7.725	7.725	0.002309	0.002334	0.000299	0.000302	-0.000003	-1.110452
06/22/89	173	2.275	10.215	0.000686	0.003079	0.000302	0.000301	0.000000	0.105912
06/23/89	174	6.410	6.410	0.001923	0.001923	0.000300	0.000300	0.000000	0.000000
06/26/89	177	7.850	3.765	0.002361	0.001128	0.000301	0.000300	0.000001	0.360888
06/27/89	178	4.670	4.565	0.001389	0.001388	0.000297	0.000304	-0.000007	-2.194403
06/28/89	179	4.140	4.140	0.001240	0.001240	0.000300	0.000300	0.000000	0.000000
06/29/89	180	4.560	3.090	0.001364	0.000932	0.000299	0.000302	-0.000003	-0.867026
06/30/89	181	7.510	6.325	0.002264	0.001909	0.000302	0.000302	-0.000000	-0.108887
07/03/89	184	5.380	0.000	0.001608	0.000000	0.000299	0.000298	0.000001	0.435590
07/05/89	186	6.295	4.485	0.001865	0.001317	0.000296	0.000294	0.000003	0.846345
07/06/89	187	5.250	3.910	0.001546	0.001149	0.000294	0.000294	0.000001	0.244776
07/07/89	188	4.215	6.250	0.001238	0.001838	0.000294	0.000294	-0.000000	-0.162985
07/10/89	191	5.925	5.950	0.001742	0.001759	0.000294	0.000296	-0.000002	-0.553429
07/11/89	192	7.380	7.380	0.002169	0.002193	0.000294	0.000297	-0.000003	-1.099212
07/12/89	193	4.455	0.000	0.001305	0.000000	0.000293	0.000295	-0.000002	-0.714895
07/13/89	194	3.410	3.410	0.000997	0.000997	0.000292	0.000292	0.000000	0.000000
07/14/89	195	6.090	5.655	0.001783	0.001670	0.000293	0.000295	-0.000003	-0.891716
07/17/89	198	0.000	0.000	0.000000	0.000000	0.000293	0.000291	0.000001	0.459737
07/18/89	199	4.550	4.390	0.001332	0.001286	0.000293	0.000293	0.000000	0.001611
07/19/89	200	4.685	7.490	0.001370	0.002217	0.000293	0.000296	-0.000003	-1.195837
07/20/89	201	4.250	3.590	0.001244	0.001061	0.000293	0.000296	-0.000003	-0.998934
07/21/89	202	2.950	7.275	0.000865	0.002148	0.000293	0.000295	-0.000002	-0.669453
07/24/89	205	5.275	5.225	0.001546	0.001542	0.000293	0.000295	-0.000002	-0.696826
07/25/89	206	6.325	4.930	0.001856	0.001473	0.000293	0.000299	-0.000005	-1.802933
07/26/89	207	2.800	11.280	0.000819	0.003320	0.000292	0.000294	-0.000002	-0.671883
07/27/89	208	3.660	4.245	0.001072	0.001259	0.000293	0.000297	-0.000004	-1.255266
07/28/89	209	3.430	3.430	0.001021	0.001021	0.000298	0.000298	0.000000	0.000000
07/31/89	212	3.885	3.645	0.001157	0.001090	0.000298	0.000299	-0.000001	-0.430754
08/01/89	213	4.015	7.330	0.001204	0.002196	0.000300	0.000300	0.000000	0.086014
08/02/89	214	5.575	10.705	0.001674	0.003173	0.000300	0.000296	0.000004	1.273258

TABLE F-1. DAILY CALIBRATION DATA SUMMARY (CHANNEL A)

Cal Date	Julian Cal Date	Intial Zero A.C.	Final Zero A.C.	Initial Zero ppmC	Final Zero ppmC	Initial Cal Factor	Final Cal Factor	Cal Factor Drift	Cal Factor % Drift
08/03/89	215	4.460	5.645	0.001325	0.001680	0.000297	0.000298	-0.000001	-0.188203
08/04/89	216	5.820	0.690	0.001701	0.000201	0.000292	0.000291	0.000002	0.581712
08/07/89	219	3.090	3.980	0.000898	0.001165	0.000291	0.000293	-0.000002	-0.666674
08/08/89	220	4.975	0.000	0.001444	0.000000	0.000290	0.000295	-0.000005	-1.633820
08/09/89	221	0.785	8.595	0.000230	0.002524	0.000293	0.000294	-0.000000	-0.059249
08/10/89	222	2.325	7.900	0.000680	0.002402	0.000293	0.000304	-0.000012	-3.960407
08/11/89	223	3.325	12.075	0.000972	0.003500	0.000292	0.000290	0.000003	0.875000
08/14/89	226	0.000	9.525	0.000000	0.002793	0.000291	0.000293	-0.000002	-0.698089
08/15/89	227	0.000	4.165	0.000000	0.001223	0.000291	0.000294	-0.000003	-0.957405
08/16/89	228	3.930	5.585	0.001154	0.001647	0.000294	0.000295	-0.000001	-0.395674
08/17/89	229	3.600	7.395	0.001055	0.002199	0.000293	0.000297	-0.000004	-1.474376
08/18/89	230	3.900	5.480	0.001154	0.001647	0.000296	0.000301	-0.000005	-1.541833
08/21/89	233	4.770	4.580	0.001423	0.001349	0.000298	0.000295	0.000004	1.280209
08/22/89	234	5.250	8.670	0.001533	0.002575	0.000292	0.000297	-0.000005	-1.739579
08/23/89	235	13.950	11.420	0.004193	0.003404	0.000301	0.000298	0.000002	0.828477
08/24/89	236	3.855	4.915	0.001136	0.001492	0.000295	0.000303	-0.000009	-2.989675
08/25/89	237	3.250	0.000	0.000962	0.000000	0.000296	0.000297	-0.000001	-0.464852
08/28/89	240	2.670	0.000	0.000798	0.000000	0.000299	0.000295	0.000004	1.416399
08/29/89	241	4.535	4.835	0.001325	0.001434	0.000292	0.000297	-0.000004	-1.516439
08/30/89	242	3.750	3.750	0.001118	0.001118	0.000298	0.000298	0.000000	0.000000
08/31/89	243	2.195	1.990	0.000645	0.000593	0.000294	0.000298	-0.000004	-1.501712
09/01/89	244	3.620	3.620	0.001064	0.001064	0.000294	0.000294	0.000000	0.000000
09/05/89	248	2.740	6.005	0.000808	0.001783	0.000295	0.000297	-0.000002	-0.634905
09/06/89	249	2.880	15.565	0.000853	0.004587	0.000296	0.000295	0.000001	0.495894
09/07/89	250	3.615	0.000	0.001061	0.000000	0.000294	0.000296	-0.000003	-0.931626
09/08/89	251	4.350	4.350	0.001287	0.001287	0.000296	0.000296	0.000000	0.000000
09/11/89	254	5.050	5.050	0.001485	0.001485	0.000294	0.000294	0.000000	0.000000
09/12/89	255	4.770	3.965	0.001394	0.001170	0.000292	0.000295	-0.000003	-0.981665
09/13/89	256	4.880	4.775	0.001431	0.001407	0.000293	0.000295	-0.000001	-0.475028
09/14/89	257	3.700	3.700	0.001084	0.001084	0.000293	0.000293	0.000000	0.000000
09/15/89	258	2.675	5.630	0.000785	0.001645	0.000293	0.000292	0.000001	0.437559
09/18/89	261	2.150	0.000	0.000624	0.000000	0.000290	0.000292	-0.000002	-0.687442
09/19/89	262	3.620	5.835	0.001048	0.001694	0.000290	0.000290	-0.000001	-0.279998
09/20/89	263	5.835	3.345	0.001694	0.000968	0.000290	0.000289	0.000001	0.381854
09/21/89	264	4.135	0.000	0.001192	0.000000	0.000288	0.000292	-0.000004	-1.402463
09/22/89	265	3.440	3.440	0.000990	0.000990	0.000288	0.000288	0.000000	0.000000
09/25/89	268	4.205	4.205	0.001208	0.001208	0.000287	0.000287	0.000000	0.000000
09/26/89	269	3.530	3.530	0.001022	0.001022	0.000290	0.000290	0.000000	0.000000
09/27/89	270	2.520	0.000	0.000734	0.000000	0.000291	0.000295	-0.000003	-1.165454
09/28/89	271	4.890	4.890	0.001415	0.001415	0.000289	0.000289	0.000000	0.000000
09/29/89	272	3.475	3.475	0.001010	0.001010	0.000291	0.000291	0.000000	0.000000
10/02/89	275	3.795	3.795	0.001092	0.001092	0.000288	0.000288	0.000000	0.000000

TABLE F-1. DAILY CALIBRATION DATA SUMMARY (CHANNEL A)

Cal Date	Julian Cal Date	Intial Zero A.C.	Final Zero A.C.	Initial Zero ppmC	Final Zero ppmC	Initial Cal Factor	Final Cal Factor	Cal Factor Drift	Cal Factor % Drift
10/03/89	276	3.490	0.000	0.001011	0.000000	0.000290	0.000291	-0.000002	-0.595562
10/04/89	277	2.360	2.360	0.000680	0.000680	0.000288	0.000288	0.000000	0.000000

TABLE F-2. DAILY CALIBRATION DATA SUMMARY (CHANNEL B)

Cal Date	Julian Cal Date	Intial Zero A.C.	Final Zero A.C.	Initial Zero ppmC	Final Zero ppmC	Initial Cal Factor	Final Cal Factor	Cal Factor Drift	Cal Factor % Drift
06/05/89	156	0.000	0.000	0.000000	0.000000	0.000305	0.000305	0.000000	0.000000
06/06/89	157	0.000	0.000	0.000000	0.000000	0.000305	0.000305	0.000000	0.000000
06/07/89	158	0.000	1.480	0.000000	0.000452	0.000305	0.000305	-0.000000	-0.032930
06/08/89	159	0.000	0.000	0.000000	0.000000	0.000310	0.000311	-0.000001	-0.267073
06/09/89	160	0.525	0.000	0.000162	0.000000	0.000308	0.000308	0.000000	0.005440
06/12/89	163	1.540	1.540	0.000477	0.000477	0.000309	0.000309	0.000000	0.000000
06/13/89	164	0.000	0.000	0.000000	0.000000	0.000309	0.000310	-0.000002	-0.587934
06/14/89	165	0.000	0.000	0.000000	0.000000	0.000311	0.000309	0.000001	0.467012
06/15/89	166	0.000	0.000	0.000000	0.000000	0.000309	0.000310	-0.000001	-0.202326
06/16/89	167	0.000	0.000	0.000000	0.000000	0.000311	0.000311	0.000000	0.000000
06/19/89	170	0.000	0.000	0.000188	0.000000	0.000313	0.000312	0.000001	0.409948
06/20/89	171	0.865	2.175	0.000270	0.000681	0.000313	0.000313	-0.000001	-0.249473
06/21/89	172	0.315	0.315	0.000097	0.000098	0.000309	0.000312	-0.000003	-1.066989
06/22/89	173	2.800	5.910	0.000000	0.001837	0.000310	0.000311	-0.000000	-0.114349
06/23/89	174	1.285	1.285	0.000397	0.000397	0.000309	0.000309	0.000000	0.000000
06/26/89	177	0.120	0.000	0.000037	0.000000	0.000308	0.000310	-0.000002	-0.681143
06/27/89	178	0.000	0.000	0.000000	0.000000	0.000309	0.000314	-0.000005	-1.520471
06/28/89	179	0.000	0.000	0.000000	0.000000	0.000309	0.000309	0.000000	0.000000
06/29/89	180	0.000	0.000	0.000000	0.000000	0.000309	0.000311	-0.000002	-0.686530
06/30/89	181	8.245	7.635	0.001848	0.002377	0.000310	0.000311	-0.000001	-0.420167
07/03/89	184	1.775	0.000	0.000546	0.000000	0.000307	0.000308	-0.000000	-0.146081
07/05/89	186	0.000	0.000	0.000000	0.000000	0.000307	0.000304	0.000003	0.888594
07/06/89	187	0.000	0.000	0.000000	0.000000	0.000304	0.000302	0.000002	0.597033
07/07/89	188	0.000	0.000	0.000000	0.000000	0.000305	0.000304	0.000000	0.052633
07/10/89	191	2.875	5.750	0.000000	0.001747	0.000304	0.000304	0.000000	0.059573
07/11/89	192	0.000	0.000	0.000000	0.000000	0.000305	0.000308	-0.000003	-0.828714
07/12/89	193	0.450	0.000	0.000137	0.000000	0.000305	0.000307	-0.000002	-0.726438
07/13/89	194	1.630	1.630	0.000497	0.000497	0.000305	0.000305	0.000000	0.000000
07/14/89	195	0.000	0.000	0.000000	0.000000	0.000302	0.000303	-0.000001	-0.454025
07/17/89	198	1.520	0.000	0.000932	0.000000	0.000303	0.000305	-0.000002	-0.770036
07/18/89	199	0.000	0.000	0.000000	0.000000	0.000303	0.000303	0.000000	0.000000
07/19/89	200	1.820	3.235	0.000553	0.000987	0.000304	0.000305	-0.000002	-0.525010
07/20/89	201	0.000	1.890	0.000000	0.000579	0.000303	0.000306	-0.000003	-0.895876
07/21/89	202	1.310	1.515	0.000398	0.000464	0.000304	0.000307	-0.000003	-0.996205
07/24/89	205	0.940	2.375	0.000288	0.000725	0.000306	0.000305	0.000001	0.226881
07/25/89	206	0.000	0.000	0.000000	0.000000	0.000305	0.000307	-0.000002	-0.516808
07/26/89	207	0.000	0.000	0.000000	0.000000	0.000303	0.000306	-0.000003	-1.023768
07/27/89	208	0.935	0.000	0.000285	0.000000	0.000304	0.000307	-0.000003	-0.831039
07/28/89	209	1.025	1.025	0.000316	0.000316	0.000308	0.000308	0.000000	0.000000
07/31/89	212	0.000	0.000	0.000000	0.000000	0.000307	0.000309	-0.000002	-0.594243
08/01/89	213	1.365	3.160	0.000420	0.000973	0.000307	0.000308	-0.000001	-0.176448
08/02/89	214	0.000	2.675	0.000000	0.000827	0.000309	0.000309	-0.000000	-0.060981

TABLE F-2. DAILY CALIBRATION DATA SUMMARY (CHANNEL B)

Cal Date	Julian Cal Date	Intial Zero A.C.	Final Zero A.C.	Initial Zero ppmC	Final Zero ppmC	Initial Cal Factor	Final Cal Factor	Cal Factor Drift	Cal Factor % Drift
08/03/89	215	0.000	0.000	0.000000	0.000000	0.000308	0.000309	-0.000001	-0.220733
08/04/89	216	0.000	0.000	0.000000	0.000000	0.000305	0.000302	0.000003	0.925512
08/07/89	219	0.000	2.735	0.000000	0.000830	0.000301	0.000303	-0.000003	-0.883351
08/08/89	220	1.640	1.640	0.000000	0.000498	0.000299	0.000304	-0.000005	-1.553606
08/09/89	221	0.000	0.000	0.000000	0.000000	0.000301	0.000304	-0.000003	-1.011834
08/10/89	222	0.375	0.000	0.000113	0.000000	0.000301	0.000302	-0.000001	-0.327116
08/11/89	223	0.910	2.440	0.000000	0.000734	0.000301	0.000301	0.000000	0.102413
08/14/89	226	0.000	0.000	0.000000	0.000000	0.000302	0.000303	-0.000002	-0.646297
08/15/89	227	0.000	0.000	0.000000	0.000000	0.000301	0.000306	-0.000005	-1.596068
08/16/89	228	0.000	0.000	0.000000	0.000000	0.000301	0.000302	-0.000001	-0.365781
08/17/89	229	0.905	4.405	0.000000	0.001328	0.000302	0.000302	0.000001	0.231768
08/18/89	230	0.000	0.000	0.000000	0.000000	0.000298	0.000297	0.000001	0.330627
08/21/89	233	0.000	2.225	0.000000	0.000686	0.000304	0.000308	-0.000004	-1.447874
08/22/89	234	0.625	1.855	0.000190	0.000571	0.000303	0.000308	-0.000005	-1.499200
08/23/89	235	3.055	5.540	0.000424	0.001695	0.000304	0.000306	-0.000002	-0.695325
08/24/89	236	0.000	0.000	0.000000	0.000000	0.000303	0.000314	-0.000011	-3.600472
08/25/89	237	0.000	0.595	0.000000	0.000183	0.000310	0.000308	0.000001	0.408081
08/28/89	240	0.585	0.000	0.000604	0.000000	0.000304	0.000308	-0.000004	-1.190001
08/29/89	241	0.000	2.030	0.000000	0.000619	0.000305	0.000305	-0.000000	-0.061877
08/30/89	242	0.000	0.000	0.000000	0.000000	0.000304	0.000304	0.000000	0.000000
08/31/89	243	0.000	0.000	0.000000	0.000000	0.000304	0.000303	0.000001	0.213428
09/01/89	244	0.000	0.000	0.000000	0.000000	0.000303	0.000303	0.000000	0.000000
09/05/89	248	0.000	2.000	0.000000	0.000612	0.000305	0.000306	-0.000001	-0.320421
09/06/89	249	0.000	2.530	0.000000	0.000779	0.000304	0.000308	-0.000004	-1.166536
09/07/89	250	0.000	0.000	0.000000	0.000000	0.000304	0.000304	-0.000000	-0.031004
09/08/89	251	0.870	0.870	0.000264	0.000264	0.000304	0.000304	0.000000	0.000000
09/11/89	254	0.000	0.000	0.000000	0.000000	0.000304	0.000304	0.000000	0.000000
09/12/89	255	0.000	0.000	0.000000	0.000000	0.000304	0.000306	-0.000002	-0.648759
09/13/89	256	3.825	5.335	0.000000	0.001624	0.000303	0.000304	-0.000001	-0.384231
09/14/89	257	0.000	0.000	0.000000	0.000000	0.000303	0.000303	0.000000	0.000000
09/15/89	258	0.000	0.905	0.000000	0.000277	0.000303	0.000306	-0.000003	-1.078605
09/18/89	261	0.000	0.000	0.000000	0.000000	0.000299	0.000299	0.000000	0.099762
09/19/89	262	0.000	0.000	0.000000	0.000000	0.000299	0.000298	0.000002	0.503915
09/20/89	263	0.000	0.000	0.000000	0.000000	0.000298	0.000301	-0.000003	-1.115485
09/21/89	264	0.000	0.000	0.000000	0.000000	0.000299	0.000300	-0.000001	-0.302059
09/22/89	265	0.000	0.000	0.000000	0.000000	0.000299	0.000299	0.000000	0.000000
09/25/89	268	0.000	0.000	0.000000	0.000000	0.000298	0.000298	0.000000	0.000000
09/26/89	269	0.000	0.000	0.000000	0.000000	0.000301	0.000301	0.000000	0.000000
09/27/89	270	0.000	0.000	0.000000	0.000000	0.000304	0.000303	0.000001	0.294636
09/28/89	271	0.000	0.000	0.000000	0.000000	0.000300	0.000300	0.000000	0.000000
09/29/89	272	0.000	0.000	0.000000	0.000000	0.000300	0.000300	0.000000	0.000000
10/02/89	275	0.000	0.000	0.000000	0.000000	0.000297	0.000297	0.000000	0.000000

TABLE F-2. DAILY CALIBRATION DATA SUMMARY (CHANNEL B)

Cal Date	Julian Cal Date	Intial Zero A.C.	Final Zero A.C.	Initial Zero ppmC	Final Zero ppmC	Initial Cal Factor	Final Cal Factor	Cal Factor Drift	Cal Factor % Drift
10/03/89	276	0.000	0.000	0.000000	0.000000	0.000297	0.000301	-0.000004	-1.253519
10/04/89	277	0.000	0.000	0.000000	0.000000	0.000299	0.000299	0.000000	0.000000

TABLE F-3. DAILY CALIBRATION DATA SUMMARY (CHANNEL C)

Cal Date	Julian Cal Date	Intial Zero A.C.	Final Zero A.C.	Initial Zero ppmC	Final Zero ppmC	Initial Cal Factor	Final Cal Factor	Cal Factor Drift	Cal Factor % Drift
06/05/89	156	0.000	0.000	0.000000	0.000000	0.000307	0.000307	0.000000	0.000000
06/06/89	157	0.000	0.000	0.000000	0.000000	0.000303	0.000303	0.000000	0.000000
06/07/89	158	0.925	0.000	0.000287	0.000000	0.000310	0.000306	0.000004	1.162502
06/08/89	159	0.000	0.865	0.000000	0.000267	0.000305	0.000309	-0.000005	-1.523787
06/09/89	160	0.000	0.000	0.000000	0.000000	0.000309	0.000308	0.000000	0.112705
06/12/89	163	6.510	6.510	0.002016	0.002016	0.000310	0.000310	0.000000	0.000000
06/13/89	164	0.000	0.000	0.000000	0.000000	0.000309	0.000309	-0.000000	-0.108095
06/14/89	165	2.075	0.000	0.000643	0.000000	0.000310	0.000311	-0.000001	-0.300575
06/15/89	166	0.000	0.000	0.000000	0.000000	0.000309	0.000313	-0.000004	-1.397509
06/16/89	167	0.000	0.000	0.000000	0.000000	0.000309	0.000309	0.000000	0.000000
06/19/89	170	0.720	0.000	0.000224	0.000000	0.000311	0.000311	0.000001	0.227065
06/20/89	171	0.000	4.880	0.000000	0.001519	0.000311	0.000311	-0.000001	-0.210027
06/21/89	172	0.000	0.000	0.000000	0.000000	0.000311	0.000311	-0.000000	-0.003374
06/22/89	173	0.000	1.765	0.000000	0.000549	0.000311	0.000311	0.000000	0.014707
06/23/89	174	0.000	0.000	0.000000	0.000000	0.000311	0.000311	0.000000	0.000000
06/26/89	177	1.880	0.000	0.000581	0.000000	0.000309	0.000311	-0.000002	-0.666836
06/27/89	178	0.000	0.000	0.000000	0.000000	0.000307	0.000309	-0.000001	-0.470070
06/28/89	179	7.075	7.075	0.002196	0.002196	0.000310	0.000310	0.000000	0.000000
06/29/89	180	1.855	3.505	0.000573	0.001093	0.000309	0.000312	-0.000003	-1.009925
06/30/89	181	10.560	0.000	0.003310	0.000000	0.000313	0.000315	-0.000001	-0.360721
07/03/89	184	0.310	0.000	0.000096	0.000000	0.000311	0.000309	0.000002	0.620594
07/05/89	186	3.495	4.735	0.001076	0.001456	0.000308	0.000307	0.000000	0.137097
07/06/89	187	0.380	0.000	0.000117	0.000000	0.000307	0.000307	-0.000000	-0.037251
07/07/89	188	1.315	0.340	0.000400	0.000104	0.000304	0.000306	-0.000002	-0.593701
07/10/89	191	0.000	8.300	0.000000	0.002556	0.000305	0.000308	-0.000003	-0.922116
07/11/89	192	0.000	0.000	0.000000	0.000000	0.000307	0.000306	0.000001	0.226307
07/12/89	193	0.730	0.000	0.000222	0.000000	0.000304	0.000306	-0.000002	-0.614882
07/13/89	194	0.000	0.000	0.000000	0.000000	0.000303	0.000303	0.000000	0.000000
07/14/89	195	0.000	0.855	0.000000	0.000262	0.000305	0.000306	-0.000001	-0.459346
07/17/89	198	1.225	4.970	0.000372	0.001526	0.000304	0.000307	-0.000003	-1.127941
07/18/89	199	0.000	0.000	0.000000	0.000000	0.000301	0.000301	0.000000	0.000000
07/19/89	200	0.000	0.000	0.000000	0.000000	0.000306	0.000306	-0.000000	-0.002155
07/20/89	201	0.000	0.000	0.000000	0.000000	0.000306	0.000307	-0.000001	-0.258112
07/21/89	202	1.235	0.000	0.000377	0.000000	0.000305	0.000307	-0.000002	-0.705133
07/24/89	205	0.950	3.830	0.000288	0.001166	0.000303	0.000305	-0.000001	-0.400412
07/25/89	206	0.865	3.895	0.000265	0.001192	0.000307	0.000306	0.000001	0.214445
07/26/89	207	1.395	4.095	0.000426	0.001256	0.000305	0.000307	-0.000001	-0.488261
07/27/89	208	0.000	2.250	0.000000	0.000682	0.000305	0.000303	0.000002	0.641400
07/28/89	209	0.000	0.000	0.000000	0.000000	0.000310	0.000310	0.000000	0.002075
07/31/89	212	0.000	0.000	0.000000	0.000000	0.000310	0.000311	-0.000001	-0.455049
08/01/89	213	0.000	1.420	0.000000	0.000436	0.000310	0.000307	0.000003	0.889591
08/02/89	214	0.000	0.000	0.000000	0.000000	0.000310	0.000312	-0.000002	-0.720842

TABLE F-3. DAILY CALIBRATION DATA SUMMARY (CHANNEL C)

Cal Date	Julian Cal Date	Intial Zero A.C.	Final Zero A.C.	Initial Zero ppmC	Final Zero ppmC	Initial Cal Factor	Final Cal Factor	Cal Factor Drift	Cal Factor % Drift
08/03/89	215	0.000	0.000	0.000000	0.000000	0.000310	0.000311	-0.000001	-0.476143
08/04/89	216	0.000	8.880	0.000000	0.002743	0.000303	0.000309	-0.000006	-1.975971
08/06/89	218	0.000	0.000	0.000000	0.000000	0.000301	0.000301	0.000000	0.000000
08/07/89	219	0.000	0.565	0.000000	0.000172	0.000304	0.000304	0.000000	0.116014
08/08/89	220	0.000	2.260	0.000000	0.000691	0.000302	0.000306	-0.000004	-1.403917
08/09/89	221	0.000	0.000	0.000000	0.000000	0.000306	0.000307	-0.000001	-0.282915
08/10/89	222	0.000	0.000	0.000000	0.000000	0.000303	0.000299	0.000004	1.279521
08/11/89	223	0.000	0.000	0.000000	0.000000	0.000302	0.000303	-0.000001	-0.337705
08/14/89	226	0.000	2.860	0.000000	0.000875	0.000302	0.000306	-0.000003	-1.106086
08/15/89	227	0.000	1.040	0.000000	0.000316	0.000302	0.000304	-0.000002	-0.753107
08/16/89	228	0.000	0.000	0.000000	0.000000	0.000303	0.000302	0.000001	0.373168
08/17/89	229	0.000	5.655	0.000000	0.001721	0.000303	0.000304	-0.000001	-0.406379
08/18/89	230	0.395	0.295	0.000117	0.000091	0.000295	0.000308	-0.000013	-4.541017
08/21/89	233	0.000	0.000	0.000000	0.000000	0.000306	0.000312	-0.000006	-1.886510
08/22/89	234	0.000	0.000	0.000000	0.000000	0.000311	0.000315	-0.000005	-1.467086
08/23/89	235	3.885	1.075	0.001187	0.000335	0.000306	0.000312	-0.000006	-1.981042
08/24/89	236	0.000	0.000	0.000000	0.000000	0.000311	0.000322	-0.000011	-3.505237
08/25/89	237	0.000	5.750	0.000000	0.001823	0.000307	0.000317	-0.000010	-3.373133
08/28/89	240	0.605	0.000	0.000187	0.000000	0.000309	0.000310	-0.000001	-0.208303
08/29/89	241	0.000	0.000	0.000000	0.000000	0.000307	0.000304	0.000003	1.016790
08/30/89	242	3.445	3.445	0.001056	0.001056	0.000306	0.000306	0.000000	0.000000
08/31/89	243	0.000	0.000	0.000000	0.000000	0.000305	0.000311	-0.000006	-2.105117
09/01/89	244	0.000	0.000	0.000000	0.000000	0.000307	0.000307	0.000000	0.000000
09/05/89	248	0.000	17.805	0.000000	0.005563	0.000308	0.000312	-0.000005	-1.505648
09/06/89	249	0.000	0.855	0.000000	0.000266	0.000303	0.000311	-0.000008	-2.778766
09/07/89	250	0.000	0.000	0.000000	0.000000	0.000307	0.000308	-0.000000	-0.022856
09/08/89	251	0.000	0.000	0.000000	0.000000	0.000307	0.000307	0.000000	0.000000
09/11/89	254	0.000	0.000	0.000000	0.000000	0.000304	0.000304	0.000000	0.000000
09/12/89	255	0.000	0.000	0.000000	0.000000	0.000307	0.000307	0.000000	0.055230
09/13/89	256	0.000	0.000	0.000000	0.000000	0.000303	0.000304	-0.000001	-0.364337
09/14/89	257	0.000	0.000	0.000000	0.000000	0.000303	0.000303	0.000000	0.000000
09/15/89	258	0.000	1.315	0.000000	0.000400	0.000305	0.000304	0.000001	0.202849
09/18/89	261	0.000	0.000	0.000000	0.000000	0.000299	0.000305	-0.000005	-1.751838
09/19/89	262	0.000	0.000	0.000000	0.000000	0.000302	0.000301	0.000001	0.434796
09/20/89	263	0.000	0.000	0.000000	0.000000	0.000301	0.000302	-0.000001	-0.397107
09/21/89	264	0.000	0.000	0.000000	0.000000	0.000301	0.000300	0.000001	0.410038
09/22/89	265	0.000	0.000	0.000000	0.000000	0.000300	0.000300	0.000000	0.000000
09/24/89	267	0.000	0.000	0.000000	0.000000	0.000299	0.000299	0.000000	0.000000
09/25/89	268	0.000	0.000	0.000000	0.000000	0.000298	0.000298	0.000000	0.000000
09/26/89	269	0.000	0.000	0.000000	0.000000	0.000301	0.000301	0.000000	0.000000
09/27/89	270	0.000	0.000	0.000000	0.000000	0.000302	0.000305	-0.000002	-0.807703
09/28/89	271	0.000	0.000	0.000000	0.000000	0.000300	0.000300	0.000000	0.000000

TABLE F-3. DAILY CALIBRATION DATA SUMMARY (CHANNEL C)

Cal Date	Julian Cal Date	Intial Zero A.C.	Final Zero A.C.	Initial Zero ppmC	Final Zero ppmC	Initial Cal Factor	Final Cal Factor	Cal Factor Drift	Cal Factor % Drift
09/29/89	272	0.000	0.000	0.000000	0.000000	0.000302	0.000302	0.000000	0.000000
10/02/89	275	0.000	0.000	0.000000	0.000000	0.000299	0.000299	0.000000	0.000000
10/03/89	276	0.000	0.000	0.000000	0.000000	0.000301	0.000302	-0.000002	-0.534528
10/04/89	277	0.000	0.000	0.000000	0.000000	0.000300	0.000300	0.000000	0.000000

TABLE F-4. DAILY CALIBRATION DATA SUMMARY (CHANNEL D)

Cal Date	Julian Cal Date	Intial Zero A.C.	Final Zero A.C.	Initial Zero ppmC	Final Zero ppmC	Initial Cal Factor	Final Cal Factor	Cal Factor Drift	Cal Factor % Drift
06/05/89	156	0.000	0.000	0.000000	0.000000	0.000304	0.000304	0.000000	0.000000
06/06/89	157	0.000	0.000	0.000000	0.000000	0.000299	0.000299	0.000000	0.000000
06/07/89	158	4.395	0.000	0.001374	0.000000	0.000313	0.000302	0.000010	3.350653
06/08/89	159	0.000	0.000	0.000000	0.000000	0.000304	0.000304	0.000001	0.272276
06/09/89	160	0.000	0.450	0.000000	0.000135	0.000302	0.000300	0.000002	0.671377
06/12/89	163	7.320	7.320	0.002253	0.002253	0.000308	0.000308	0.000000	0.000000
06/13/89	164	4.375	0.000	0.001342	0.000000	0.000307	0.000311	-0.000005	-1.509456
06/14/89	165	0.000	0.000	0.000000	0.000000	0.000307	0.000308	-0.000001	-0.294841
06/15/89	166	0.000	0.480	0.000000	0.000149	0.000307	0.000310	-0.000003	-0.942282
06/16/89	167	0.000	0.000	0.000000	0.000000	0.000306	0.000306	0.000000	0.000000
06/19/89	170	0.000	0.000	0.000000	0.000000	0.000310	0.000309	0.000000	0.111115
06/20/89	171	2.995	2.480	0.000920	0.000763	0.000307	0.000307	-0.000000	-0.149677
06/21/89	172	0.000	0.000	0.000000	0.000000	0.000305	0.000309	-0.000004	-1.298378
06/22/89	173	0.000	2.015	0.000000	0.000618	0.000307	0.000307	0.000000	0.136536
06/23/89	174	0.000	0.000	0.000000	0.000000	0.000308	0.000308	0.000000	0.000000
06/26/89	177	0.000	0.000	0.000000	0.000000	0.000308	0.000307	0.000001	0.196775
06/27/89	178	0.000	0.000	0.000000	0.000000	0.000301	0.000296	0.000005	1.782288
06/28/89	179	6.840	6.840	0.002105	0.002105	0.000308	0.000308	0.000000	0.000000
06/29/89	180	0.035	1.175	0.000011	0.000363	0.000306	0.000309	-0.000003	-1.003048
06/30/89	181	0.710	1.715	0.000220	0.000533	0.000310	0.000310	-0.000001	-0.310233
07/03/89	184	0.000	0.000	0.000000	0.000000	0.000306	0.000305	0.000001	0.307133
07/05/89	186	2.255	5.075	0.000689	0.001542	0.000305	0.000304	0.000002	0.540610
07/06/89	187	5.350	7.640	0.001627	0.002320	0.000304	0.000304	0.000000	0.131631
07/07/89	188	0.000	2.235	0.000000	0.000676	0.000302	0.000302	-0.000001	-0.271935
07/10/89	191	0.000	0.000	0.000000	0.000000	0.000302	0.000304	-0.000002	-0.638951
07/11/89	192	0.000	0.000	0.000000	0.000000	0.000303	0.000303	0.000001	0.195601
07/12/89	193	0.000	0.000	0.000000	0.000000	0.000302	0.000303	-0.000001	-0.416619
07/13/89	194	0.220	0.220	0.000066	0.000066	0.000300	0.000300	0.000000	0.000000
07/14/89	195	0.000	0.000	0.000000	0.000000	0.000303	0.000303	0.000000	0.113669
07/17/89	198	0.540	4.695	0.000163	0.001426	0.000302	0.000304	-0.000001	-0.475004
07/18/89	199	0.000	0.000	0.000000	0.000000	0.000302	0.000302	0.000000	0.000000
07/19/89	200	7.030	1.535	0.002123	0.000462	0.000302	0.000301	0.000001	0.216507
07/20/89	201	0.000	0.115	0.000000	0.000035	0.000301	0.000302	-0.000000	-0.144582
07/21/89	202	0.000	3.890	0.000000	0.001186	0.000301	0.000305	-0.000004	-1.201915
07/24/89	205	0.000	6.175	0.000000	0.001895	0.000305	0.000307	-0.000001	-0.441588
07/25/89	206	0.000	4.885	0.000000	0.001479	0.000303	0.000303	0.000000	0.083444
07/26/89	207	4.515	2.670	0.001357	0.000812	0.000301	0.000304	-0.000003	-1.164375
07/27/89	208	0.000	6.160	0.000000	0.001852	0.000301	0.000301	0.000001	0.277864
07/28/89	209	0.000	0.000	0.000000	0.000000	0.000307	0.000307	0.000000	0.000000
07/31/89	212	0.000	0.000	0.000000	0.000000	0.000307	0.000310	-0.000003	-0.901830
08/01/89	213	0.000	3.620	0.000000	0.001132	0.000306	0.000313	-0.000006	-1.993076
08/02/89	214	5.865	0.000	0.001788	0.000000	0.000305	0.000307	-0.000002	-0.657493

TABLE F-4. DAILY CALIBRATION DATA SUMMARY (CHANNEL D)

Cal Date	Julian Cal Date	Intial Zero A.C.	Final Zero A.C.	Initial Zero ppmC	Final Zero ppmC	Initial Cal Factor	Final Cal Factor	Cal Factor Drift	Cal Factor % Drift
08/03/89	215	0.000	0.000	0.000000	0.000000	0.000307	0.000308	-0.000001	-0.358708
08/04/89	216	0.000	3.050	0.000000	0.000925	0.000300	0.000303	-0.000004	-1.208061
08/06/89	218	0.000	0.000	0.000000	0.000000	0.000299	0.000299	0.000000	0.000000
08/07/89	219	0.000	0.000	0.000000	0.000000	0.000300	0.000300	0.000000	0.029398
08/08/89	220	0.000	2.315	0.000000	0.000697	0.000299	0.000301	-0.000002	-0.616333
08/09/89	221	0.000	0.000	0.000000	0.000000	0.000301	0.000302	-0.000001	-0.336481
08/10/89	222	0.000	0.000	0.000000	0.000000	0.000300	0.000303	-0.000003	-1.107990
08/11/89	223	2.465	0.000	0.000739	0.000000	0.000300	0.000300	-0.000000	-0.144798
08/14/89	226	0.000	0.000	0.000000	0.000000	0.000300	0.000306	-0.000006	-1.855203
08/15/89	227	0.000	3.710	0.000000	0.001132	0.000299	0.000305	-0.000006	-1.921009
08/16/89	228	0.000	0.000	0.000000	0.000000	0.000299	0.000302	-0.000002	-0.779748
08/17/89	229	0.000	4.565	0.000000	0.001370	0.000300	0.000300	-0.000000	-0.003137
08/18/89	230	0.000	0.000	0.000000	0.000000	0.000306	0.000292	0.000014	4.460500
08/21/89	233	0.000	0.000	0.000000	0.000000	0.000294	0.000298	-0.000004	-1.423636
08/22/89	234	0.000	0.000	0.000000	0.000000	0.000299	0.000306	-0.000007	-2.272854
08/23/89	235	0.000	0.575	0.000000	0.000174	0.000297	0.000302	-0.000004	-1.498292
08/24/89	236	0.000	0.000	0.000000	0.000000	0.000303	0.000309	-0.000006	-2.056354
08/25/89	237	0.000	0.000	0.000000	0.000000	0.000305	0.000312	-0.000006	-2.074276
08/28/89	240	1.780	0.000	0.000538	0.000000	0.000302	0.000304	-0.000002	-0.588713
08/29/89	241	0.000	8.890	0.000000	0.002642	0.000303	0.000297	0.000005	1.816768
08/30/89	242	12.730	12.73	0.003872	0.003872	0.000304	0.000304	0.000000	0.000000
08/31/89	243	0.000	0.000	0.000000	0.000000	0.000302	0.000308	-0.000006	-1.993487
09/01/89	244	0.360	0.360	0.000109	0.000109	0.000303	0.000303	0.000000	0.000000
09/05/89	248	0.000	2.140	0.000000	0.000665	0.000304	0.000311	-0.000007	-2.357163
09/06/89	249	0.000	0.375	0.000000	0.000116	0.000303	0.000310	-0.000006	-2.121072
09/07/89	250	0.000	0.000	0.000000	0.000000	0.000303	0.000304	-0.000001	-0.327210
09/08/89	251	0.000	0.000	0.000000	0.000000	0.000304	0.000304	0.000000	0.000000
09/11/89	254	0.000	0.000	0.000000	0.000000	0.000302	0.000302	0.000000	0.000000
09/12/89	255	0.000	0.000	0.000000	0.000000	0.000303	0.000303	-0.000001	-0.205518
09/13/89	256	0.000	0.000	0.000000	0.000000	0.000309	0.000309	0.000000	0.023649
09/14/89	257	2.350	2.350	0.000709	0.000709	0.000302	0.000302	0.000000	0.000000
09/15/89	258	0.000	0.000	0.000000	0.000000	0.000303	0.000303	-0.000001	-0.185613
09/18/89	261	0.000	0.000	0.000000	0.000000	0.000299	0.000302	-0.000003	-1.101487
09/19/89	262	0.000	0.000	0.000000	0.000000	0.000300	0.000298	0.000002	0.784490
09/20/89	263	0.000	0.000	0.000000	0.000000	0.000298	0.000301	-0.000003	-1.012285
09/21/89	264	0.000	0.000	0.000000	0.000000	0.000298	0.000297	0.000000	0.154848
09/22/89	265	0.000	0.000	0.000000	0.000000	0.000297	0.000297	0.000000	0.000000
09/24/89	267	0.000	0.000	0.000000	0.000000	0.000297	0.000297	0.000000	0.000000
09/25/89	268	0.000	0.000	0.000000	0.000000	0.000296	0.000296	0.000000	0.000000
09/26/89	269	0.000	0.000	0.000000	0.000000	0.000299	0.000299	0.000000	0.000000
09/27/89	270	0.000	0.000	0.000000	0.000000	0.000300	0.000303	-0.000004	-1.190461
09/28/89	271	0.000	0.000	0.000000	0.000000	0.000297	0.000297	0.000000	0.000000

TABLE F-4. DAILY CALIBRATION DATA SUMMARY (CHANNEL D)

Cal Date	Julian Cal Date	Intial Zero A.C.	Final Zero A.C.	Initial Zero ppmC	Final Zero ppmC	Initial Cal Factor	Final Cal Factor	Cal Factor Drift	Cal Factor % Drift
09/29/89	272	0.000	0.000	0.000000	0.000000	0.000299	0.000299	0.000000	0.000000
10/02/89	275	0.000	0.000	0.000000	0.000000	0.000297	0.000297	0.000000	0.000000
10/03/89	276	0.000	0.000	0.000000	0.000000	0.000296	0.000299	-0.000003	-0.970956
10/04/89	277	0.000	0.000	0.000000	0.000000	0.000296	0.000296	0.000000	0.000000

APPENDIX G

1989 NMOC IN-HOUSE QUALITY CONTROL SAMPLES

TABLE G-1. NMOC INHOUSE QUALITY CONTROL SAMPLES (CHANNEL A)

Date Analyzed	Julian Date Analyzed	QC I.D. Number	Calculated NMOC ppmC	Measured NMOC ppmC	NMOC Bias ppmC	NMOC Percent Bias
06/06/89	157	1002	0.455	0.458	-0.003	0.659
06/07/89	158	1003	0.545	0.546	0.001	0.257
06/08/89	159	1004	0.766	0.754	-0.012	-1.567
06/09/89	160	1058	0.406	0.364	-0.042	-10.345
06/12/89	163	1086	0.464	0.466	0.002	0.431
06/14/89	165	1111	0.597	0.649	0.052	8.710
06/21/89	172	1233	1.815	1.784	-0.031	-1.708
06/23/89	174	1298	0.512	0.486	-0.026	-5.078
06/26/89	177	1297	0.158	0.147	-0.011	-6.962
06/28/89	179	1354	0.284	0.292	0.008	2.817
06/29/89	180	1373	0.394	0.433	0.039	9.898
06/30/89	181	1418	0.325	0.304	-0.021	-6.462
07/03/89	184	1447	17.557	17.251	-0.306	-1.743
07/06/89	187	1471	16.763	17.557	0.794	4.737
07/10/89	191	1573	8.767	8.401	-0.366	-4.175
07/12/89	193	1599	8.395	8.767	0.372	4.431
07/14/89	195	1654	5.459	5.682	0.223	4.085
07/17/89	198	1682	1.231	1.298	0.067	5.443
07/18/89	199	1708	0.757	0.772	0.015	1.982
07/19/89	200	1734	0.478	0.490	0.012	2.510
07/20/89	201	1762	0.320	0.333	0.013	4.063
07/21/89	202	1788	0.260	0.252	-0.008	-3.077
07/24/89	205	1813	0.207	0.217	0.010	4.831
07/26/89	207	1866	0.242	0.245	0.003	1.240
07/27/89	208	1600	8.767	8.431	-0.336	-3.833
07/28/89	209	1912	0.193	0.196	0.003	1.554
07/31/89	212	1939	0.151	0.171	0.020	13.245
08/02/89	214	1988	0.132	0.126	-0.006	-4.545
08/04/89	216	2039	0.291	0.275	-0.016	-5.498
08/07/89	219	2064	0.491	0.504	0.013	2.648
08/09/89	221	2096	0.271	0.255	-0.016	-5.904
08/10/89	222	2143	0.345	0.342	-0.003	-0.870
08/11/89	223	2168	0.612	0.612	0.000	0.000
08/14/89	226	2190	0.117	0.110	-0.007	-5.983
08/15/89	227	2222	1.144	1.095	-0.049	-4.283
08/21/89	233	2318	0.701	0.667	-0.034	-4.850
08/23/89	235	2369	0.998	0.984	-0.014	-1.403
08/25/89	237	2422	3.744	3.847	0.103	2.751
08/28/89	240	2458	1.714	1.703	-0.011	-0.642
08/30/89	242	2498	0.636	0.598	-0.038	-5.975
08/31/89	243	2527	0.472	0.606	0.134	28.390
09/01/89	244	2530	0.688	0.677	-0.011	-1.599
09/05/89	248	2601	0.142	0.167	0.025	17.606

TABLE G-1. NMOC INHOUSE QUALITY CONTROL SAMPLES (CHANNEL A)

Date Analyzed	Julian Date Analyzed	QC I.D. Number	Calculated NMOC ppmC	Measured NMOC ppmC	NMOC Bias ppmC	NMOC Percent Bias
09/07/89	250	2629	0.916	0.931	0.015	1.638
09/08/89	251	2645	0.707	0.689	-0.018	-2.546
09/13/89	256	2735	0.656	0.708	0.052	7.927
09/14/89	257	2757	1.049	1.080	0.031	2.955
09/15/89	258	2779	1.089	1.170	0.081	7.438
09/20/89	263	2854	0.246	0.248	0.002	0.813
09/22/89	265	2906	0.357	0.347	-0.010	-2.801

TABLE G-2. NMOC INHOUSE QUALITY CONTROL SAMPLES (CHANNEL B)

Date Analyzed	Julian Date Analyzed	QC I.D. Number	Calculated NMOC ppmC	Measured NMOC ppmC	NMOC Bias ppmC	NMOC Percent Bias
06/06/89	157	1002	0.461	0.458	-0.003	-0.651
06/07/89	158	1003	0.529	0.546	0.017	3.289
06/08/89	159	1004	0.759	0.754	-0.005	-0.659
06/09/89	160	1058	0.404	0.364	-0.040	-9.901
06/12/89	163	1086	0.454	0.466	0.012	2.643
06/14/89	165	1111	0.564	0.649	0.085	15.071
06/21/89	172	1233	1.821	1.784	-0.037	-2.032
06/23/89	174	1298	0.508	0.486	-0.022	-4.331
06/26/89	177	1297	0.163	0.147	-0.016	-9.816
06/28/89	179	1354	0.284	0.287	0.003	1.056
06/29/89	180	1373	0.393	0.433	0.040	10.178
06/30/89	181	1418	0.325	0.289	-0.036	-11.077
07/03/89	184	1447	17.557	17.321	-0.236	-1.344
07/06/89	187	1471	16.975	17.557	0.582	3.429
07/10/89	191	1573	8.767	8.404	-0.363	-4.141
07/12/89	193	1599	8.449	8.767	0.318	3.764
07/14/89	195	1654	5.458	5.682	0.224	4.104
07/17/89	198	1682	1.227	1.298	0.071	5.786
07/18/89	199	1708	0.753	0.772	0.019	2.523
07/19/89	200	1734	0.477	0.490	0.013	2.725
07/20/89	201	1762	0.318	0.333	0.015	4.717
07/21/89	202	1788	0.260	0.252	-0.008	-3.077
07/24/89	205	1813	0.207	0.211	0.004	1.932
07/26/89	207	1866	0.242	0.242	0.000	0.000
07/27/89	208	1600	8.767	8.506	-0.261	-2.977
07/28/89	209	1912	0.193	0.191	-0.002	-1.036
07/31/89	212	1939	0.151	0.158	0.007	4.636
08/02/89	214	1988	0.128	0.126	-0.002	-1.563
08/04/89	216	2039	0.291	0.279	-0.012	-4.124
08/07/89	219	2064	0.492	0.504	0.012	2.439
08/09/89	221	2096	0.267	0.255	-0.012	-4.494
08/10/89	222	2143	0.334	0.342	0.008	2.395
08/11/89	223	2168	0.612	0.614	0.002	0.327
08/14/89	226	2190	0.117	0.110	-0.007	-5.983
08/15/89	227	2222	1.149	1.095	-0.054	-4.700
08/21/89	233	2318	0.686	0.667	-0.019	-2.770
08/23/89	235	2369	0.975	0.984	0.009	0.923
08/25/89	237	2422	3.804	3.847	0.043	1.130
08/28/89	240	2458	1.681	1.703	0.022	1.309
08/30/89	242	2498	0.627	0.598	-0.029	-4.625
08/31/89	243	2527	0.461	0.606	0.145	31.453
09/01/89	244	2530	0.686	0.677	-0.009	-1.312
09/05/89	248	2601	0.139	0.167	0.028	20.144

TABLE G-2. NMOC INHOUSE QUALITY CONTROL SAMPLES (CHANNEL B)

Date Analyzed	Julian Date Analyzed	QC I.D. Number	Calculated NMOC ppmC	Measured NMOC ppmC	NMOC Bias ppmC	NMOC Percent Bias
09/07/89	250	2629	0.919	0.931	0.012	1.306
09/08/89	251	2645	0.691	0.689	-0.002	-0.289
09/13/89	256	2735	0.656	0.689	0.033	5.030
09/14/89	257	2757	1.049	1.077	0.028	2.669
09/15/89	258	2779	1.089	1.180	0.091	8.356
09/20/89	263	2854	0.209	0.248	0.039	18.660
09/22/89	265	2906	0.358	0.347	-0.011	-3.073

TABLE G-3. NMOC INHOUSE QUALITY CONTROL SAMPLES (CHANNEL C)

Date Analyzed	Julian Date Analyzed	QC I.D. Number	Calculated NMOC ppmC	Measured NMOC ppmC	NMOC Bias ppmC	NMOC Percent Bias
06/06/89	157	1002	0.456	0.458	0.002	0.439
06/07/89	158	1003	0.542	0.546	0.004	0.812
06/08/89	159	1004	0.741	0.754	0.013	1.754
06/09/89	160	1058	0.403	0.364	-0.039	-9.677
06/12/89	163	1086	0.456	0.466	0.010	2.193
06/14/89	165	1111	0.600	0.649	0.049	8.167
06/21/89	172	1233	1.833	1.784	-0.049	-2.673
06/23/89	174	1298	0.513	0.486	-0.027	-5.263
06/26/89	177	1297	0.160	0.147	-0.013	-8.125
06/28/89	179	1354	0.284	0.292	0.008	2.817
06/29/89	180	1373	0.386	0.433	0.047	12.176
06/30/89	181	1418	0.325	0.296	-0.029	-8.923
07/03/89	184	1447	17.557	17.122	-0.435	-2.478
07/06/89	187	1471	16.993	17.557	0.564	3.319
07/10/89	191	1573	8.767	8.187	-0.580	-6.616
07/12/89	193	1599	8.177	8.767	0.590	7.215
07/14/89	195	1654	5.430	5.682	0.252	4.641
07/17/89	198	1682	1.221	1.298	0.077	6.306
07/18/89	199	1708	0.743	0.772	0.029	3.903
07/19/89	200	1734	0.480	0.490	0.010	2.083
07/20/89	201	1762	0.320	0.333	0.013	4.063
07/21/89	202	1788	0.261	0.252	-0.009	-3.448
07/24/89	205	1813	0.207	0.211	0.004	1.932
07/26/89	207	1866	0.242	0.243	0.001	0.413
07/27/89	208	1600	8.767	8.143	-0.624	-7.118
07/28/89	209	1912	0.193	0.193	0.000	0.000
07/31/89	212	1939	0.151	0.187	0.036	23.841
08/02/89	214	1988	0.127	0.126	-0.001	-0.787
08/04/89	216	2039	0.291	0.275	-0.016	-5.498
08/07/89	219	2064	0.494	0.504	0.010	2.024
08/09/89	221	2096	0.269	0.255	-0.014	-5.204
08/10/89	222	2143	0.342	0.342	0.000	0.000
08/11/89	223	2168	0.612	0.609	-0.003	-0.490
08/14/89	226	2190	0.117	0.109	-0.008	-6.838
08/15/89	227	2222	1.150	1.095	-0.055	-4.783
08/21/89	233	2318	0.679	0.667	-0.012	-1.767
08/23/89	235	2369	0.983	0.984	0.001	0.102
08/25/89	237	2422	3.701	3.847	0.146	3.945
08/28/89	240	2458	1.690	1.703	0.013	0.769
08/30/89	242	2498	0.623	0.598	-0.025	-4.013
08/31/89	243	2527	0.470	0.606	0.136	28.936
09/01/89	244	2530	0.708	0.677	-0.031	-4.379
09/05/89	248	2601	0.148	0.167	0.019	12.838

TABLE G-3. NMOC INHOUSE QUALITY CONTROL SAMPLES (CHANNEL C)

Date Analyzed	Julian Date Analyzed	QC I.D. Number	Calculated NMOC ppmC	Measured NMOC ppmC	NMOC Bias ppmC	NMOC Percent Bias
09/07/89	250	2629	0.941	0.931	-0.010	-1.063
09/08/89	251	2645	0.697	0.689	-0.008	-1.148
09/13/89	256	2735	0.656	0.706	0.050	7.622
09/14/89	257	2757	1.049	1.084	0.035	3.337
09/15/89	258	2779	1.089	1.178	0.089	8.173
09/20/89	263	2854	0.238	0.248	0.010	4.202
09/22/89	265	2906	0.353	0.347	-0.006	-1.700

TABLE G-4. NMOC INHOUSE QUALITY CONTROL SAMPLES (CHANNEL D)

Date Analyzed	Julian Date Analyzed	QC I.D. Number	Calculated NMOC ppmC	Measured NMOC ppmC	NMOC Bias ppmC	NMOC Percent Bias
06/06/89	157	1002	0.453	0.458	0.005	1.104
06/07/89	158	1003	0.525	0.546	0.021	4.076
06/08/89	159	1004	0.743	0.754	0.011	1.480
06/09/89	160	1058	0.393	0.364	-0.029	-7.379
06/12/89	163	1086	0.454	0.466	0.012	2.643
06/14/89	165	1111	0.592	0.649	0.057	9.628
06/21/89	172	1233	1.821	1.784	-0.037	-2.032
06/23/89	174	1298	0.597	0.486	-0.111	-18.593
06/26/89	177	1297	0.155	0.147	-0.008	-5.161
06/28/89	179	1354	0.284	0.284	0.000	0.000
06/29/89	180	1373	0.383	0.433	0.050	13.055
06/30/89	181	1418	0.325	0.306	-0.019	-5.846
07/03/89	184	1447	17.557	16.991	-0.566	-3.224
07/06/89	187	1471	16.712	17.557	0.845	5.056
07/10/89	191	1573	8.767	8.378	-0.389	-4.437
07/12/89	193	1599	8.384	8.767	0.383	4.568
07/14/89	195	1654	5.490	5.682	0.192	3.497
07/17/89	198	1682	1.214	1.298	0.084	6.919
07/18/89	199	1708	0.742	0.772	0.030	4.043
07/19/89	200	1734	0.464	0.490	0.026	5.603
07/20/89	201	1762	0.312	0.333	0.021	6.731
07/21/89	202	1788	0.252	0.252	0.000	0.000
07/24/89	205	1813	0.207	0.206	-0.001	-0.483
07/26/89	207	1866	0.242	0.238	-0.004	-1.653
07/27/89	208	1600	8.767	8.431	-0.336	-3.833
07/28/89	209	1912	0.193	0.190	-0.003	-1.554
07/31/89	212	1939	0.151	0.190	0.039	25.828
08/02/89	214	1988	0.124	0.126	0.002	1.613
08/04/89	216	2039	0.291	0.267	-0.024	-8.247
08/07/89	219	2064	0.484	0.504	0.020	4.132
08/09/89	221	2096	0.262	0.255	-0.007	-2.672
08/10/89	222	2143	0.336	0.342	0.006	1.786
08/11/89	223	2168	0.612	0.603	-0.009	-1.471
08/14/89	226	2190	0.117	0.108	-0.009	-7.692
08/15/89	227	2222	1.138	1.095	-0.043	-3.779
08/16/89	233	2318	0.674	0.667	-0.007	-1.039
08/23/89	235	2369	1.047	0.984	-0.063	-6.017
08/25/89	237	2422	3.811	3.847	0.036	0.945
08/28/89	240	2458	1.710	1.703	-0.007	-0.409
08/30/89	242	2498	0.651	0.598	-0.053	-8.141
08/31/89	243	2527	0.508	0.606	0.098	19.291
09/01/89	244	2530	0.676	0.677	0.001	0.148
09/05/89	248	2601	0.138	0.167	0.029	21.014

TABLE G-4. NMOC INHOUSE QUALITY CONTROL SAMPLES (CHANNEL D)

Date Analyzed	Julian Date Analyzed	QC I.D. Number	Calculated NMOC ppmC	Measured NMOC ppmC	NMOC Bias ppmC	NMOC Percent Bias
09/07/89	250	2629	0.967	0.931	-0.036	-3.723
09/08/89	251	2645	0.747	0.689	-0.058	-7.764
09/13/89	256	2735	0.656	0.704	0.048	7.317
09/14/89	257	2757	1.049	1.073	0.024	2.288
09/15/89	258	2779	1.089	1.170	0.081	7.438
09/20/89	263	2854	0.233	0.248	0.015	6.438
09/22/89	265	2906	0.351	0.347	-0.004	-1.140

APPENDIX H

MULTIPLE DETECTOR SPECIATED THREE-HOUR SITE DATA SUMMARIES

APPENDIX H -- LIST OF TABLES

TABLE H-1. MULTIPLE DETECTOR SPECIATED THREE-HOUR DATA SUMMARY FOR C3IL

Sample Date	07/17/89	08/09/89	08/11/89	08/14/89	08/15/89
Sample ID	1748	2174	2223	2283	2277
Total NMOC, ppmC	0.417	0.232	0.211	0.242	0.252
Compound	Concentration, ppbv				
Acetylene	<1.00	3.27 L	<1.00	<1.00	1.73 L
Propylene	<0.10	<0.10	<0.10	<0.10	<0.10
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	0.05 H	<0.10	<0.10	<0.10	<0.10
Bromomethane	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroethane	0.05 H	<0.10	<0.10	<0.10	<0.10
Methylene chloride	<0.11	<0.11	1.32 H	<0.11	<0.11
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	0.10 H	<0.06	0.06 M	0.13 M	0.08 H
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	<0.01	1.09 M	3.13 H	0.83 L	1.13 M
Carbon tetrachloride	0.15 L	0.14 L	0.14 L	0.14 L	0.15 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	2.25 H	1.34 H	0.90 H	0.89 H	0.89 H
Trichloroethylene	<0.01	0.37 H	0.58 M	0.14 L	0.74 H
1,2-Dichloropropane	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	<0.01	<0.01	0.08 M	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	<0.04	3.65 H	<0.04	<0.04
Toluene	2.38 M	2.30 H	<0.02	1.45 H	3.41 M
n-Octane/t-1,3-Dichloropropylene	<0.04	<0.04	<0.04	0.31 L	<0.04
1,1,2-Trichloroethane	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachloroethylene	<0.07	<0.07	<0.07	0.88 L	1.33 L
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.36 H	0.24 H	0.20 H	0.19 H	0.29 H
m/p-Xylene	1.82 H	1.34 H	0.97 H	0.85 H	1.37 H
Styrene/o-Xylene	0.53 H	0.41 H	0.36 H	0.31 H	0.46 H
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	0.03 L	<0.02	<0.02	<0.02	<0.02
p-Dichlorobenzene	<0.09	<0.09	<0.09	<0.09	0.84 L
o-Dichlorobenzene	<0.02	<0.02	<0.02	<0.02	0.07 L

H High confidence level M Medium confidence level L Low confidence level (Continued)

WHM/015

TABLE H-1. C3IL (Continued)

Sample Date	08/16/89	08/17/89	08/17/89	08/17/89	08/18/89
Sample ID	2316	2338D	2338R	2339D	2416
Total NMOC, ppmC	0.304	0.141	0.141	0.150	0.080
Compound	Concentration, ppbv				
Acetylene	<1.00	<1.00	<1.00	<1.00	<1.00
Propylene	<0.10	<0.10	<0.10	<0.10	<0.10
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	<0.10	<0.10	<0.10	<0.10	<0.10
Bromomethane	0.07 H	<0.20	<0.20	<0.20	<0.20
Chloroethane	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	<0.11	2.04 H	2.25 H	1.94 H	<0.11
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	0.13 L	<0.06	<0.06	<0.06	<0.06
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	2.52 H	1.12 H	1.15 H	1.10 H	0.83 M
Carbon tetrachloride	0.13 L	0.12 L	0.13 L	0.13 L	0.14 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	1.14 H	0.53 H	0.57 H	0.56 H	0.25 H
Trichloroethylene	0.51 H	0.21 H	0.37 M	0.26 H	0.16 L
1,2-Dichloropropane	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
Toluene	3.76 M	1.18 H	1.28 H	1.16 H	0.24 H
n-Octane/t-1,3-Dichloropropylene	0.22 L	<0.04	<0.04	<0.04	<0.04
1,1,2-Trichloroethane	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachloroethylene	1.82 L	<0.07	<0.07	<0.07	0.09 L
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.37 H	0.12 H	0.12 H	0.12 H	0.04 M
m/p-Xylene	1.84 H	0.59 H	0.64 H	0.59 H	0.18 H
Styrene/o-Xylene	0.56 H	0.16 H	0.22 H	0.21 L	0.06 H
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	0.02 L	<0.02	<0.02	<0.02	<0.02
p-Dichlorobenzene	<0.09	<0.09	<0.09	<0.09	<0.09
o-Dichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02

H High confidence level M Medium confidence level L Low confidence level (Continued)
D Duplicate sample R Replicate analysis

WHM/015

TABLE H-1. C3IL (Continued)

Sample Date	08/21/89	08/22/89
Sample ID	2378	2400
Total NMOC, ppmC	0.542	0.233
Compound	**Concentration, ppbv**	
Acetylene	<1.00	<1.00
Propylene	<0.10	<0.10
Chloromethane	<0.20	<0.20
Vinyl chloride	<0.20	<0.20
1,3-Butadiene	<0.10	<0.10
Bromomethane	<0.20	<0.20
Chloroethane	<0.10	<0.10
Methylene chloride	1.61 L	<0.11
trans-1,2-Dichloroethylene	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04
Chloroprene	<0.06	<0.06
Bromochloromethane	<0.01	<0.01
Chloroform	<0.01	<0.01
1,1,1-Trichloroethane	1.29 L	0.75 L
Carbon tetrachloride	0.13 L	0.15 L
1,2-Dichloroethane	<0.04	<0.04
Benzene	2.44 H	1.24 M
Trichloroethylene	0.65 L	<0.01
1,2-Dichloropropane	<0.04	0.46 H
Bromodichloromethane	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	<0.04
Toluene	6.59 H	3.07 H
n-Octane/t-1,3-Dichloropropylene	<0.04	<0.04
1,1,2-Trichloroethane	<0.02	<0.02
Tetrachloroethylene	1.15 L	<0.07
Dibromochloromethane	<0.01	<0.01
Chlorobenzene	<0.02	<0.02
Ethylbenzene	0.67 H	0.22 H
m/p-Xylene	3.59 H	1.16 H
Styrene/o-Xylene	1.09 H	0.36 L
Bromoform	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01
m-Dichlorobenzene	<0.02	<0.02
p-Dichlorobenzene	0.20 H	0.08 M
o-Dichlorobenzene	<0.02	<0.02

H High confidence level M Medium confidence level L Low confidence level

TABLE H-2. MULTIPLE DETECTOR SPECIATED THREE-HOUR DATA SUMMARY FOR C6IL

Sample Date	07/17/89	08/09/89	08/11/89	08/15/89	08/16/89
Sample ID	1749	2173	2224	2276	2317
Total NMOC, ppmC	0.973	0.960	1.442	0.628	0.963
Compound	Concentration, ppbv				
Acetylene	<1.00	<1.00	17.33 L	<1.00	<1.00
Propylene	<0.10	<0.10	<0.10	<0.10	<0.10
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	1.04 M	0.77 M	1.07 M	0.56 M	<0.10
Bromomethane	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroethane	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	<0.11	<0.11	<0.11	<0.11	<0.11
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	0.03 M	0.03 M	<0.06	<0.06	0.24 M
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	1.35 M	1.39 M	2.54 M	1.52 M	2.85 M
Carbon tetrachloride	0.14 L	0.16 L	0.17 L	0.20 L	0.13 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	8.16 M	5.35 M	8.30 M	3.61 M	4.04 M
Trichloroethylene	0.39 L	0.44 M	1.76 M	0.94 M	1.15 M
1,2-Dichloropropane	<0.04	1.04 M	<0.04	<0.04	<0.04
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
Toluene	10.53 M	9.25 M	27.86 M	9.64 M	10.00 M
n-Octane/t-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1,2-Trichloroethane	<0.02	<0.02	<0.02	<0.02	0.03 M
Tetrachloroethylene	<0.07	<0.07	1.77 L	<0.07	<0.07
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	1.20 M	1.09 M	1.82 M	1.73 M	3.00 M
m/p-Xylene	6.95 M	6.28 M	10.00 M	9.50 M	17.41 M
Styrene/o-Xylene	2.23 M	2.09 M	3.43 M	2.76 M	4.89 M
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02
p-Dichlorobenzene	1.15 M	0.82 L	<0.09	1.21 M	<0.09
o-Dichlorobenzene	<0.02	<0.02	<0.02	0.40 L	<0.02

H High confidence level M Medium confidence level L Low confidence level (Continued)

TABLE H-2. C6IL (Continued)

Sample Date	08/17/89	08/21/89	08/21/89	08/21/89	08/22/89
Sample ID	2331	2388D	2388R	2389D	2401
Total NMOC, ppmC	1.952	1.811	1.811	1.781	2.663
Compound	Concentration, ppbv				
Acetylene	<1.00	<1.00	<1.00	<1.00	1.75 L
Propylene	19.46 M	<0.10	<0.10	<0.10	<0.10
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	1.02 M	1.64 M	1.43 M	1.67 M	0.31 M
Bromomethane	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroethane	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	2.78 L	<0.11	<0.11	<0.11	<0.11
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	0.12 L	0.18 L	<0.06	<0.06	1.30 M
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	6.27 M	2.33 M	2.13 M	2.34 M	6.87 M
Carbon tetrachloride	0.15 L	0.17 L	0.17 L	0.17 L	0.21 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	6.39 M	8.93 M	8.68 M	8.72 M	2.20 M
Trichloroethylene	0.97 L	1.19 M	1.41 M	1.67 L	0.92 M
1,2-Dichloropropane	1.35 M	<0.04	<0.04	<0.04	1.64 M
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
Toluene	23.74 M	21.04 M	21.07 M	21.72 M	54.31 M
n-Octane/t-1,3-Dichloropropylene	1.53 L	<0.04	<0.04	<0.04	<0.04
1,1,2-Trichloroethane	0.08 M	0.05 M	0.06 M	<0.02	<0.02
Tetrachloroethylene	2.98 L	<0.07	<0.07	<0.07	1.76 L
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.02	<0.02	<0.02	0.03 L	0.95 M
Ethylbenzene	16.48 M	3.77 M	3.66 M	3.65 M	2.08 M
m/p-Xylene	88.90 M	20.98 M	20.16 M	20.02 M	7.60 M
Styrene/o-Xylene	18.64	6.89 M	6.70 M	6.48 M	4.62 M
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	<0.02	<0.02	0.02 L	<0.02	<0.02
p-Dichlorobenzene	<0.09	<0.09	<0.09	<0.09	<0.09
o-Dichlorobenzene	<0.02	<0.02	<0.02	0.12 L	<0.02

H High confidence level M Medium confidence level L Low confidence level (Continued)

D Duplicate sample R Replicate analysis

TABLE H-2. C6IL (Continued)

Sample Date	08/31/89
Sample ID	2581
Total NMOC, ppmC	0.732

Compound	Concentration, ppbv
Acetylene	<1.00
Propylene	<0.10
Chloromethane	<0.20
Vinyl chloride	<0.20
1,3-Butadiene	<0.10
Bromomethane	<0.20
Chloroethane	<0.10
Methylene chloride	<0.11
trans-1,2-Dichloroethylene	<0.04
1,1-Dichloroethane	<0.04
Chloroprene	0.56 M
Bromochloromethane	<0.01
Chloroform	<0.01
1,1,1-Trichloroethane	0.98 H
Carbon tetrachloride	0.11 L
1,2-Dichloroethane	<0.04
Benzene	3.83 H
Trichloroethylene	0.37 H
1,2-Dichloropropane	<0.04
Bromodichloromethane	<0.01
cis-1,3-Dichloropropylene	<0.04
Toluene	9.05 H
n-Octane/t-1,3-Dichloropropylene	<0.04
1,1,2-Trichloroethane	<0.02
Tetrachloroethylene	<0.07
Dibromochloromethane	<0.01
Chlorobenzene	<0.02
Ethylbenzene	1.05 H
m/p-Xylene	5.64 H
Styrene/o-Xylene	1.80 L
Bromoform	<0.01
1,1,2,2-Tetrachloroethane	<0.01
m-Dichlorobenzene	<0.02
p-Dichlorobenzene	<0.09
o-Dichlorobenzene	<0.02

H High confidence level M Medium confidence level L Low confidence level

TABLE H-3. MULTIPLE DETECTOR SPECIATED THREE-HOUR DATA SUMMARY FOR GRMI

Sample Date	07/17/89	08/03/89	08/03/89	08/03/89	08/09/89
Sample ID	1761	2093D	2093R	2094D	2180
Total NMOC, ppmC	1.001	0.586	0.586	0.567	1.394
Compound	Concentration, ppbv				
Acetylene	<1.00	<1.00	<1.00	<1.00	<1.00
Propylene	<0.10	<0.10	<0.10	<0.10	<0.10
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	0.70 M	0.42 M	0.45 M	0.42 L	0.81 M
Bromomethane	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroethane	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	<0.11	<0.11	<0.11	<0.11	<0.11
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	0.13 H	0.19 L	0.10 H	0.08 H	<0.06
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	3.43 M	1.55 L	1.60 L	1.54 L	3.50 H
Carbon tetrachloride	0.14 L	0.18 L	0.19 L	0.17 L	0.17 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	3.58 H	2.29 H	2.15 H	2.10 H	4.73 H
Trichloroethylene	7.56 H	0.84 H	0.86 H	0.71 H	3.14 H
1,2-Dichloropropane	<0.04	<0.04	<0.04	<0.04	1.14 H
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
Toluene	15.43 H	4.06 H	4.21 H	4.13 L	17.79 H
n-Octane/t-1,3-dichloropropylene	1.87 L	<0.04	<0.04	<0.04	<0.04
1,1,2-Trichloroethane	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachloroethylene	0.35 H	<0.07	0.53 L	0.22 L	<0.07
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.02	0.04 M	<0.02	0.05 L	<0.02
Ethylbenzene	1.43 H	0.51 M	0.53 H	0.48 H	1.63 H
m/p-Xylene	8.78 H	2.28 H	2.30 H	2.27 H	9.46 H
Styrene/o-Xylene	2.68 H	0.84 L	0.90 H	0.86 H	2.74 H
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02
p-Dichlorobenzene	<0.09	0.20 M	0.24 M	0.20 M	<0.09
o-Dichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02

H High confidence level M Medium confidence level L Low confidence level (Continued)

D Duplicate sample R Replicate analysis

TABLE H-3. GRMI (Continued)

Sample Date	08/11/89	08/14/89	08/15/89	08/16/89	08/17/89
Sample ID	2208	2258	2272	2295	2337
Total NMOC, ppmC	0.414	0.424	0.218	0.636	0.701
Compound	Concentration, ppbv				
Acetylene	<1.00	<1.00	<1.00	<1.00	<1.00
Propylene	<0.10	<0.10	<0.10	<0.10	9.58 M
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	0.96 M	0.10 H	0.17 L	<0.10	0.48 H
Bromomethane	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroethane	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	<0.11	<0.11	<0.11	<0.11	<0.11
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	0.10 H	<0.06	<0.06	<0.06	<0.06
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	2.89 M	1.17 H	0.85 M	0.76 L	2.21 H
Carbon tetrachloride	0.14 L	0.15 L	0.20 L	0.13 L	0.13 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	5.99 H	1.64 H	1.16 H	2.89 M	2.81 H
Trichloroethylene	2.11 H	0.73 L	0.71 H	0.44 M	0.12 L
1,2-Dichloropropane	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
Toluene	2.07 H	4.96 H	4.37 H	8.45 H	10.33 H
n-Octane/t-1,3-dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1,2-Trichloroethane	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachloroethylene	<0.07	<0.07	0.14 L	0.07 M	0.25 L
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	2.17 H	0.60 H	0.41 H	0.69 H	0.68 H
m/p-Xylene	11.83 H	2.78 H	2.07 H	4.05 M	4.00 H
Styrene/o-Xylene	3.58 H	0.82 H	0.64 H	1.25 M	1.38 H
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02
p-Dichlorobenzene	<0.09	<0.09	0.25 L	<0.09	<0.09
o-Dichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02

H High confidence level M Medium confidence level L Low confidence level (Continued)

TABLE H-3. GRMI (Continued)

Sample Date	08/21/89
Sample ID	2387
Total NMOC, ppmC	0.364

Compound	Concentration, ppbv
Acetylene	<1.00
Propylene	<0.10
Chloromethane	<0.20
Vinyl chloride	<0.20
1,3-Butadiene	<0.10
Bromomethane	<0.20
Chloroethane	<0.10
Methylene chloride	<0.11
trans-1,2-Dichloroethylene	<0.04
1,1-Dichloroethane	<0.04
Chloroprene	<0.06
Bromochloromethane	<0.01
Chloroform	<0.01
1,1,1-Trichloroethane	2.88 H
Carbon tetrachloride	0.13 L
1,2-Dichloroethane	<0.04
Benzene	1.23 H
Trichloroethylene	0.72 H
1,2-Dichloropropane	0.07 M
Bromodichloromethane	<0.01
cis-1,3-Dichloropropylene	<0.04
Toluene	3.73 H
n-Octane/t-1,3-dichloropropylene	<0.04
1,1,2-Trichloroethane	<0.02
Tetrachloroethylene	0.08 L
Dibromochloromethane	<0.01
Chlorobenzene	<0.02
Ethylbenzene	0.63 H
m/p-Xylene	3.56 H
Styrene/o-Xylene	1.03 H
Bromoform	<0.01
1,1,2,2-Tetrachloroethane	<0.01
m-Dichlorobenzene	<0.02
p-Dichlorobenzene	0.60 L
o-Dichlorobenzene	<0.02

H High confidence level M Medium confidence level L Low confidence level

TABLE H-4. MULTIPLE DETECTOR SPECIATED THREE-HOUR DATA SUMMARY FOR MNY

Sample Date	07/17/89	07/18/89	08/09/89	08/10/89	08/11/89
Sample ID	1757	1753	2176	2197	2230
Total NMOC, ppmC	0.216	0.515	0.127	0.603	0.281
Compound	Concentration, ppbv				
Acetylene	<1.00	8.69 L	1.23 L	6.94 L	<1.00
Propylene	2.39 M	<0.10	3.37 H	<0.10	<0.10
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	0.14 H	0.28 H	0.10 H	0.29 H	0.17 H
Bromomethane	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroethane	0.11 L	<0.10	<0.10	<0.10	<0.10
Methylene chloride	<0.11	<0.11	1.87 L	<0.11	<0.11
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	0.50 L	0.09 H	<0.06	<0.06	<0.06
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	0.10 H	<0.01
1,1,1-Trichloroethane	0.90 H	1.11 H	1.06 H	1.27 M	0.56 H
Carbon tetrachloride	0.14 L	0.14 L	0.15 L	0.16 L	0.14 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	0.98 H	2.33 H	0.94 H	2.31 H	1.30 H
Trichloroethylene	0.05 H	0.19 M	<0.01	0.22 L	<0.01
1,2-Dichloropropane	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
Toluene	2.01 H	5.15 H	3.02 H	8.04 H	2.81 H
n-Octane/t-1,3-dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1,2-Trichloroethane	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachloroethylene	4.85 H	3.53 L	<0.07	3.03 L	<0.07
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.19 H	0.59 H	0.23 H	0.56 H	0.28 H
m/p-Xylene	1.16 H	3.33 H	1.32 H	3.82 H	1.61 H
Styrene/o-Xylene	0.44 L	1.19 H	0.52 L	1.33 H	0.63 H
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02
p-Dichlorobenzene	0.13 H	<0.09	0.17 H	0.30 M	0.16 M
o-Dichlorobenzene	<0.02	0.30 L	0.23 M	<0.02	<0.02

H High confidence level M Medium confidence level L Low confidence level (Continued)

TABLE H-4. MNY (Continued)

Sample Date	08/15/89	08/16/89	08/16/89	08/16/89	08/18/89
Sample ID	2286	2284D	2284R	2285D	2362
Total NMOC, ppmC	1.006	0.566	0.566	0.556	0.259
Compound	Concentration, ppbv				
Acetylene	<1.00	<1.00	<1.00	<1.00	1.02 L
Propylene	<0.10	<0.10	<0.10	<0.10	3.02 H
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	0.62 M	0.32 M	0.30 M	0.32 M	0.13 M
Bromomethane	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroethane	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	<0.11	<0.11	<0.11	<0.11	<0.11
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	<0.06	0.24 M	<0.06	0.09 M	0.08 M
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	1.79 H	1.20 H	1.06 H	0.97 H	0.58 M
Carbon tetrachloride	0.17 L	0.18 L	0.16 L	0.15 L	0.15 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	4.18 M	2.27 H	2.37 H	2.32 H	1.12 H
Trichloroethylene	0.21 L	<0.01	0.04 M	<0.01	0.03 L
1,2-Dichloropropane	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	0.29 L
Toluene	13.38 H	5.37 L	5.41 M	5.49 M	2.54 L
n-Octane/t-1,3-dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1,2-Trichloroethane	<0.02	0.11 M	<0.02	<0.02	<0.02
Tetrachloroethylene	3.93 H	2.00 H	1.98 H	2.58 M	1.07 L
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.02	<0.02	0.27 M	0.13 M	<0.02
Ethylbenzene	1.24 H	0.65 H	0.94 L	0.68 H	0.26 H
m/p-Xylene	6.86 H	4.06 H	3.99 H	3.71 H	1.43 H
Styrene/o-Xylene	2.52 H	1.75 H	1.69 M	1.73 H	0.56 H
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	<0.02	0.03 M	<0.02	<0.02	<0.02
p-Dichlorobenzene	<0.09	<0.09	<0.09	<0.09	<0.09
o-Dichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02

H High confidence level M Medium confidence level L Low confidence level (Continued)

D Duplicate sample R Replicate analysis

TABLE H-4. MNY (Continued)

Sample Date	08/17/89
Sample ID	2358
Total NMOC, ppmC	0.405

Compound	Concentration, ppbv	
Acetylene	<1.00	
Propylene	6.22	H
Chloromethane	<0.20	
Vinyl chloride	<0.20	
1,3-Butadiene	0.16	H
Bromomethane	<0.20	
Chloroethane	<0.10	
Methylene chloride	<0.11	
trans-1,2-Dichloroethylene	<0.04	
1,1-Dichloroethane	<0.04	
Chloroprene	0.52	H
Bromochloromethane	<0.01	
Chloroform	0.10	H
1,1,1-Trichloroethane	0.93	H
Carbon tetrachloride	0.14	L
1,2-Dichloroethane	<0.04	
Benzene	1.45	H
Trichloroethylene	0.09	L
1,2-Dichloropropane	<0.04	
Bromodichloromethane	<0.01	
cis-1,3-Dichloropropylene	<0.04	
Toluene	3.51	M
n-Octane/t-1,3-dichloropropylene	<0.04	
1,1,2-Trichloroethane	<0.02	
Tetrachloroethylene	2.46	H
Dibromochloromethane	<0.01	
Chlorobenzene	<0.02	
Ethylbenzene	0.37	H
m/p-Xylene	2.06	H
Styrene/o-Xylene	0.78	H
Bromoform	<0.01	
1,1,2,2-Tetrachloroethane	<0.01	
m-Dichlorobenzene	0.01	H
p-Dichlorobenzene	<0.09	
o-Dichlorobenzene	<0.02	

H High confidence level M Medium confidence level L Low confidence level

TABLE H-5. M1NY (Continued)

Sample Date	08/15/89	08/16/89	08/17/89	08/17/89	7/89
Sample ID	2287	2301	2348D	2348R	2349D
Total NMOC, ppmC	2.043	0.795	0.359	0.359	0.312
Compound	Concentration, ppbv				
Acetylene	<1.00	<1.00	<1.00	<1.00	<1.00
Propylene	<0.10	14.19 M	4.61 M	4.82 L	4.63 L
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	<0.10	0.52 M	0.20 M	0.18 M	0.15 M
Bromomethane	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroethane	<0.10	1.49 L	0.05 L	<0.10	<0.10
Methylene chloride	<0.11	2.51 L	<0.11	<0.11	<0.11
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	0.18 M	0.09 M	<0.06	0.05 M	0.05 M
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	4.87 M	3.05 M	0.88 M	0.89 M	0.91 M
Carbon tetrachloride	0.23 L	0.15 L	0.13 L	0.14 L	0.13 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	7.80 M	4.31 M	1.54 M	1.58 M	1.59 M
Trichloroethylene	0.57 M	0.16 L	0.05 L	0.05 L	0.07 L
1,2-Dichloropropane	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	<0.04	<0.04	0.25 L	<0.04
Toluene	25.01 L	10.15 M	3.64 M	3.75 M	3.68 M
n-Octane/t-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1,2-Trichloroethane	0.11 M	<0.02	<0.02	<0.02	<0.02
Tetrachloroethylene	<0.07	1.91 L	<0.07	<0.07	<0.07
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	2.06 M	1.30 M	0.37 M	0.39 M	0.40 M
m/p-Xylene	12.01 M	7.24 M	2.11 M	2.07 M	2.18 M
Styrene/o-Xylene	4.55 M	2.94 M	0.80 M	0.79 M	0.84 M
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	<0.02	<0.02	<0.02	0.02 L	<0.02
p-Dichlorobenzene	<0.09	<0.09	1.14 L	0.97 L	<0.09
o-Dichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02

H High confidence level M Medium confidence level L Low confidence level (Continued)

D Duplicate sample R Replicate analysis

TABLE H-5. MULTIPLE DETECTOR SPECIATED THREE-HOUR DATA SUMMARY FOR M1NY

Sample Date	07/17/89	07/18/89	08/09/89	08/10/89	08/11/89
Sample ID	1758	1752	2175	2196	2236
Total NMOC, ppmC	0.309	0.681	0.356	0.799	0.220
Compound	Concentration, ppbv				
Acetylene	<1.00	<1.00	<1.00	<1.00	<1.00
Propylene	3.41 M	8.31 M	<0.10	<0.10	<0.10
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	0.17 H	0.54 M	0.26 H	0.53 H	0.14 H
Bromomethane	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroethane	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	<0.11	<0.11	<0.11	<0.11	<0.11
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	<0.06	<0.06	<0.06	<0.06	<0.06
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	0.09 H	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	0.71 M	1.08 H	0.88 H	3.23 H	0.62 H
Carbon tetrachloride	0.16 L	0.14 L	0.14 L	0.20 L	0.14 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	1.35 H	2.92 H	1.82 H	3.70 H	1.27 H
Trichloroethylene	<0.01	0.17 L	<0.01	0.37 M	0.10 L
1,2-Dichloropropane	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
Toluene	2.92 M	6.12 H	5.05 H	9.98 H	2.84 H
n-Octane/t-1,3-Dichloropropylene	0.12 H	<0.04	<0.04	<0.04	<0.04
1,1,2-Trichloroethane	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachloroethylene	0.61 L	<0.07	<0.07	1.90 L	<0.07
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.02	<0.02	<0.02	<0.02	0.13 M
Ethylbenzene	0.35 H	0.64 H	0.40 H	0.93 H	0.28 H
m/p-Xylene	2.05 H	3.94 H	2.33 H	5.58 H	1.54 H
Styrene/o-Xylene	0.74 H	0.14 L	0.85 H	2.17 H	0.58 H
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	<0.02	<0.02	<0.02	0.01 L	<0.02
p-Dichlorobenzene	0.22 H	0.35 M	<0.09	1.41 L	0.16 M
o-Dichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02

H High confidence level M Medium confidence level L Low confidence level (Continued)
D Duplicate sample R Replicate analysis

TABLE H-5. M1NY (Continued)

Sample Date	08/18/89
Sample ID	2363
Total NMOC, ppmC	0.318
Compound	**Concentration, ppbv**
Acetylene	<1.00
Propylene	4.21 H
Chloromethane	<0.20
Vinyl chloride	<0.20
1,3-Butadiene	0.17 H
Bromomethane	<0.20
Chloroethane	0.74 L
Methylene chloride	<0.11
trans-1,2-Dichloroethylene	<0.04
1,1-Dichloroethane	<0.04
Chloroprene	<0.06
Bromochloromethane	<0.01
Chloroform	<0.01
1,1,1-Trichloroethane	0.77 H
Carbon tetrachloride	0.17 L
1,2-Dichloroethane	<0.04
Benzene	1.42 H
Trichloroethylene	0.07 M
1,2-Dichloropropane	<0.04
Bromodichloromethane	<0.01
cis-1,3-Dichloropropylene	<0.04
Toluene	3.50 H
n-Octane/t-1,3-Dichloropropylene	<0.04
1,1,2-Trichloroethane	<0.02
Tetrachloroethylene	1.57 H
Dibromochloromethane	<0.01
Chlorobenzene	<0.02
Ethylbenzene	0.42 H
m/p-Xylene	2.33 M
Styrene/o-Xylene	0.84 H
Bromoform	<0.01
1,1,2,2-Tetrachloroethane	<0.01
m-Dichlorobenzene	0.01 L
p-Dichlorobenzene	<0.09
o-Dichlorobenzene	<0.02

H High confidence level M Medium confidence level L Low confidence level

TABLE H-6. MULTIPLE DETECTOR SPECIATED THREE-HOUR DATA SUMMARY FOR NWNJ

Sample Date	07/14/89	08/08/89	08/09/89	08/09/89	08/09/89
Sample ID	1760	2199	2169D	2169R	2170D
Total NMOC, ppmC	1.112	0.254	0.319	0.319	0.298
Compound	Concentration, ppbv				
Acetylene	<1.00	<1.00	<1.00	<1.00	<1.00
Propylene	<0.10	<0.10	<0.10	<0.10	<0.10
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	0.51 H	0.11 H	0.09 M	0.07 H	0.09 H
Bromomethane	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroethane	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	5.57 H	<0.11	0.96 H	0.87 L	0.96 L
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	<0.06	<0.06	0.07 L	0.06 H	0.07 H
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	1.79 H	0.51 L	1.75 H	1.69 H	1.64 H
Carbon tetrachloride	0.14 L	0.13 L	0.15 L	0.14 L	0.14 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	2.85 H	1.15 H	0.94 H	0.89 H	0.92 H
Trichloroethylene	1.95 M	<0.01	0.36 M	0.26 H	0.31 L
1,2-Dichloropropane	<0.04	0.29 H	<0.04	<0.04	<0.04
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
cis-1,3-Dichloropropylene	0.92 L	<0.04	<0.04	<0.04	<0.04
Toluene	23.67 H	2.40 H	3.82 H	3.65 H	4.00 H
n-Octane/t-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1,2-Trichloroethane	0.51 H	<0.02	<0.02	<0.02	<0.02
Tetrachloroethylene	1.78 L	<0.07	<0.07	<0.07	<0.07
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	1.04 H	0.33 H	1.54 H	1.46 H	1.47 H
m/p-Xylene	6.66 H	2.03 H	7.58 H	7.20 H	7.22 H
Styrene/o-Xylene	2.18 H	0.66 L	1.56 H	1.54 H	1.50 H
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	0.13 L	<0.02	0.01 L	<0.02	0.06 L
p-Dichlorobenzene	2.54 L	0.09 H	<0.09	0.08 M	<0.09
o-Dichlorobenzene	<0.02	<0.02	<0.02	0.90 L	<0.02

H High confidence level M Medium confidence level L Low confidence level (Continued)
D Duplicate sample R Replicate analysis

TABLE H-6. NWNJ (Continued)

Sample Date	08/14/89	08/15/89	08/16/89	08/18/89	08/22/89
Sample ID	2265	2297	2364	2419	2448
Total NMOC, ppmC	1.356	1.981	0.551	0.324	0.307
Compound	Concentration, ppbv				
Acetylene	<1.00	<1.00	<1.00	<1.00	<1.00
Propylene	<0.10	<0.10	<0.10	<0.10	<0.10
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	0.96 M	<0.10	0.29 M	<0.10	0.10 M
Bromomethane	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroethane	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	<0.11	<0.11	<0.11	1.29 H	<0.11
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	<0.06	<0.06	0.56 M	<0.06	<0.06
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	2.02 L	2.57 M	1.18 L	0.60 L	0.49 M
Carbon tetrachloride	0.17 L	0.21 L	0.15 L	0.14 L	0.13 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	5.44 M	5.98 M	2.18 H	1.18 H	1.20 H
Trichloroethylene	0.55 M	1.00 L	1.48 H	0.19 M	<0.01
1,2-Dichloropropane	0.93 L	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
Toluene	18.21 H	20.17 M	6.72 H	8.54 H	4.43 L
n-Octane/t-1,3-Dichloropropylene	0.61 M	<0.04	<0.04	<0.04	<0.04
1,1,2-Trichloroethane	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachloroethylene	0.71 L	1.01 M	0.75 L	0.15 L	1.04 L
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	0.26 H	1.29 M	<0.02	<0.02	<0.02
Ethylbenzene	1.76 M	2.44 M	0.96 M	0.42 H	0.36 H
m/p-Xylene	10.16 M	14.07 M	5.01 H	2.52 H	2.02 M
Styrene/o-Xylene	3.50 M	5.06 M	1.78 M	0.77 L	0.85 M
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	<0.02	<0.02	0.02 L	<0.02	<0.02
p-Dichlorobenzene	<0.09	<0.09	<0.09	<0.09	0.12 L
o-Dichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02

H High confidence level M Medium confidence level L Low confidence level (Continued)

TABLE H-6. NWNJ (Continued)

Sample Date	08/24/89
Sample ID	2433
Total NMOC, ppmC	0.315
Compound	**Concentration, ppbv**
Acetylene	<1.00
Propylene	<0.10
Chloromethane	<0.20
Vinyl chloride	<0.20
1,3-Butadiene	0.16 H
Bromomethane	<0.20
Chloroethane	<0.10
Methylene chloride	<0.11
trans-1,2-Dichloroethylene	<0.04
1,1-Dichloroethane	<0.04
Chloroprene	<0.06
Bromochloromethane	<0.01
Chloroform	<0.01
1,1,1-Trichloroethane	1.10 M
Carbon tetrachloride	0.13 L
1,2-Dichloroethane	<0.04
Benzene	1.33 H
Trichloroethylene	0.11 L
1,2-Dichloropropane	<0.04
Bromodichloromethane	<0.01
cis-1,3-Dichloropropylene	<0.04
Toluene	4.48 H
n-Octane/t-1,3-Dichloropropylene	<0.04
1,1,2-Trichloroethane	<0.02
Tetrachloroethylene	1.55 M
Dibromochloromethane	<0.01
Chlorobenzene	<0.02
Ethylbenzene	0.44 H
m/p-Xylene	2.44 H
Styrene/o-Xylene	0.83 H
Bromoform	<0.01
1,1,2,2-Tetrachloroethane	<0.01
m-Dichlorobenzene	<0.02
p-Dichlorobenzene	<0.09
o-Dichlorobenzene	<0.02

H High confidence level M Medium confidence level L Low confidence level

TABLE H-7. MULTIPLE DETECTOR SPECIATED THREE-HOUR DATA SUMMARY FOR PLNJ

Sample Date	08/08/89	08/09/89	08/14/89	08/14/89	08/14/89
Sample ID	2198	2193	2314D	2314R	2315D
Total NMOC, ppmC	0.104	0.525	0.764	0.764	0.758
Compound	Concentration, ppbv				
Acetylene	<1.00	<1.00	<1.00	<1.00	<1.00
Propylene	1.52 L	<0.10	<0.10	<0.10	<0.10
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	<0.10	0.46 H	0.52 H	0.42 H	0.45 H
Bromomethane	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroethane	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	<0.11	<0.11	9.45 M	10.29 L	10.08 M
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	<0.06	<0.06	0.10 M	<0.06	<0.06
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	0.28 L	2.04 H	1.93 H	2.02 H	1.91 H
Carbon tetrachloride	0.14 L	0.13 L	0.15 L	0.16 L	0.15 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	0.49 H	2.64 H	3.38 H	3.36 H	2.94 H
Trichloroethylene	<0.01	<0.01	<0.01	0.60 L	0.34 H
1,2-Dichloropropane	<0.04	0.26 H	<0.04	<0.04	<0.04
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	0.71 L
Toluene	1.04 H	6.03 H	9.02 H	8.05 H	8.00 H
n-Octane/t-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1,2-Trichloroethane	0.01 M	<0.02	<0.02	<0.02	<0.02
Tetrachloroethylene	0.04 L	<0.07	0.78 L	0.73 M	<0.07
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.02	<0.02	<0.02	0.03 M	0.07 H
Ethylbenzene	0.08 M	0.51 H	0.97 H	0.97 H	0.96 H
m/p-Xylene	0.40 H	3.18 H	5.07 H	4.74 H	4.90 H
Styrene/o-Xylene	0.18 H	1.18 H	1.90 H	1.75 H	2.03 H
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02
p-Dichlorobenzene	0.05 L	<0.09	1.96 M	2.30 M	1.33 L
o-Dichlorobenzene	0.20 L	<0.02	<0.02	<0.02	<0.02

H High confidence level M Medium confidence level L Low confidence level (Continued)
D Duplicate sample R Replicate analysis

TABLE H-7. PLNJ (Continued)

Sample Date	08/15/89	08/17/89	08/18/89	08/21/89	08/22/89
Sample ID	2303	2342	2409	2413	2453
Total NMOC, ppmC	0.888	0.405	0.294	0.353	0.161
Compound	Concentration, ppbv				
Acetylene	3.89 L	<1.00	<1.00	<1.00	<1.00
Propylene	<0.10	<0.10	<0.10	<0.10	<0.10
Chloromethane	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Butadiene	<0.10	0.20 H	<0.10	<0.10	<0.10
Bromomethane	<0.20	<0.20	<0.20	0.06 H	<0.20
Chloroethane	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	<0.11	<0.11	<0.11	1.87 H	<0.11
trans-1,2-Dichloroethylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroprene	<0.06	0.47 H	<0.06	<0.06	0.31 M
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloroethane	1.78 L	0.87 H	0.32 L	0.91 L	0.31 M
Carbon tetrachloride	0.17 L	0.14 L	0.13 L	0.15 L	0.15 L
1,2-Dichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04
Benzene	3.48 H	1.71 H	0.97 H	2.06 H	0.92 H
Trichloroethylene	0.27 L	0.16 L	[illegible]	<0.01	0.19 L
1,2-Dichloropropane	<0.04	<0.04	[illegible]	<0.04	0.04
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
cis-1,3-Dichloropropylene	<0.04	0.30 H	<0.04	<0.04	<0.04
Toluene	8.95 L	4.61 H	3.11 H	5.77 H	1.63 H
n-Octane/t-1,3-Dichloropropylene	<0.04	<0.04	<0.04	<0.04	<0.04
1,1,2-Trichloroethane	0.07 L	<0.02	<0.02	<0.02	<0.02
Tetrachloroethylene	1.30 M	<0.07	0.34 L	0.14 M	0.26 H
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.02	<0.02	<0.02	0.06 L	<0.02
Ethylbenzene	0.99 H	0.40 H	0.33 H	0.39 H	0.20 H
m/p-Xylene	5.35 H	2.30 H	1.95 H	2.12 H	1.04 H
Styrene/o-Xylene	1.88 H	0.90 H	1.61 H	0.80 H	0.41 H
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
m-Dichlorobenzene	0.01 L	<0.02	<0.02	<0.02	<0.02
p-Dichlorobenzene	1.22 L	<0.09	0.18 H	<0.09	0.35 L
o-Dichlorobenzene	<0.02	<0.02	<0.02	0.26 L	0.10 L

H High confidence level M Medium confidence level L Low confidence level (Continued)

TABLE H-7. PLNJ (Continued)

Sample Date	08/23/89
Sample ID	2454
Total NMOC, ppmC	0.425
Compound	**Concentration, ppbv**
Acetylene	<1.00
Propylene	<0.10
Chloromethane	<0.20
Vinyl chloride	<0.20
1,3-Butadiene	0.14 M
Bromomethane	<0.20
Chloroethane	<0.10
Methylene chloride	<0.11
trans-1,2-Dichloroethylene	<0.04
1,1-Dichloroethane	<0.04
Chloroprene	0.10 M
Bromochloromethane	<0.01
Chloroform	<0.01
1,1,1-Trichloroethane	0.73 H
Carbon tetrachloride	0.15 L
1,2-Dichloroethane	<0.04
Benzene	1.68 H
Trichloroethylene	<0.01
1,2-Dichloropropane	<0.04
Bromodichloromethane	<0.01
cis-1,3-Dichloropropylene	<0.04
Toluene	4.13 L
n-Octane/t-1,3-Dichloropropylene	<0.04
1,1,2-Trichloroethane	<0.02
Tetrachloroethylene	<0.07
Dibromochloromethane	<0.01
Chlorobenzene	0.04 H
Ethylbenzene	0.37 H
m/p-Xylene	1.84 H
Styrene/o-Xylene	0.68 M
Bromoform	<0.01
1,1,2,2-Tetrachloroethane	<0.01
m-Dichlorobenzene	<0.02
p-Dichlorobenzene	<0.09
o-Dichlorobenzene	<0.02

H High confidence level M Medium confidence level L Low confidence level

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16. ABSTRACT

In certain areas of the country where the National Ambient Air Quality Standard (NAAQS) for ozone is being exceeded, additional measurements of ambient nonmethane organic compounds (NMOC) are needed to assist the affected States in developing revised ozone control strategies. Because of previous difficulty in obtaining accurate NMOC measurements, the U.S. Environmental Protection Agency (EPA) has provided monitoring and analytical assistance to these States, beginning in 1984 and continuing through the 1989 NMOC Monitoring Program.

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