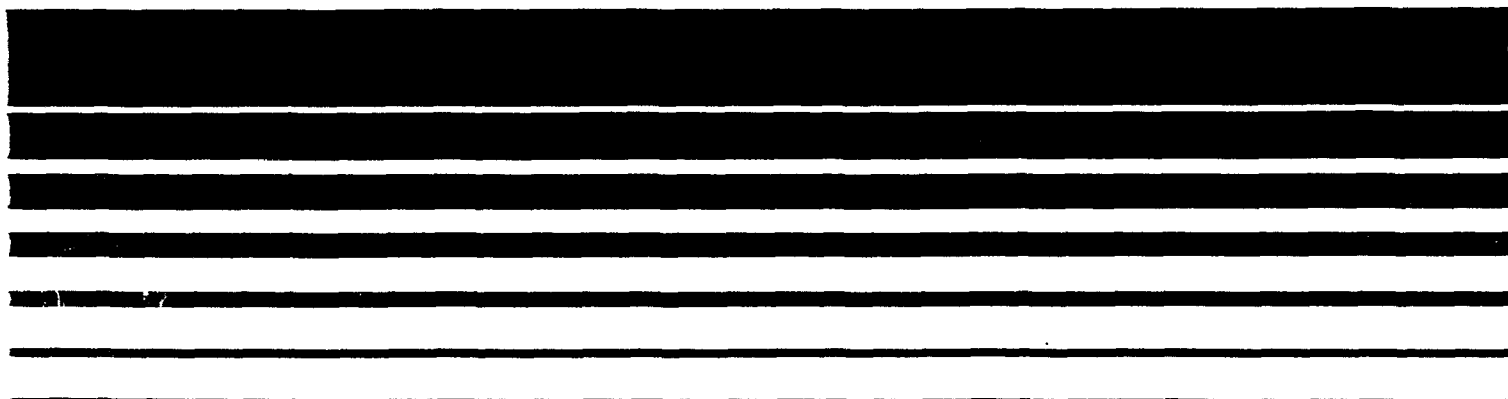




1989 URBAN AIR TOXICS MONITORING PROGRAM ALDEHYDE RESULTS



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By

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FINAL REPORT

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October 1990

DISCLAIMER

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SYMBOLS AND ABBREVIATIONS

ABS	Absolute value
ADL	Analytical detection limit
AIRS	Atmospheric Information Retrieval System
ANOVA	Analysis of Variance
APR	April
AREAL	Atmospheric Research and Exposure Assessment Laboratory
ASCII	American Standard Code for Information Interchange
AUG	August
BRLA	Baton Rouge, LA; AIRS No. 22-033-0004
C4IL	Chicago, IL; AIRS No. 17-031-0060
CANJ	Camden, NJ; AIRS No. 31-007-0003
cm	centimeter
CONC	concentration
COR	correlation coefficient
COV	covariance
DC	District of Columbia
DEC	December
DIF	Difference; Percent DIF = $(X_2 - X_1)/((X_1 + X_2)/2)*100$
DIST	Distribution
DLTX	Dallas, TX; AIRS No. 48-113-0069
DNPH	2,4-dinitrophenyl hydrazine
EPA	U. S. Environmental Protection Agency
FID	Flame ionization detection
FL	Florida
FLFL	Ft. Lauderdale, FL; AIRS No. 12-011-1003
GC/MS	Gas chromatograph/mass spectrometry
GC/MD	Gas chromatograph/multidetector
FEB	February
HITX	Houston, TX; AIRS No. 48-201-1034
Hg	Mercury
HPLC	High performance liquid chromatography
ID	Radian assigned alphanumeric identification
IL	Illinois
in.	inch
JAN	January
JUL	July
JUN	June
KS	Kansas
L	Liter
LA	Louisiana
LOG	natural logarithm
MAR	March
MAX	maximum

MIFL	Miami, FL; AIRS No. 12-025-4002
MIN	minimum
min.	minute (60 seconds)
mL	milliliter
mm	millimeter
MO	Missouri
N	number of cases, or sample size
NC	North Carolina
NJ	New Jersey
nm	nanometer
NMOC	Nonmethane organic compound(s)
NORM	normal
NOV	November
NY	New York
OAQPS	Office of Air Quality Standards and Planning
OCT	October
PEFL	Pensacola, FL; AIRS No. 12-033-0004
PID	Photoionization detection
ppbv	parts per billion by volume
PPK	Perimeter Park, Morrisville, NC, Radian Analytical Laboratory
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
QAD	Quality Assurance Division
R	regression coefficient
RTP	Research Triangle Park, NC
S2MO	St. Louis, MO; AIRS No. 29-510-0072
SAIL	Sauget, IL; AIRS No. 17-163-1010
SEP	September
St.	Saint
STD	Standard Deviation
TX	Texas
U. S.	United States of America
U. K.	United Kingdom
UATMP	Urban Air Toxics Monitoring Program
W	Shapiro-Wilk W statistic, used in SAS® software to indicate normality of a distribution
WEEKCLS	Classification for weekdays; 1 = Monday through Friday, 2 = Saturday or Sunday
W1DC	Washington, DC; AIRS No. 11-001-0025
W1KS	Wichita, KS; AIRS No. 20-173-0010
W2DC	Washington, DC; AIRS No. 11-001-0039
W2KS	Wichita, KS; AIRS No. 20-173-0007

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1.0 SUMMARY AND CONCLUSIONS

This report summarizes the results of sampling ambient air for selected carbonyls in 14 urban centers in the contiguous United States as part of the Urban Air Toxics Monitoring Program (UATMP). Formaldehyde, acetaldehyde, and acetone concentrations were measured using 2,4-dinitrophenyl hydrazine-coated resin cartridges to collect the carbonyls for subsequent analysis. Sampling and analysis followed guidance provided in EPA compendium method TO-11. Formaldehyde concentrations ranged from 0.43 to 8.91 ppbv with an average concentration for all sites of 2.13 ppbv. Site average formaldehyde concentrations ranged from 1.41 ppbv for Wichita, KS (W2KS) to 3.81 for Washington, DC (W1DC). Acetaldehyde concentrations ranged from 0.37 to 7.57 ppbv, averaging 1.37 ppbv over all 1989 UATMP sites. Site average acetaldehyde concentrations ranged from 0.94 ppbv at Sauget, IL (SAIL) to 1.857 ppbv at Houston, TX (H1TX). Acetone concentrations ranged from 0.37 to 8.77 ppbv and averaged 2.09 ppbv over all sites. Site average acetone concentrations ranged from 1.00 ppbv at Ft. Lauderdale, FL (FLFL) to 2.71 ppbv at St. Louis, MO (S2MO).

The precision as measured by the mean percent difference of concentration for analysis of duplicate samples over all sites was near 11.8% for formaldehyde, near 14.5% for acetaldehyde, and near 16.7% for acetone. At individual sites the mean percent differences ranged from 8.1 to 19.4% for formaldehyde, from 10.0 to 19.4 percent for acetaldehyde, and from 9.3 to 27.6 percent for acetone.

Accuracy was measured as bias from audit samples. For formaldehyde bias ranged from -12.0 to 28.0% and averaged 6.2 percent. For acetaldehyde, bias ranged from -38.0 to 52.0% and averaged 13.8 percent. For acetone bias ranged from 12.0 to 43.0% and averaged 25.2 percent. The percent difference and biases reported in this study indicate that the sampling and analytical methodology is repeatable and valid.

Concentration data for formaldehyde, acetaldehyde, and acetone appeared to be distributed approximately as the lognormal distribution at the sites in the 1989 UATMP. Average monthly concentrations differed from month to month over all sites and from site to site. Smallest average monthly concentrations appeared to be in March while concentrations peaked in October at nearly all sites.

Formaldehyde and acetaldehyde concentrations correlate well at all sites. Little correlation exists between acetone and either formaldehyde or acetaldehyde.

2.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) developed the Urban Air Toxics Monitoring Program (UATMP) to help state and local agencies assess the nature and magnitude of their air toxics problems. The UATMP sampler collects ambient air samples at urban sites in 6-liter (L) SUMMA®-treated stainless steel canisters. At the same time, through a separate heated sample line, ambient air samples are drawn in parallel through duplicate cartridges which trap the carbonyl compounds from the ambient air.

The UATMP is a companion to the Nonmethane Organic Compound (NMOC) Monitoring Program which began in the summer of 1984. The NMOC monitoring program measures the total concentration of organic compounds, with the exception of methane, but does not speciate organics. The UATMP speciates 38 toxic compounds listed in Table 2-1, primarily aromatic hydrocarbons and halocarbons collected in canisters.

The aldehyde cartridges collected at the UATMP sites for 1989 were extracted and analyzed by the Atmospheric Research and Exposure Assessment Laboratory (AREAL) of the U.S. EPA at Research Triangle Park, NC for formaldehyde, acetaldehyde, and acetone. These carbonyls were selected as target compounds for the 1989 UATMP. This report presents the data summaries and other data assessments for the carbonyl samples collected during the 1989 UATMP season. The air toxics compounds collected in canisters for the 1989 UATMP season are reported separately.^{1,2}

TABLE 2-1. 1989 UATMP TARGET COMPOUNDS

<u>Canister Analytes</u>	<u>Cartridge Analytes</u>
Acetylene	Formaldehyde
Propylene	Acetaldehyde
Chloromethane	Acetone
Vinyl chloride	
1,3-Butadiene	
Bromomethane	
Chloroethane	
Methylene chloride	
trans-1,2-Dichloroethylene	
1,1-Dichloroethane	
Chloroprene	
Bromochloromethane	
Chloroform	
1,1,1-Trichloroethane	
Carbon tetrachloride	
1,2-Dichloroethane	
Benzene	
Trichloroethylene	
1,2-Dichloropropane	
Bromodichloromethane	
cis-1,3-Dichloropropylene	
Toluene	
n-Octane	
trans-1,3-Dichloropropylene	
1,1,2-Trichloroethane	
Tetrachloroethylene	
Dibromochloromethane	
Chlorobenzene	
Ethylbenzene	
m-Xylene	
p-Xylene	
o-Xylene	
Styrene	
Bromoform	
1,1,2,2-Tetrachloroethane	
m-Dichlorobenzene	
p-Dichlorobenzene	
o-Dichlorobenzene	

3.0 UATMP FOR 1989

Brief program descriptions for the air toxics and aldehyde portions of the UATMP are given in this section. Both the air toxics and aldehyde programs collected integrated 24-hour ambient air samples on a 12-day schedule beginning the week of January 13, 1989, except for the site at Pensacola, Florida as noted below. Sampling for the 1989 UATMP was completed on January 23, 1990.

Whole-air integrated ambient air samples were collected in 6-L SUMMA[®]-treated stainless steel canisters. Simultaneously a parallel ambient air stream was passed through 2,4-dinitrophenyl hydrazine-treated cartridges at 13 sites shown in Table 3-1. The table also gives Radian site codes, Aerometric Information Retrieval System (AIRS) Numbers, and EPA Regions. Additional description of the sites from the AIRS data base are given in Appendix A. The UATMP site at Pensacola, Florida obtained the first sample on April 22, 1989, but sampling was interrupted until December 11, 1989. Samples taken at PEFL on April 22, 1989, December 18, 1989, January 4, 11, 17, and 29, 1990 will be reported in the current carbonyl 1989 UATMP, and in the air toxics 1989 UATMP reports. Sampling continues at PEFL and samples obtained after January 29, 1990 will be included in the 1990 UATMP report. Aldehyde samples were taken simultaneously with all the UATMP canister samples. Duplicate cartridges were installed in parallel in a separate heated sample probe. Ambient air was drawn through the aldehyde cartridges for 24 hours at constant flow rate. The flow rate which is in the range of 600 to 900 mL/min, is measured at each site by the site operator before and after taking each sample. Aldehyde cartridges are DNPH-coated resin which reacts with aldehydes in ambient air, trapping them in the cartridge.

Three laboratories are involved in the aldehyde cartridge preparation, distribution and analysis. An independent EPA contractor prepares aldehyde sampling cartridges in batches. The Radian RTP laboratory obtained the prepared cartridges for distribution to the shipping boxes containing the

TABLE 3-1. 1989 URBAN AIR TOXICS MONITORING PROGRAM SITES

Region	City	Radian Site Code	AIRS Number
II	Camden, NJ	CANJ	34-007-0003
III	Washington, DC	W1DC	11-001-0025
	Washington, DC	W2DC	11-001-0039
IV	Miami, FL	M1FL	12-025-4002
	Ft. Lauderdale, FL	FLFL	12-011-1003
	Pensacola, FL	PEFL	12-033-0004
V	Chicago, IL	C4IL	17-031-0060
	Sauget, IL	SAIL	17-163-1010
VI	Dallas, TX	DLTX	48-113-0069
	Houston, TX	H1TX	48-201-1034
	Baton Rouge, LA	BRLA	22-033-0004
VII	Wichita, KS	W1KS	20-173-0010
	Wichita, KS	W2KS	20-173-0009
	St. Louis, MO	S2MO	29-510-0072

canisters that are sent to the UATMP sites, along with the aldehyde field data sheet. Radian coordinates the return and transfer of the exposed aldehyde sample cartridges, and custody records to the U.S. EPA AREAL for analysis. EPA's AREAL extracts samples from the cartridges and analyzes these extracts for target compounds. Radian Corporation reviews the analytical results, summarizes the data, and is responsible for semiannual and annual result summaries, which will be distributed to EPA and participating agencies. Figure 3-1 shows the aldehyde sample and data flow for the 1989 UATMP.

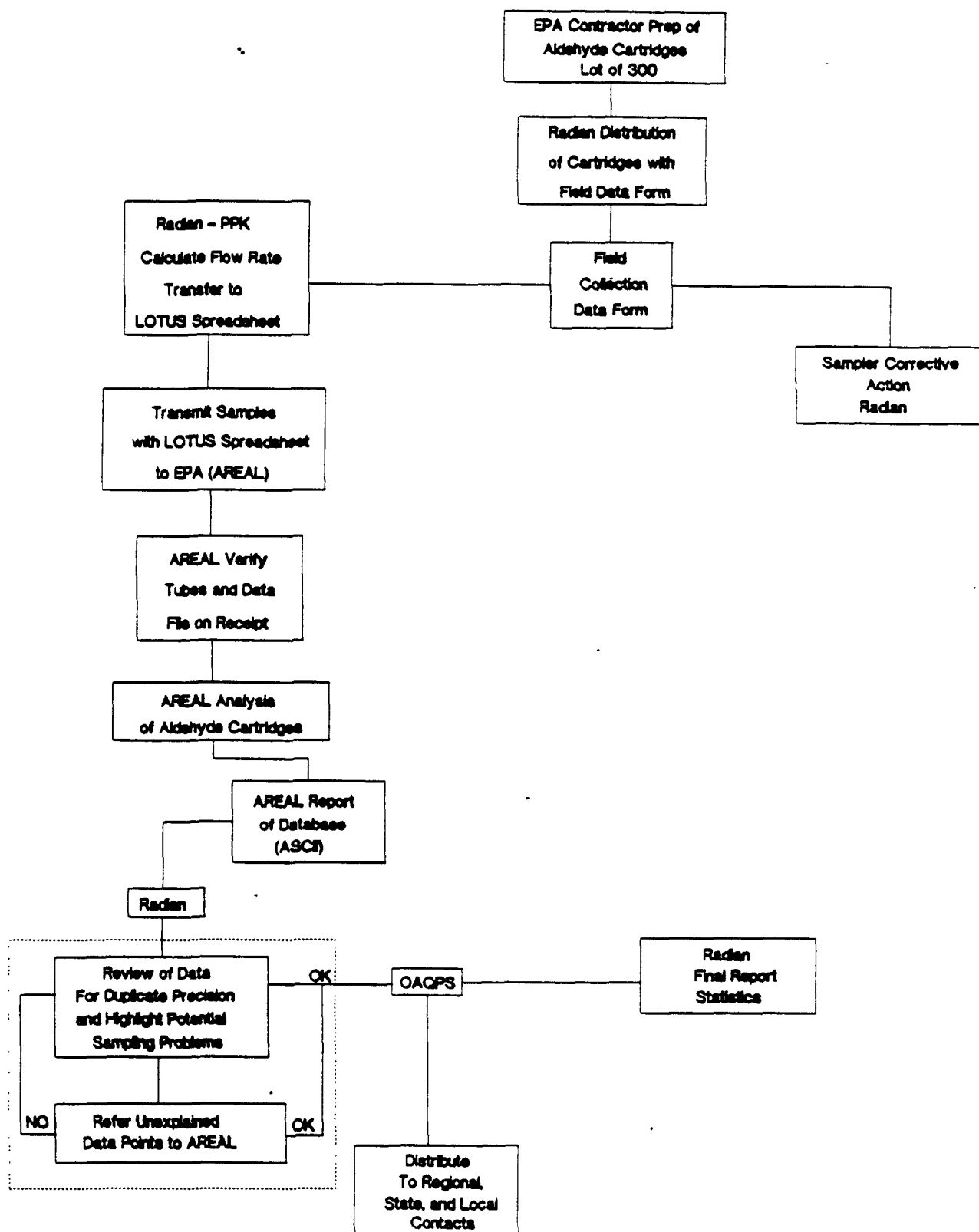


Figure 3-1. 1989 UATMP Aldehyde Data Flow .

4.0 SAMPLING, ANALYSIS, AND QUALITY ASSURANCE PROCEDURES

Sampling and analysis procedures for the aldehyde samples, along with the quality assurance procedures used to quantify data quality are described in this section. Implementing the UATMP involved Radian personnel installing the sampling equipment for the canister and the aldehyde samples, and training site personnel to operate the equipment properly, and observing all the quality assurance procedures necessary to ensure the integrity of the sample, and to providing appropriate documentation. The site operators's task involved recognizing problems with sampling equipment and procedures, and notifying Radian personnel at Research Triangle Park so that appropriate corrective action might be taken.

4.1 SAMPLING EQUIPMENT AND PROCEDURES

A schematic diagram of the UATMP sampler is shown in Figure 4-1. The sampler consists of two subsystems, the VOC canister and the aldehyde cartridge. Each subsystem collects a discrete sample through use of a common control system. Each sampler subsystem has a separate atmospheric inlet. The ambient air is introduced through an inverted glass funnel and heated stainless steel probe. The heated probe is maintained at 150°F to prevent moisture condensation. The aldehyde cartridges are mounted in parallel, so that the aldehyde samples are collected in duplicate during each sampling episode. The aldehyde cartridge is a commercially available (Waters Co.) silica gel Sep-pak® cartridge which is coated with 2,4-dinitrophenol hydrazine (DNPH). The cartridges are prepared in batches by the laboratory and stored under refrigeration until shipped to the field.

The aldehyde cartridges are installed in the sample line several days ahead of scheduled sample collection. The collection frequency was planned once every 12 days (30 per year). A 24-hour sample collection period was utilized for both the canister and cartridge samples. The aldehyde probe was purged and heated prior to sample collection period. In addition to the

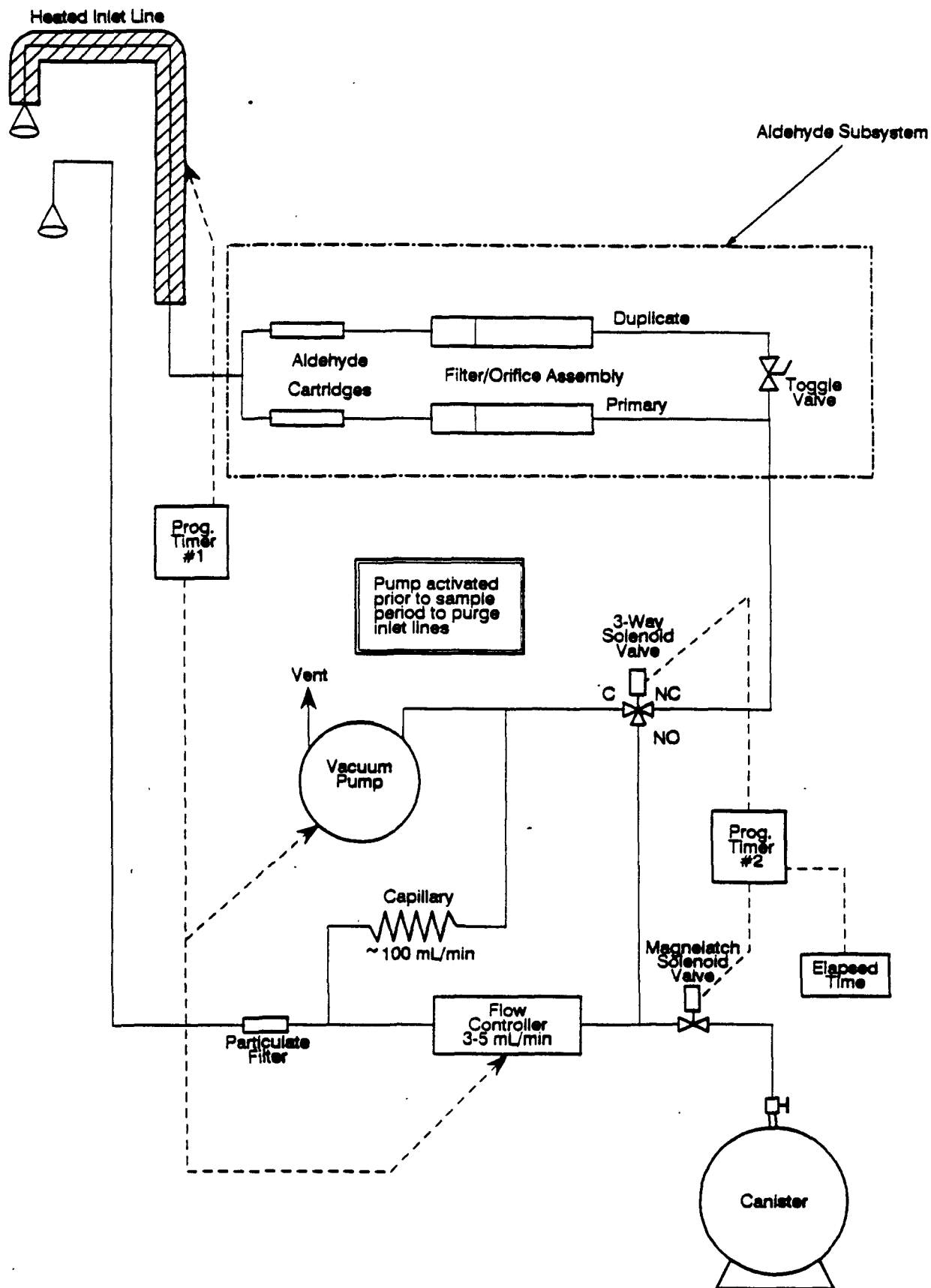


Figure 4-1. 1989 UATMP sampling assembly.

aldehyde cartridges installed in the sample line, a third cartridge is sent along in the shipment box as a trip blank.

The flow rate through each sample cartridge was measured before and after each collection period by the site operator. The flow rate was measured with a calibrated rotameter and recorded on a preformatted data sheet. The volume of ambient air sampled through each cartridge was calculated in the laboratory based on the field-recorded flow rate measurements.

4.2 ANALYTICAL PROCEDURES

The analytical procedures for aldehydes is given below. Sample preparation and analyses are performed at the AREAL by EPA personnel. A sample cartridge is removed from its shipping vial and attached to the end of a 10-mL polypropylene syringe. Six milliliters of acetonitrile are added to the syringe and allowed to drain through the cartridge into the graduated centrifuge tube. After the drainage has stopped the volume of extract is made up to 5-mL with acetonitrile and mixed. A portion of this solution is transferred to a 4-mL sample vial fitted with a Teflon[®]-lined self-sealing septum and stored in a refrigerator until used. TO-11 high pressure liquid chromatography (HPLC) column and elution solvents used for analysis were modified to decrease analysis time.

The separation is done using a 10-cm x 0.46-cm C18 analytical column with 3-micron particle size preceded by a 5-cm x 0.46 cm C18 guard column containing 5-micron particles. Typically 20-microliter samples are injected with an automatic sample injector. The isocratic elution is carried out with a 25% (by volume) acetonitrile, 25% tetrahydrofuran aqueous solution at 2.4 mL/min. Detector signals from a programmable multiwavelength detector are collected for 10 minutes at 220, 254, 330, and 360 nanometers (nm). Any residual sample is eluted from the column in three minutes with 100% acetonitrile.

The relevant chromatographic peaks determined by acceptable retention times are integrated and the concentrations calculated using standard curves from standards analyzed the same day as the samples. The 360-nm absorption is used for this purpose. Other wavelengths are used to compute signal purity by comparing signal at these wavelengths for standards to the absorption for each sample. Detection limits are determined by a one-sided tolerance interval around the repeatability of the lowest standard. This procedure was modified based on experience with the samples. The analysis modifications optimize

sample throughput for analysis of formaldehyde, acetaldehyde, and acetone. Some other species may coelute with these target compounds using this HPLC column and isocratic elution approach.

The aldehyde species to be reported are formaldehyde and acetaldehyde. Acetone, a ketone, is also reported. All results were reported to Radian in parts per billion by volume (ppbv) from the laboratory via floppy disk. All EPA reported analyses were identified by the unique tube numbers.

4.3 QUALITY ASSURANCE PROCEDURES

Quality assurance procedures relative to calibration data for acetone, formaldehyde, and acetaldehyde are discussed below. Daily quality control procedures are also discussed. Sampling and analysis precision was determined from the analysis of duplicate field samples. Sample custody records were maintained throughout the program. Figure 4-2 shows the multi-page field data and custody sheet used for the aldehyde cartridges.

4.4. CALIBRATION PROCEDURES

The calibration procedures used for this study followed AREAL standard operating procedures.

4.4.1 Daily Quality Control Procedures

Daily calibration checks were used to assure that the analytical procedures were in control. Aldehyde samples were analyzed in batches of 75 to 100 tubes throughout the year. Independently prepared audit samples were analyzed with each batch of field samples. Daily QC checks were performed each day analyses were conducted.

4.4.2 Duplicate Samples

Duplicate field cartridges were installed in parallel in the sample probe for each sampling episode, as shown in Figure 4-1. The paired average of the analyses of these duplicate cartridges was used as the average sample concentration in this report. If one of the field duplicates was broken or otherwise declared invalid, the analysis of the remaining cartridge was used as the reported sample concentration. Likewise if one of the duplicates showed a concentration above the detection limit and the other duplicate reported a concentration below the detection limit, the concentration above the detection limit was reported as the sample concentration.

4.4.3 Trip Blanks

For each pair of aldehyde samples, a trip-blank cartridge was included in the field site shipment. The blank consisted of a regular DNPH-cartridge with



URBAN TOXICS MONITORING PROGRAM

Aldehyde Data Sheet

City _____ Sample Date _____
 SAROAD No. _____ A05 Sampler No. _____

<u>Cartridge</u>	<u>Port A (red)</u>	<u>Port B (green)</u>	<u>(blank)</u>
Tube No. _____	_____	_____	_____
Lot No. _____	_____	_____	_____

Rotameter No. _____

Rotameter Reading¹ _____ / _____ (before)

Rotameter Reading¹ _____ / _____ (after)

Sampling Time/Duration _____ (hours)

Sampling Volume³ _____ (liters)

Average Ambient Temperature _____ (C° or F°)

Average Barometric Pressure _____ (mm Hg)

Site Operator _____

Comments/Remarks _____

¹ Rotameter reading center of black ball.

² Calculated from calibration curve by the laboratory.

³ Calculated by laboratory.

Sample Control Copy

Figure 4-2. Aldehyde Field Data Sheet

caps, identical with the sample cartridges. Each cartridge had a unique serial number for identification purposes. The blank cartridge accompanies the duplicate sample cartridges on the trip to and from the site, without removing the caps on each end of the cartridge. The trip-blank cartridge is not exposed to air at any time during the shipment or sampling periods. The trip-blank cartridges are analyzed for formaldehyde, acetaldehyde, and acetone at the same time the sample cartridges are analyzed. If the concentration of an analyte on the trip blank was measured to be above the detection limit, the concentrations of the duplicate samples were corrected for the blank concentration where the analytical results were above the analytical detection limit (ADL).

4.4.4 Precision

Precision was measured as the average standard deviation of the paired duplicate samples. The relation between precision and mean concentration, and between absolute percent difference and mean concentration were investigated.

4.4.5 Accuracy

Accuracy was determined by analyzing audit samples prepared by the Quality Assurance Division (QAD) of AREAL. All audit samples contained formaldehyde, and acetaldehyde. Selected audit samples also contained acetone.

The program acknowledges a potential bias for the reported carbonyl concentrations due to ozone interference. The ozone interference is under investigation by the agency and will be addressed in the 1990 UATMP carbonyl report.

5.0 RESULTS

5.1 ANALYTICAL RESULTS

Analytical results are presented in Appendices B and C. Concentrations of formaldehyde, acetaldehyde, and acetone are reported in ppbv, and are tabulated by site.

Figure 5-1 shows the annual average of the mean concentrations for the three compounds at each site. Figures 5-2 through 5-15 show the mean concentrations for the three compounds by sampling episode. Each of the figures represents a separate site. For example, Figure 5-2 shows the mean concentrations for each sampling episode at site BRLA. Each sampling episode corresponds to a date given in the site tables in Appendix B and C. Sampling episodes number the dates listed chronologically.

5.2 ANALYSIS RESULT STATISTICS

Appendix B gives rudimentary statistics for the carbonyl analyses. Each site shows two tables in Appendix B that correspond to the two data analysis cases discussed in the following section. Tables B-1 and B-2 list statistics for BRLA, for example.

In Table B-1 for BRLA, the first column gives, in compressed format, the date on which the sample was taken. For the first sample taken at BRLA, for example, the sample date is given as "16JAN89," which indicates that the sample was taken on January 16, 1989. The second column in the table shows the day of the week for the sample date. Weekday 1, refers to Sunday; 2 to Monday; 3 to Tuesday; etc. ID Numbers listed in the tables of Appendix B refer to the Radian ID Numbers for the UATMP samples collected on the sample date. The ID Numbers carrying a "D" after the first four digits refers to a UATMP sample that was taken in duplicate.

Overall averages are given for each mean concentration, percent difference, and standard deviation column in the tables of Appendix B. These

Mean Aldehyde Concentrations-All Sites

1989 UATMP

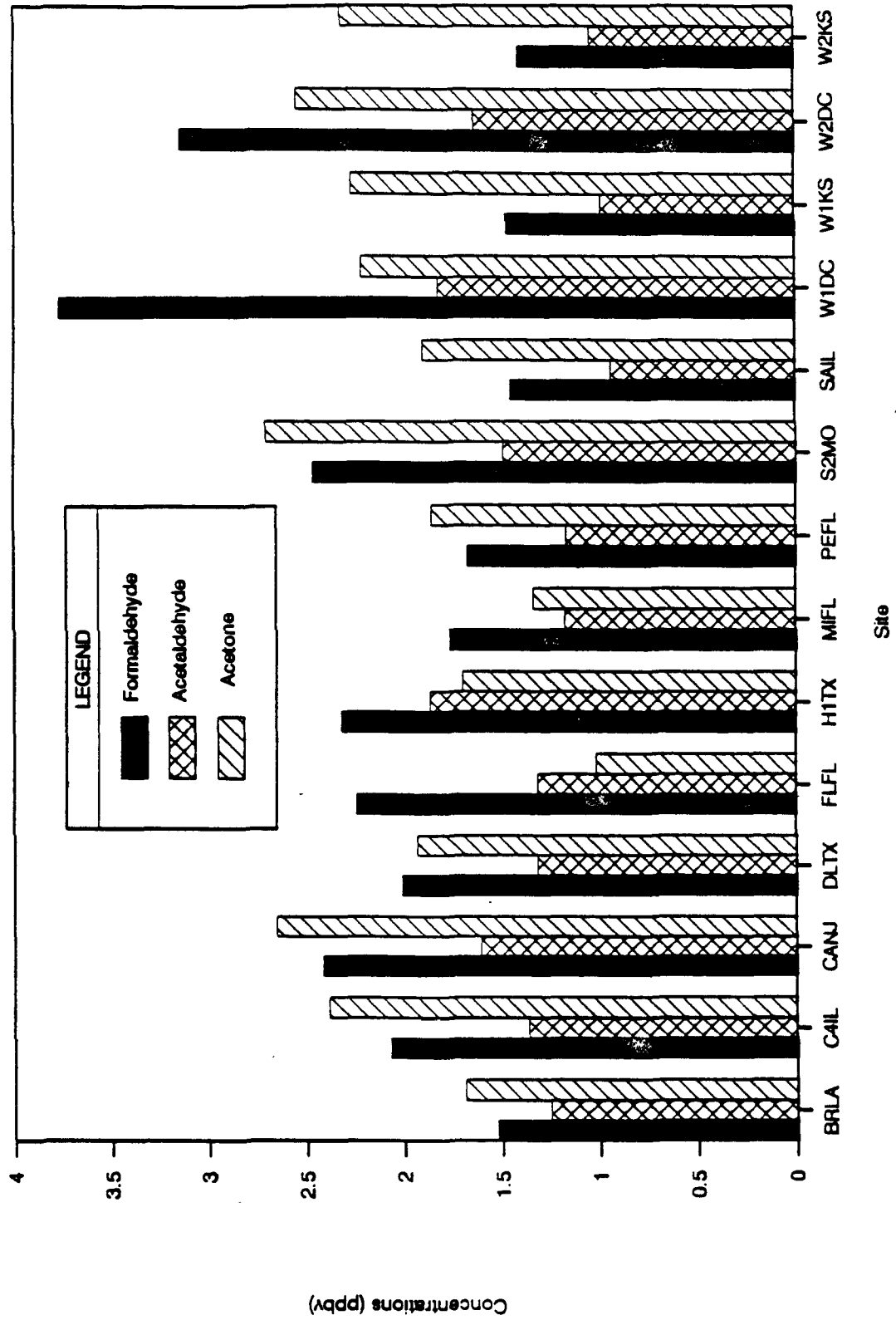


Figure 5-1. Average Aldehyde Concentration - All Sites

BRLA Aldehyde Concentrations

1989 LATMP

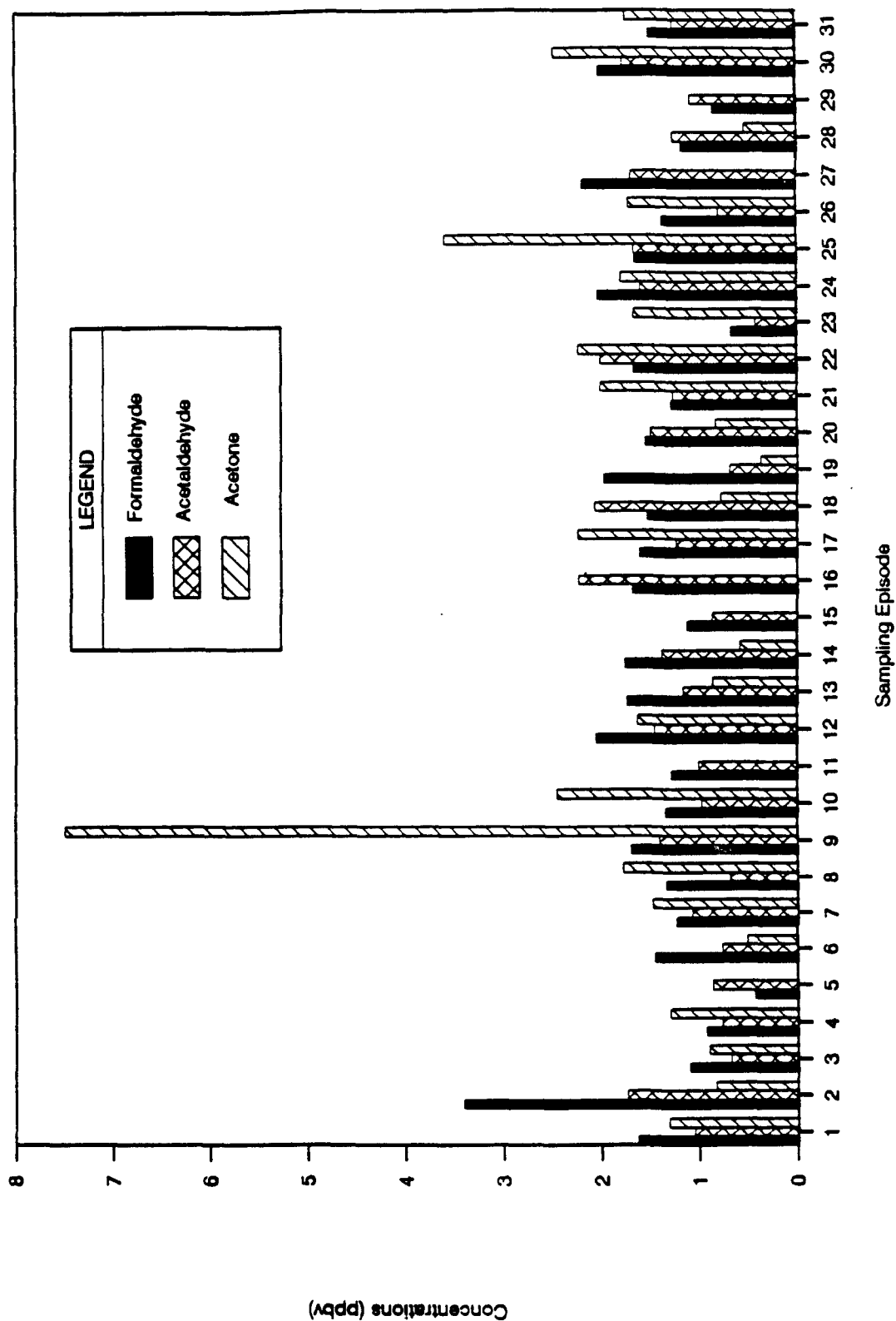


Figure 5-2. Aldehyde Concentration for Baton Rouge, Louisiana

3103919R

C4IL Aldehyde Concentrations

1989 LATMP

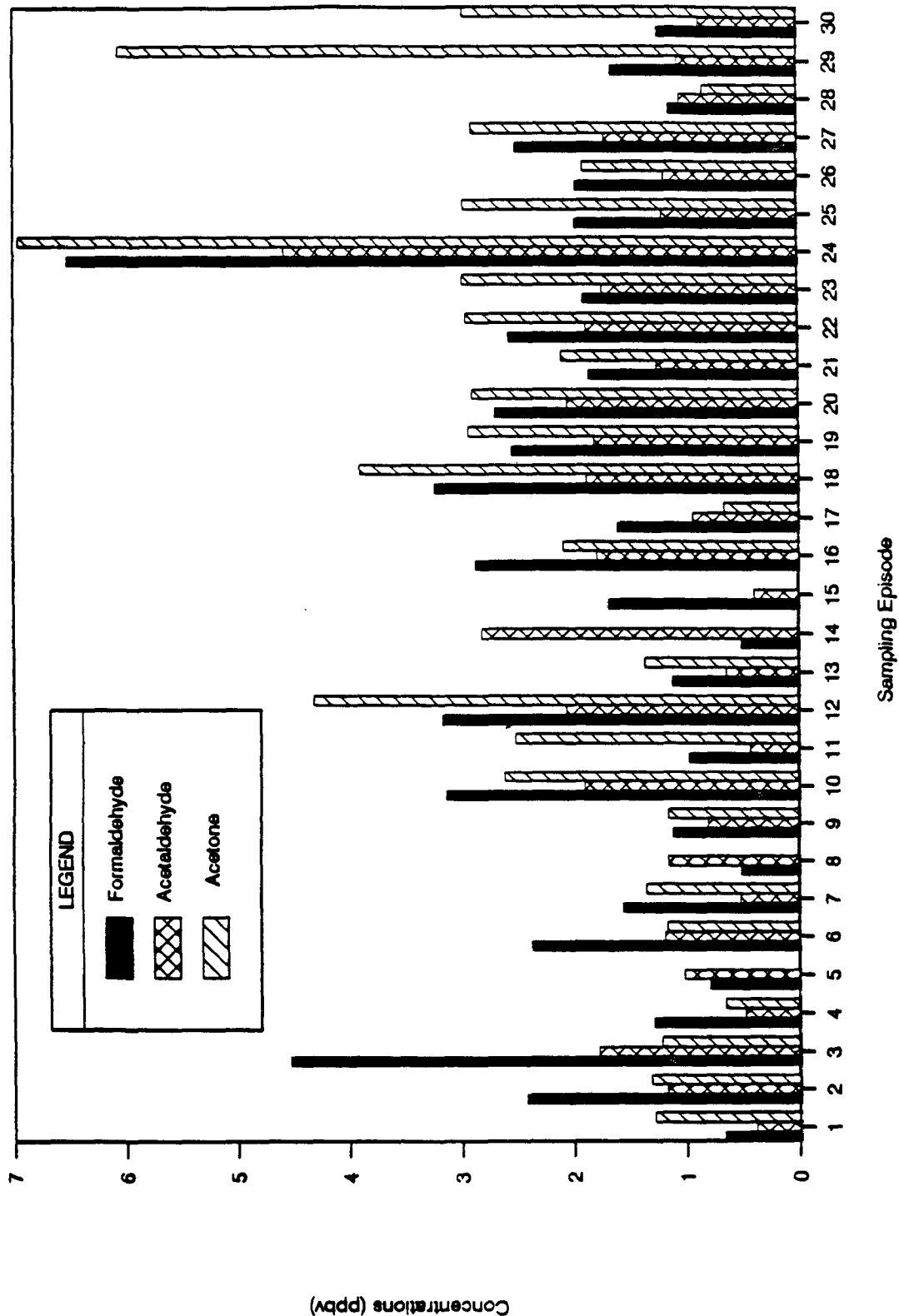


Figure 5-3. Aldehyde Concentration for Chicago, Illinois

31030208

CANJ Aldehyde Concentrations

1989 UATMP

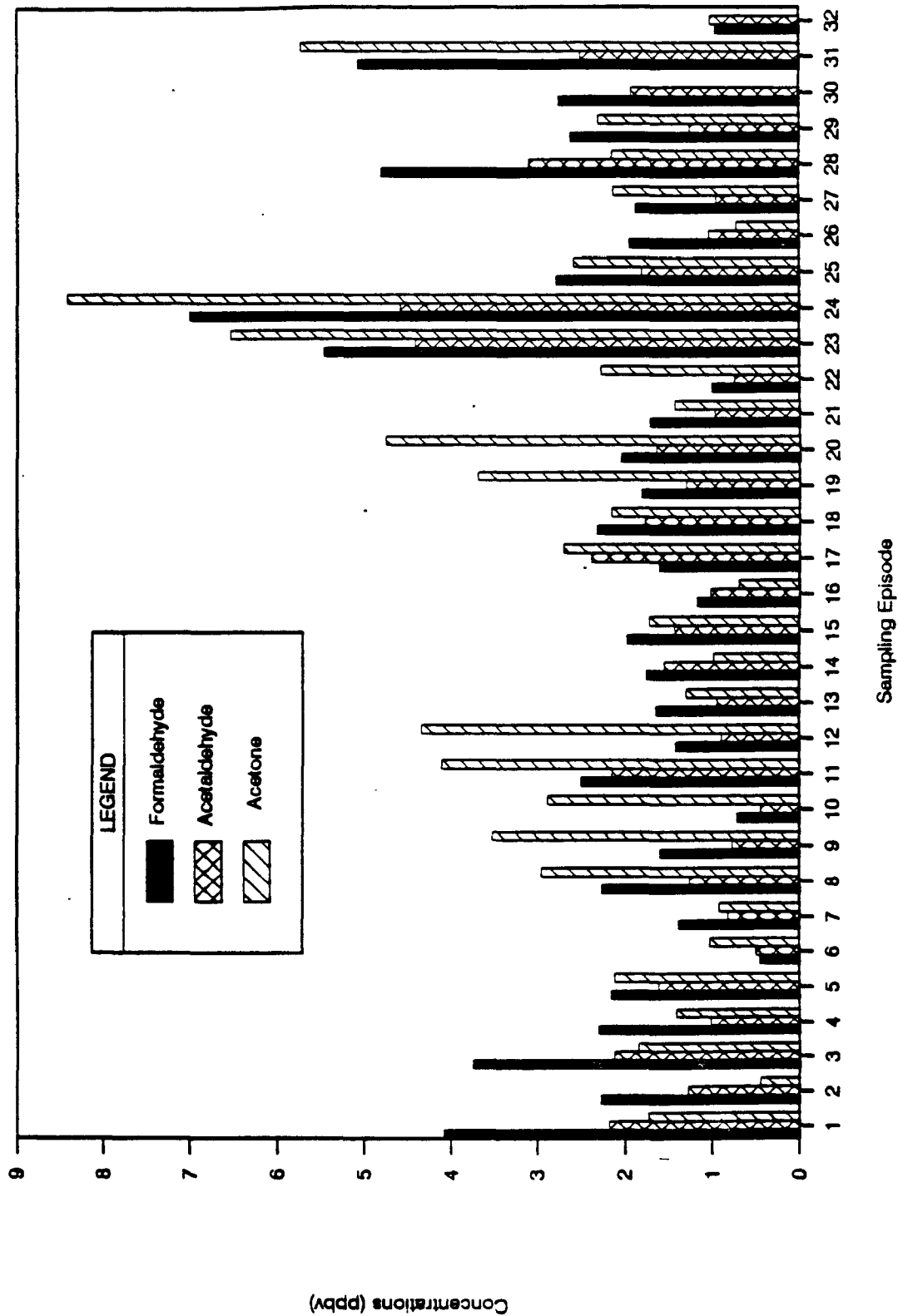


Figure 5-4. Aldehyde Concentration for Camden, New Jersey

DLTX Aldehyde Concentrations

1989 UATMP

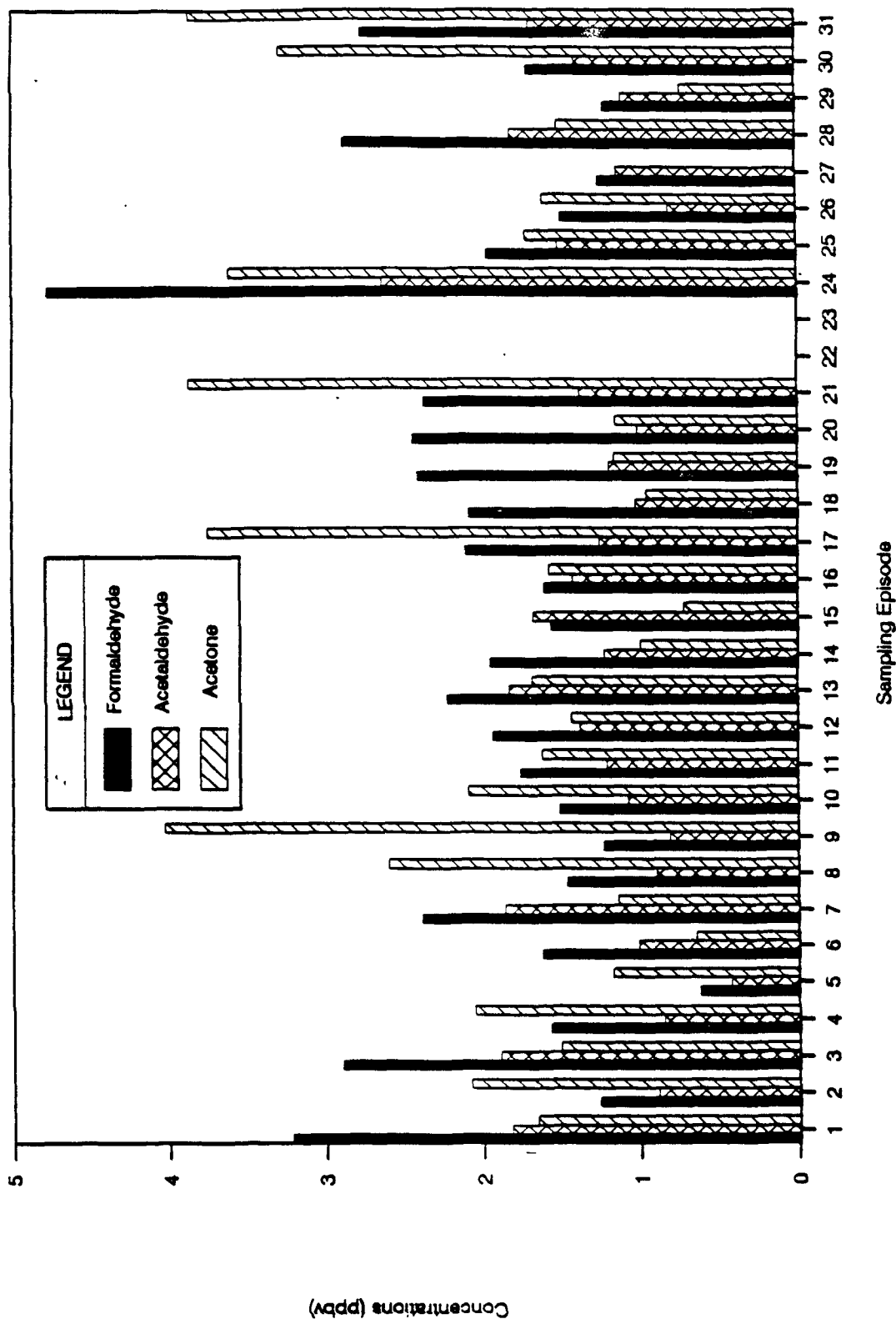


Figure 5-5. Aldehyde Concentration for Dallas, Texas

FLFL Aldehyde Concentrations

1989 LATMP

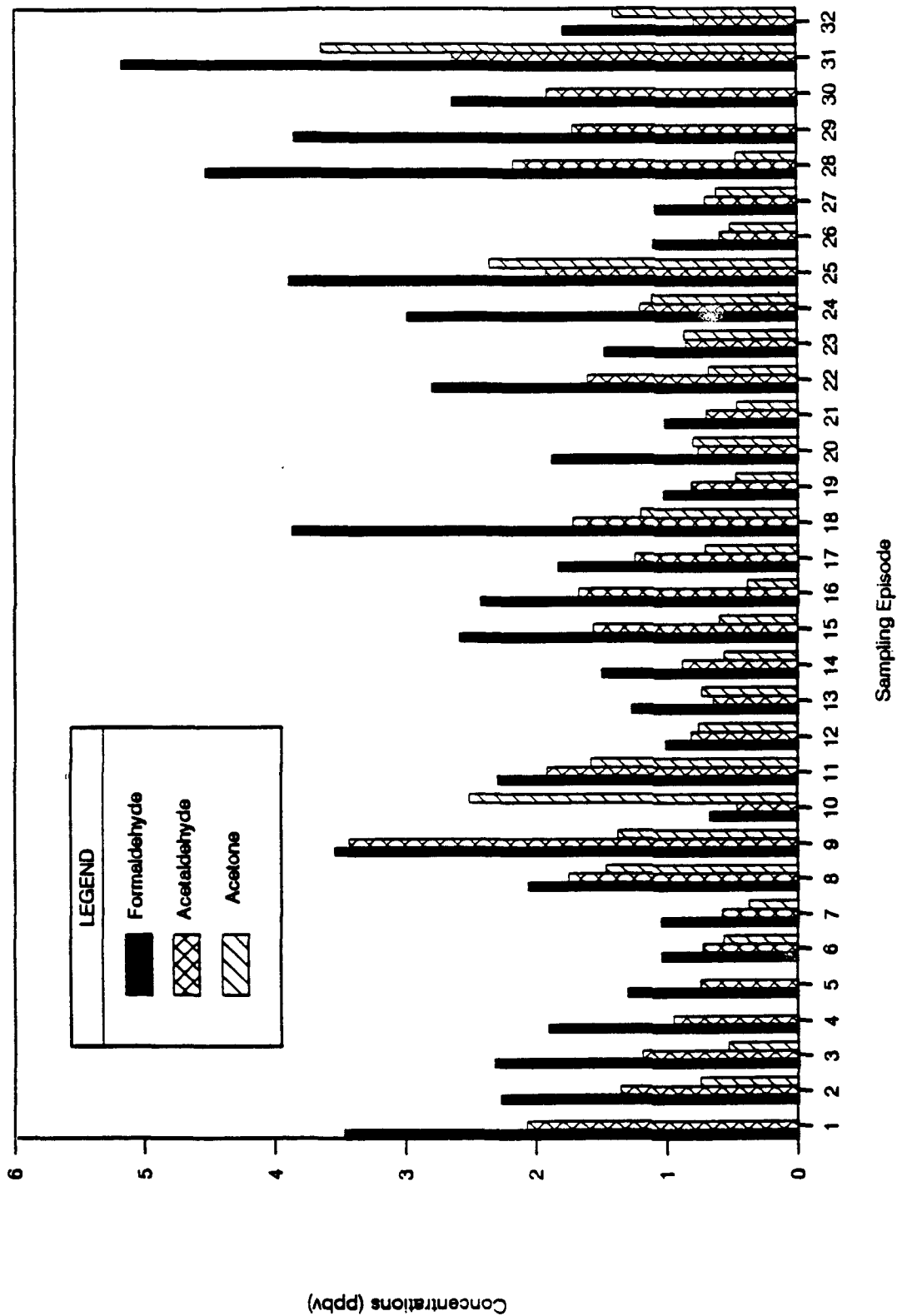


Figure 5-6. Aldehyde Concentration for Fort Lauderdale, Florida

H1TX Aldehyde Concentrations

1989 LUATMP

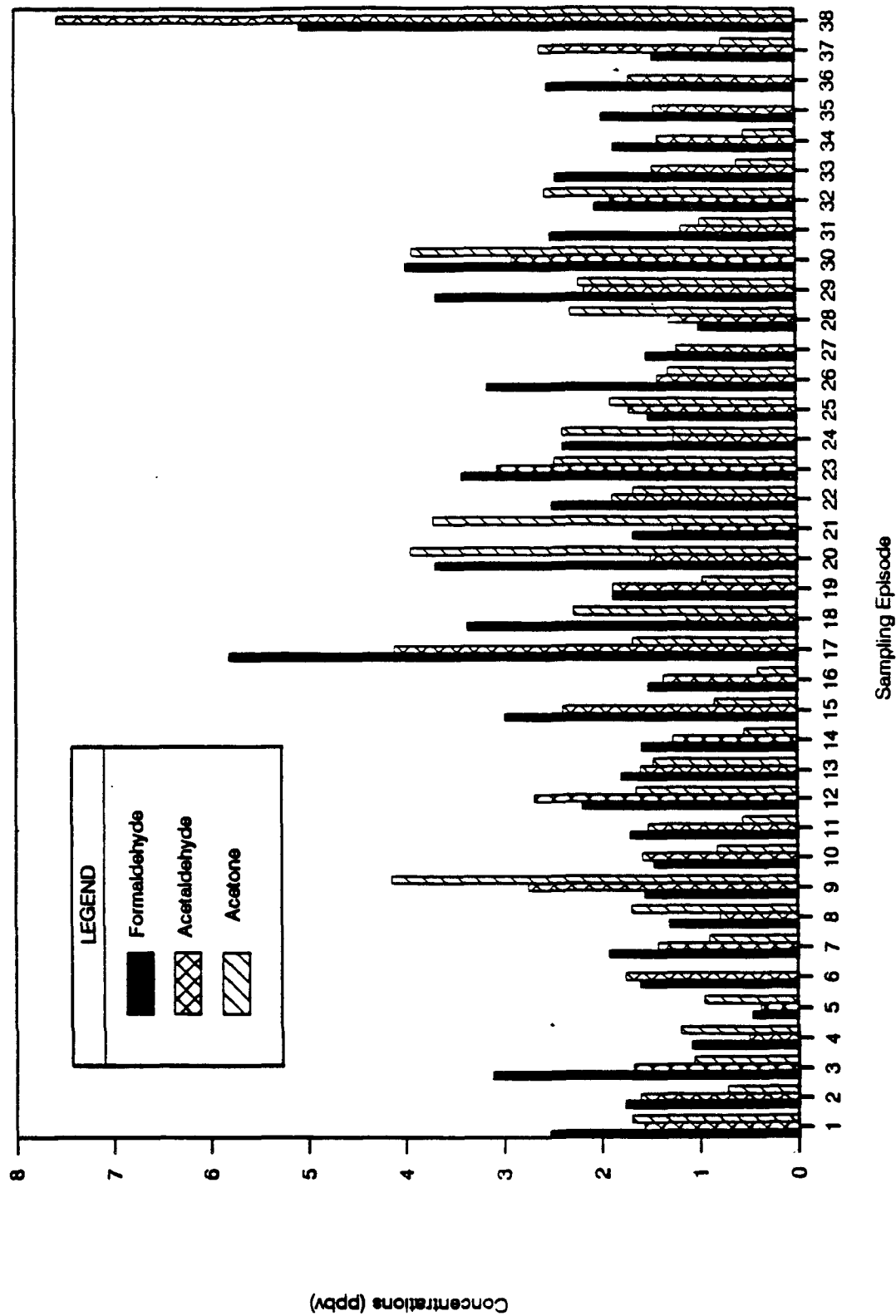


Figure 5-7. Aldehyde Concentration for Houston, Texas - Site 1

3103924R

MIFL Aldehyde Concentrations

1989 LATMP

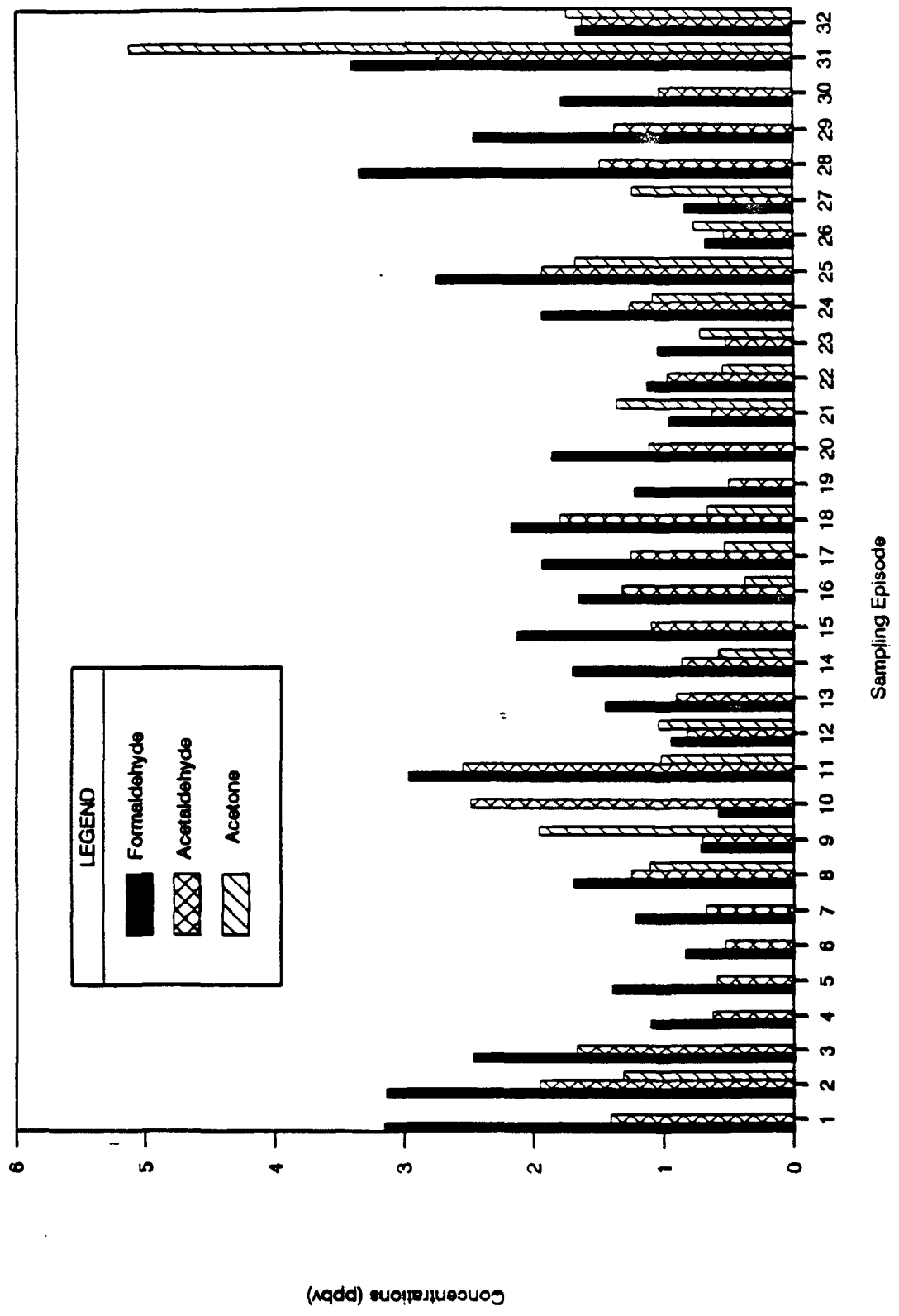


Figure 5-8. Aldehyde Concentration for Miami, Florida

PEFL Aldehyde Concentrations

1989 UATMP

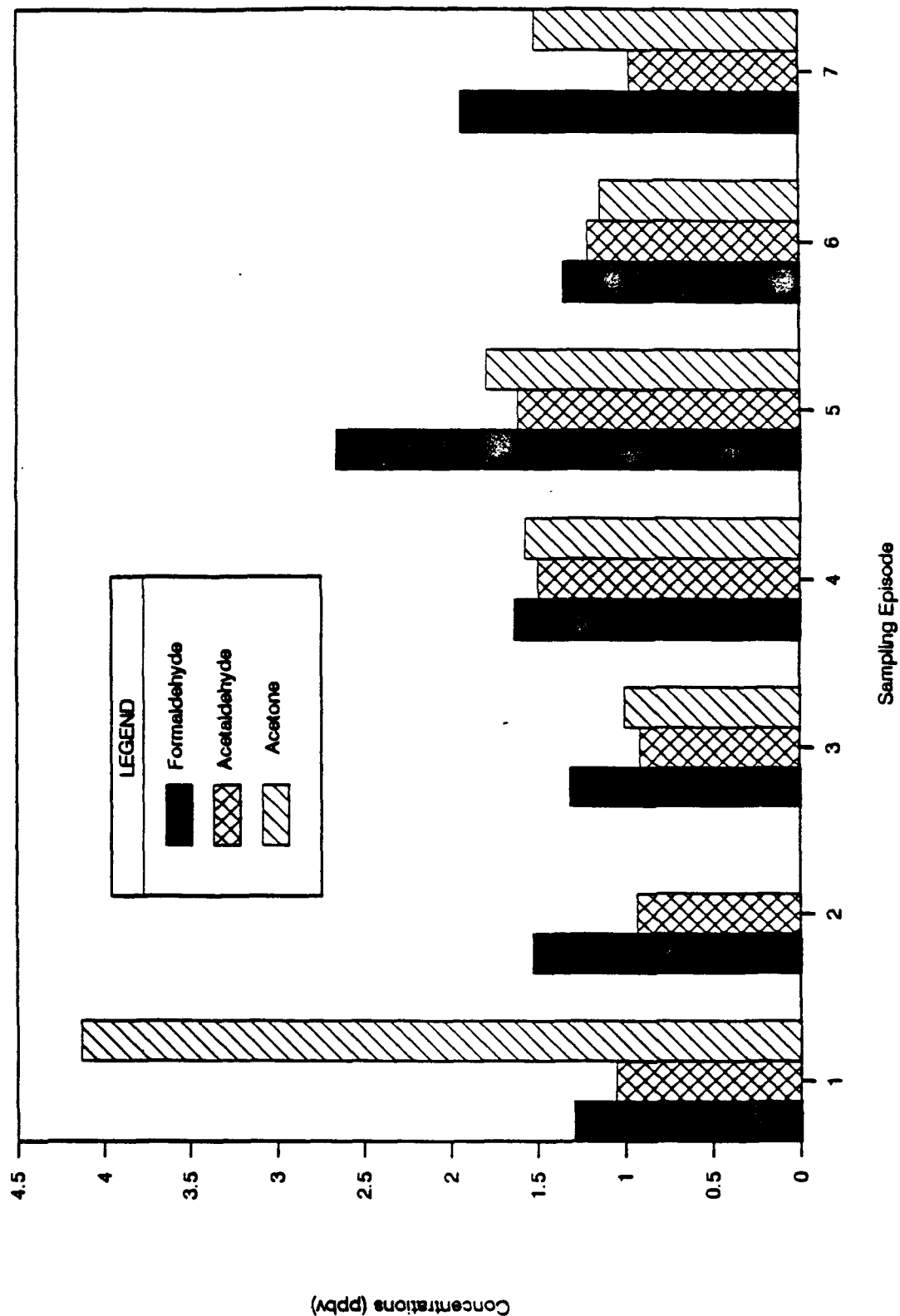


Figure 5-9. Aldehyde Concentration for Pensacola, Florida

3103926R

S2MO Aldehyde Concentrations

1989 UATMP

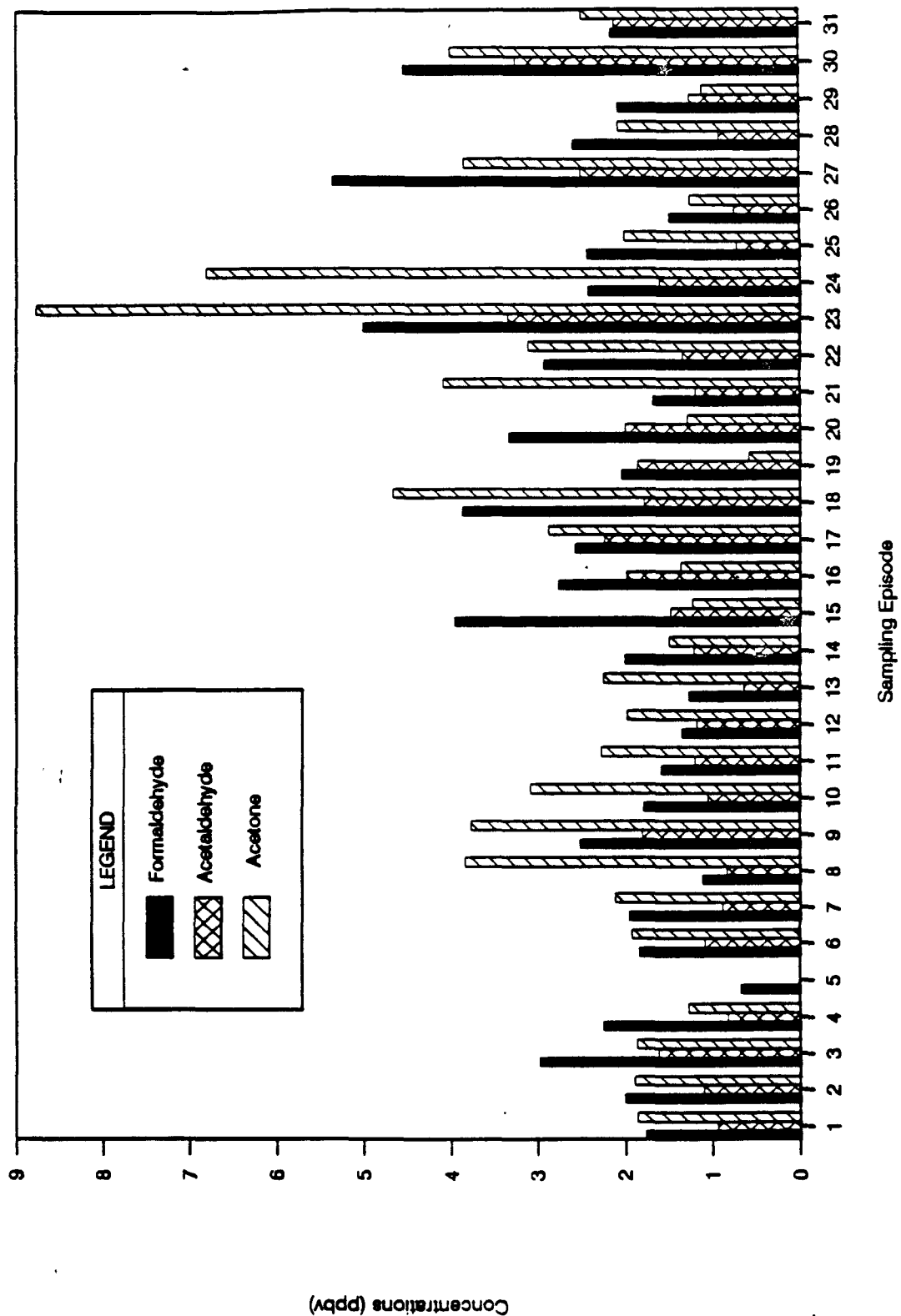


Figure 5-10. Aldehyde Concentration for St. Louis, Missouri

310327R

SAIL Aldehyde Concentrations

1989 UATMP

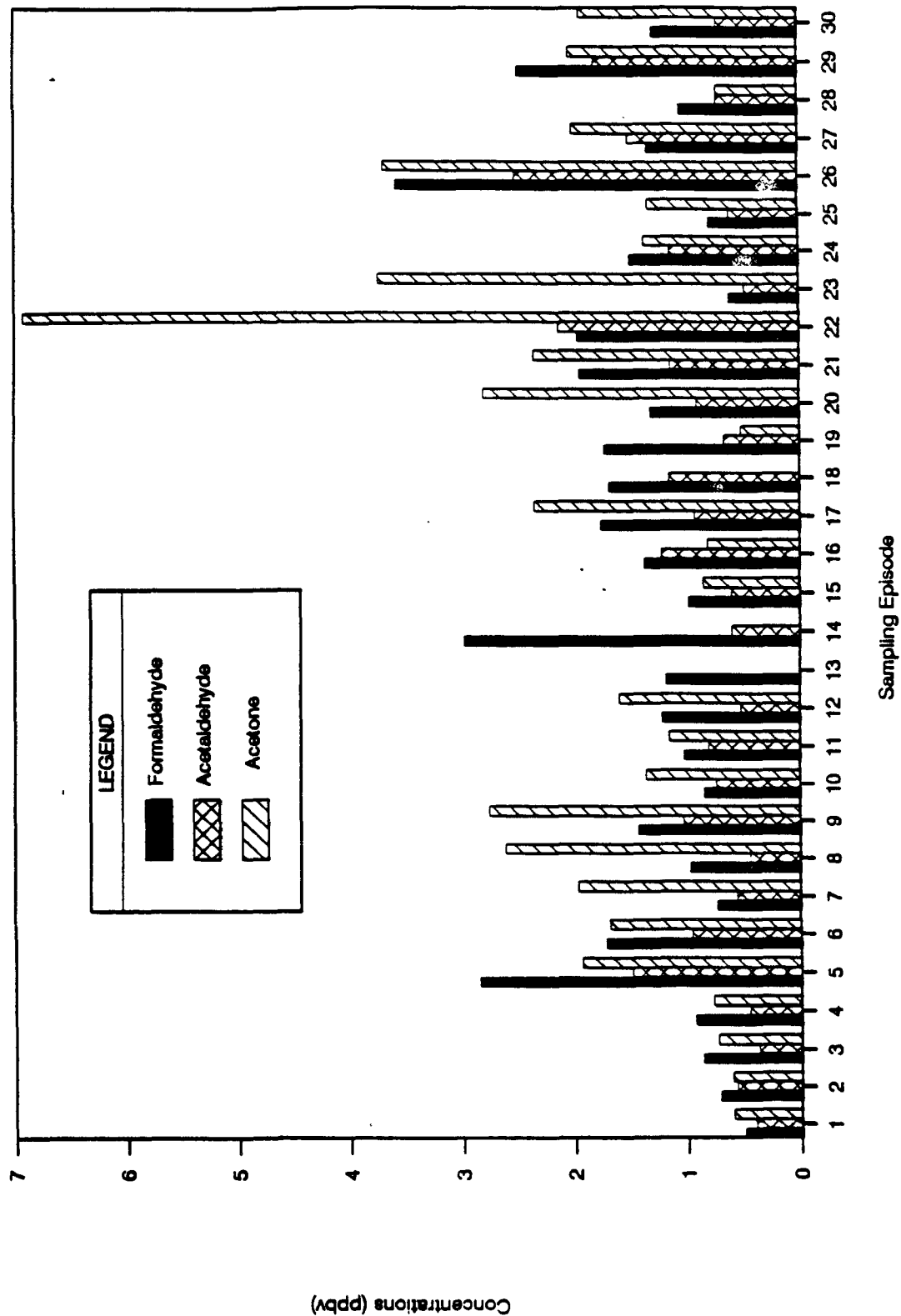


Figure 5-11. Aldehyde Concentration for Sauget, Illinois

W1DC Aldehyde Concentrations

1989 UATMP

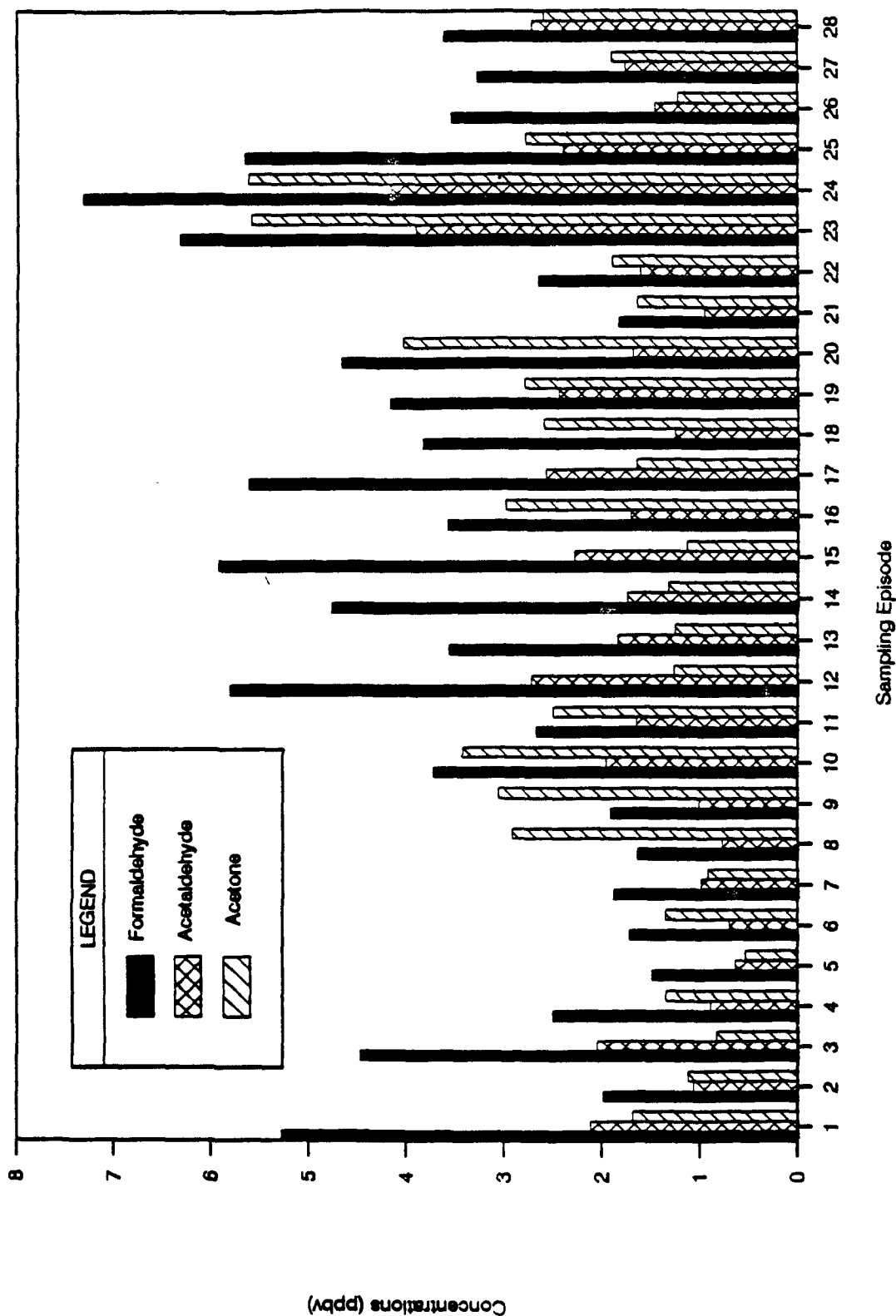


Figure 5-12. Aldehyde Concentration for Washington, D.C. - Site 1

310322R

W1KS Aldehyde Concentrations

1989 UATMP

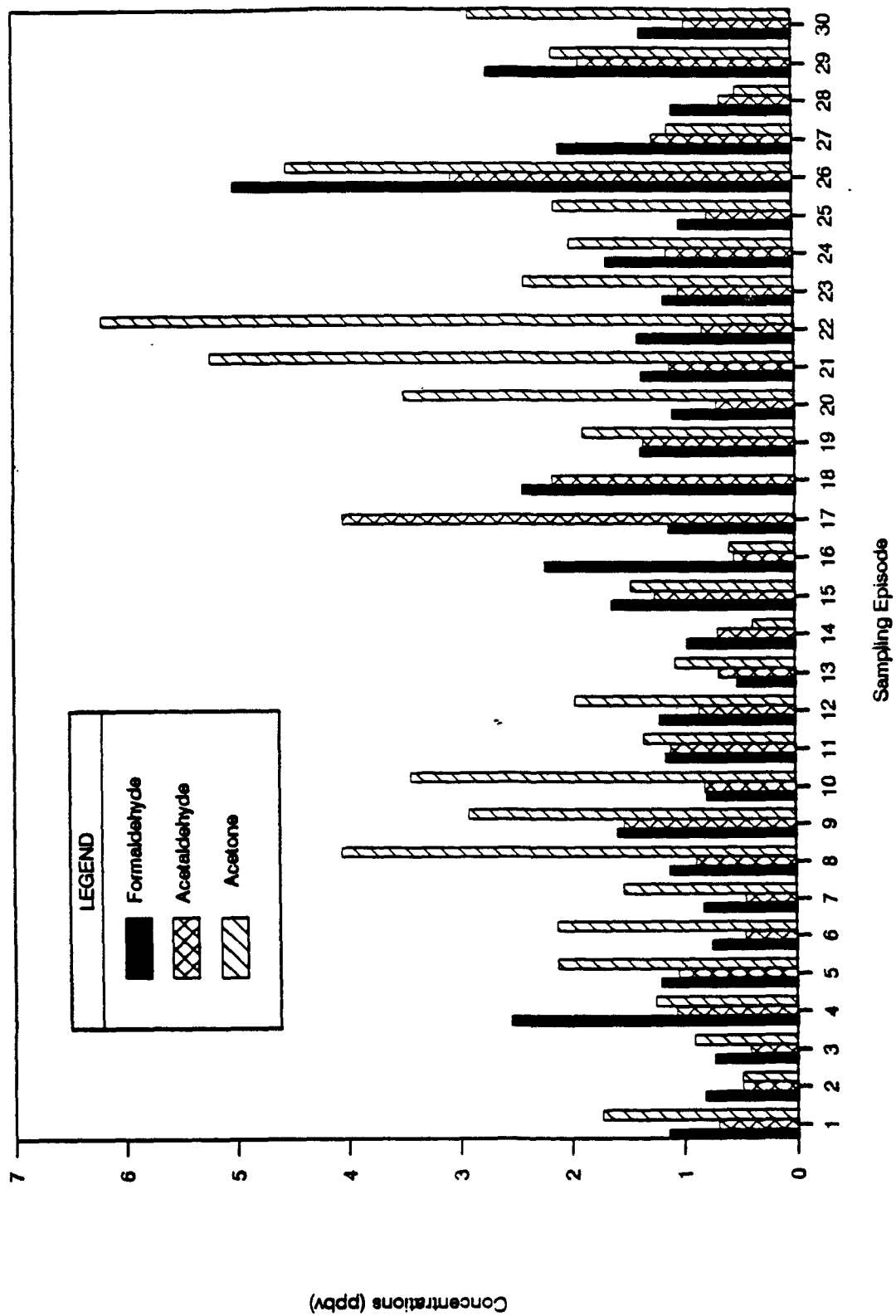


Figure 5-13. Aldehyde Concentration for Wichita, Kansas - Site 1

W2DC Aldehyde Concentrations

1989 UATMP

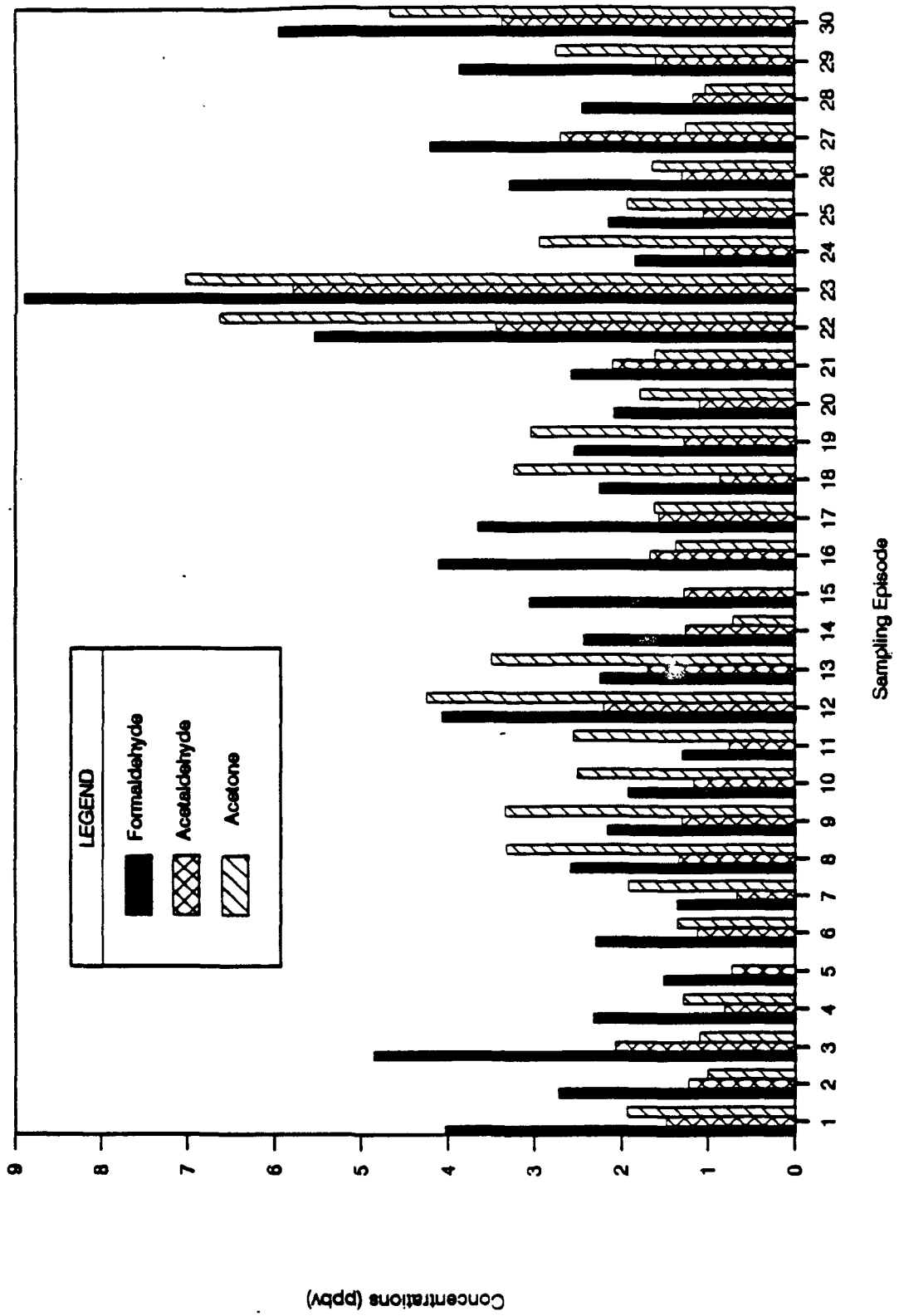


Figure 5-14. Aldehyde Concentration for Washington, D.C. - Site 2

W2KS Aldehyde Concentrations

1989 UATMP

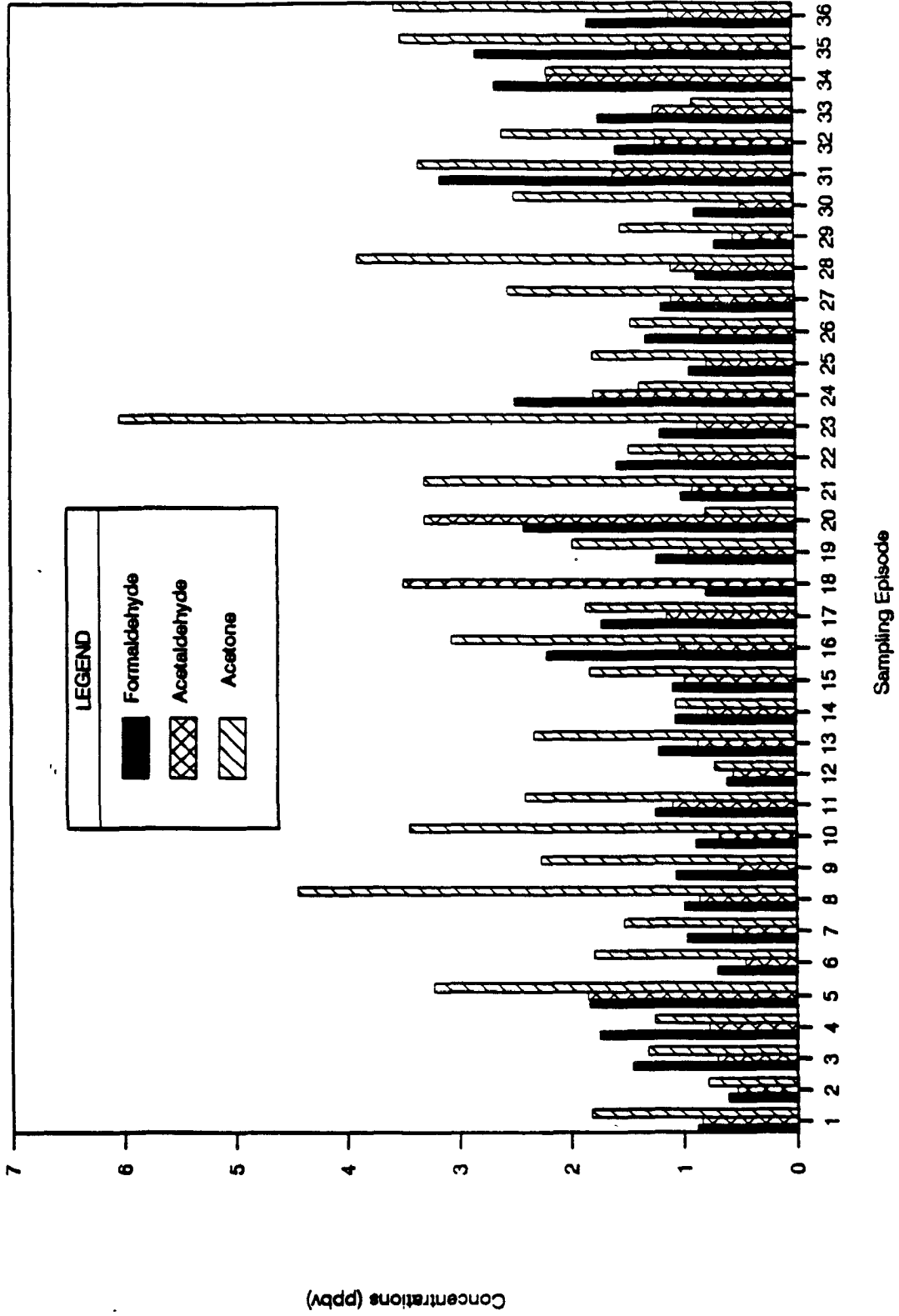


Figure 5-15. Aldehyde Concentration for Wichita, Kansas - Site 2

overall averages may be considered to be annual averages, since the time interval of the study was approximately one year.

5.3 ANALYTICAL RESULTS DATA

Appendix C lists all of the analytical data received from the EPA laboratory. In addition to sample date, week day, and ID NO., the tables show "Lot," which identifies the lot number of the aldehyde cartridge used in obtaining the sample. The aldehyde cartridges were fabricated in lots of about 300 cartridges per lot, and each lot was give a Lot Number in order to identify it uniquely.

Each table in Appendix C contains the analytical results from the indicated site. Concentration and purity data are listed for (duplicate) tube 1, and (duplicate) tube 2. The choice of which duplicate was designated as tube 1, and which was tube 2, was completely arbitrary.

6.0 DATA ANALYSIS

6.1 INTRODUCTION

The UATMP carbonyl data summaries were prepared for two separate, parallel cases that illustrate how summary statistics and analysis results may differ according to the method by which mean concentrations are determined. Four types of concentrations were reported: 1) concentrations > ADL, 2) concentrations < ADL, 3) zero, and 4) missing. Tube concentrations listed as zero were set to missing and excluded from further calculations in both cases. When both tube concentrations were reported by the analytical laboratory below the ADL, the mean concentration was set to "missing" in both cases. In the first case, hereafter referred to as Case 1, a mean concentration was calculated from the two tube concentrations only when both concentrations were above the ADL. When one tube concentration was above the ADL and the other tube concentration was below the ADL, zero, or missing, the tube concentration above the ADL was reported as the mean concentration. For Case 2, a mean concentration was calculated similar to Case 1, however, when one tube concentration was above the ADL and the other tube concentration was below the ADL, a value of one-half the ADL was substituted for the tube concentration below the ADL, and a mean was then calculated from the two tube concentrations. If the other tube concentration, i.e., the one not above the ADL, was zero or missing, the tube concentration above the ADL was reported as the mean concentration. These two cases were applied to all three compounds. The ADL chosen for these two cases were the same for formaldehyde, acetaldehyde, and acetone--0.36 ppbv.

Several statistical summaries and plots were generated to characterize the aldehyde data. Summary statistics, including the means and standard deviations of the normal and lognormal distributions; percentiles; and confidence intervals were calculated by site and over all sites. Box plots and stem-and-leaf plots were constructed visually to represent the data

distributions. The question of seasonality in the aldehyde data was addressed by plotting monthly averages by site to enable a visual determination of potential monthly periodicity of the concentration data. Intercarbonyl correlations and covariances were calculated to demonstrate the relatedness of the compound concentrations. A measure of variability and a measure of precision were calculated for each tube pair when both tube concentrations were above the ADL. Finally, audit sample results were summarized.

6.2 SUMMARY STATISTICS

Summary statistics were calculated by site and compound, as well as over all sites for each compound, for both the mean concentrations and for the mean concentrations of the corresponding lognormal distributions. The natural logarithms were considered because air quality data are often more closely lognormally distributed than normally distributed. These two sets of summary statistics were calculated for both Case 1 and Case 2, resulting in a total of four sets of summary statistics for each compound.

The summary statistics were calculated and stored for use in summary tables by the Statistical Analysis System (SAS®)³ univariate procedure. This procedure provides a test statistic and corresponding probability for the null hypothesis that the data examined are normally distributed. For sample sizes (N) less than or equal to 2000, which is the case for all samples in this report, SAS provides the Shapiro-Wilk statistic, W, against which to test the null hypothesis. For testing at the 95 percent confidence level, the null hypothesis is accepted when the probability of a smaller W is larger than 0.05.

Table 6-1 lists the probabilities for a smaller W for the distributions of the mean concentrations and for the distributions of the natural logarithms of the mean concentrations, by compound, for Case 1 and Case 2. The site code "ALL" refers to the summary over all 1989 field sites. No probabilities are listed for site PEFL, because the sample size is only seven. The sample sizes for the other sites are still only minimal to provide meaningful probability distribution characterizations. The probabilities listed in Table 6-1 support the postulate that the data are more nearly lognormally distributed than normally distributed. The null hypothesis (normally distributed data) is accepted for the distributions of the mean concentrations only 3 times out of 39 for Case 1 and only 7 times out of 39 for Case 2. On the other hand, the null hypothesis is accepted 37 out of 39 times for both

TABLE 6-1. PROBABILITIES FOR A SMALLER W STATISTIC FOR DISTRIBUTIONS OF THE MEAN CONCENTRATIONS AND LOGS OF THE MEAN CONCENTRATIONS

SITE CODE	FORMALDEHYDE DISTRIBUTION					ACETALDEHYDE DISTRIBUTION					ACETONE DISTRIBUTION				
	N	MEAN CONC		LOG OF MEAN CONC		N	MEAN CONC		LOG OF MEAN CONC		N	MEAN CONC		LOG OF MEAN CONC	
		CASE1	CASE2	CASE1	CASE2		CASE1	CASE2	CASE1	CASE2		CASE1	CASE2	CASE1	CASE2
ALL	416	.000	.000	.263*	.566*	406	.000	.000	.181*	.321*	378	.000	.000	.003	.000
BRLA	31	.035	.045	.045	.002	30	.689*	.689*	.513*	.513*	26	.000	.000	.594*	.417*
C4IL	30	.002	.002	.718*	.718*	27	.000	.000	.107*	.202*	29	.001	.001	.258*	.258*
CANJ	32	.000	.001	.644*	.258*	32	.000	.000	.762*	.762*	30	.002	.004	.981*	.635*
DLTX	29	.010	.010	.587*	.587*	29	.291*	.291*	.372*	.372*	28	.001	.001	.149*	.116*
FLFL	32	.024	.024	.337*	.337*	32	.004	.006	.210*	.631*	27	.000	.000	.057*	.404*
H1TX	38	.003	.003	.384*	.384*	38	.000	.000	.016	.016	34	.002	.005	.311*	.361*
H1FL	32	.047	.104*	.345*	.414*	31	.009	.053*	.169*	.686*	19	.000	.000	.775*	.861*
PEFL	7					7					6				
S2MO	31	.017	.034	.821*	.948*	30	.005	.054*	.612*	.760*	30	.000	.000	.809*	.633*
SAIL	30	.004	.004	.946*	.946*	29	.001	.003	.465*	.952*	27	.000	.000	.505*	.815*
W1DC	28	.167*	.167*	.119*	.119*	28	.039	.039	.518*	.518*	28	.002	.004	.724*	.467*
W1KS	30	.000	.000	.300*	.447*	28	.000	.000	.571*	.816*	30	.029	.034	.308*	.257*
W2DC	30	.000	.000	.467*	.287*	30	.000	.000	.090*	.065*	28	.001	.001	.783*	.730*
W2KS	36	.002	.006	.329*	.809*	35	.000	.000	.287*	.322*	36	.029	.071*	.589*	.661*

*Indicates acceptance of normal distribution hypothesis at the 95% confidence level (probability larger than 0.05).

NOTES: N refers to the number of observations from which the probabilities were calculated.

In Case 1, mean concentrations are calculated using detectable tube concentrations only.

In Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

Case 1 and Case 2 for the distributions of the logarithms of the mean concentrations, i.e., supporting the postulate that the data are lognormally distributed.

Tables 6-2, 6-4, 6-6, 6-8, 6-10, and 6-12 list the summary statistics by compound and site. The site mean and standard deviation of the normal distributions are compared to the mean and standard deviation of the lognormal distribution.⁴ Some percentiles are also listed to depict the distribution of the data. Because the sample size for site PEFL is very small, statistics for that site should be interpreted with caution. Figures 6-1, 6-2, and 6-3 show the stem-and-leaf diagrams for formaldehyde, acetaldehyde, and acetone concentrations, using the combined data for all sites. In the stem-and-leaf plots, the concentration data are sorted and plotted from the minimum, at the top of the diagram, to the maximum, at the bottom of the diagram. The stems are shown on the left, and the leaves, shown on the right of the diagram. Each concentration (416 cases in Figure 6-1) is plotted as a digit in the appropriate leaf. The stem-and-leaf plot also shows the location of the stem for the lower and upper hinges (the 25th and 75th percentiles, respectively), as well as the location of the stem for the median (the 50th percentile). Other statistics for each compound are shown in Figures 6-1 through 6-3. The stem-and-leaf plots show that the frequency distributions of the concentration data appear to be consistent with the hypothesis that the concentration data are lognormally distributed.

Tables 6-3, 6-5, 6-7, 6-9, 6-11, and 6-13 list the 95 percent confidence intervals for the lognormal mean and for the median by compound and site. The confidence intervals for the lognormal mean are based on a formula from Aitchison and Brown⁴ and the confidence intervals for the median are based on efficient confidence intervals described by Hoaglin, et al.⁵

6.3 BOX PLOTS

Box plots were constructed to compare, visually, mean sample concentration data distributions between sites. The box plots for the logarithms of the mean concentrations at each site for Case 1 are shown in Figures 6-4, 6-5, and 6-6 for formaldehyde, acetaldehyde, and acetone, respectively. Box plots of the natural logarithms of the mean concentrations are shown, because, as demonstrated in Table 6-1, the logarithms of the concentrations are normally distributed.

TABLE 6-2. SUMMARY ARITHMETIC AND LOGNORMAL STATISTICS IN PPBV FOR MEAN FORMALDEHYDE CONCENTRATIONS: CASE 1^a

SITE CODE	N	NORMAL DIST		LOGNORMAL DIST		PERCENTILES				
		MEAN	STD	MEAN	STD	(MIN) 0th	25th	(MEDIAN) 50th	75th	(MAX) 100th
ALL	416	2.134	1.265	2.133	0.938	0.430	1.260	1.790	2.570	8.905
BRLA	31	1.525	0.539	1.539	0.508	0.430	1.230	1.530	1.745	3.410
C4IL	30	2.073	1.259	2.104	1.050	0.510	1.135	1.855	2.570	6.520
CANJ	32	2.419	1.465	2.442	1.080	0.450	1.605	1.980	2.625	7.005
DLTX	29	2.010	0.799	2.018	0.591	0.625	1.510	1.935	2.390	4.775
FLFL	32	2.243	1.168	2.261	0.921	0.670	1.105	1.910	2.805	5.180
H1TX	38	2.319	1.106	2.337	0.817	0.465	1.565	1.930	2.985	5.805
H1FL	32	1.763	0.837	1.780	0.759	0.575	1.045	1.665	2.180	3.405
PEFL	7	1.674	0.489	1.679	0.349	1.295	1.315	1.530	1.940	2.655
S2MO	31	2.465	1.115	2.480	0.783	0.670	1.770	2.160	2.930	5.365
SAIL	30	1.450	0.737	1.452	0.643	0.505	0.935	1.290	1.740	3.575
W1DC	28	3.768	1.633	3.805	1.016	1.495	1.985	3.580	4.770	7.320
W1KS	30	1.471	0.871	1.458	0.631	0.520	1.015	1.160	1.635	5.015
W2DC	30	3.148	1.607	3.138	0.868	1.300	2.170	2.550	4.040	8.905
W2KS	36	1.409	0.659	1.409	0.575	0.605	0.890	1.200	1.730	3.145

^aIn Case 1, mean concentrations are calculated using detectable-tube concentrations only.TABLE 6-3. 95% CONFIDENCE INTERVALS IN PPBV FOR MEAN FORMALDEHYDE CONCENTRATIONS: CASE 1^a

SITE CODE	MEAN CONFIDENCE INTERVALS			MEDIAN CONFIDENCE INTERVALS		
	LOWER BOUND	LOGNORMAL DIST MEAN	UPPER BOUND	LOWER BOUND	MEDIAN	UPPER BOUND
BRLA	1.360	1.539	1.718	1.326	1.530	1.653
C4IL	1.728	2.104	2.479	1.544	1.855	2.315
CANJ	2.068	2.442	2.816	1.680	1.980	2.418
DLTX	1.803	2.018	2.232	1.666	1.935	2.196
FLFL	1.942	2.261	2.580	1.734	1.910	2.602
H1TX	2.077	2.337	2.597	1.791	1.930	2.423
H1FL	1.517	1.780	2.043	1.412	1.665	2.047
PEFL	1.420	1.679	1.937	1.237	1.530	1.937
S2MO	2.204	2.480	2.755	1.909	2.160	2.624
SAIL	1.222	1.452	1.682	1.120	1.290	1.617
W1DC	3.429	3.805	4.182	3.044	3.580	4.413
W1KS	1.232	1.458	1.683	1.044	1.160	1.421
W2DC	2.827	3.138	3.448	2.347	2.550	3.248
W2KS	1.221	1.409	1.597	1.098	1.200	1.522

^aIn Case 1, mean concentrations are calculated using detectable tube concentrations only.

TABLE 6-6. SUMMARY ARITHMETIC AND LOGNORMAL STATISTICS IN PPBV FOR MEAN FORMALDEHYDE CONCENTRATIONS: CASE 2^a

SITE CODE	N	NORMAL DIST		LOGNORMAL DIST		PERCENTILES				
		MEAN	STD	MEAN	STD	(MIN) 0th	25th	(MEDIAN) 50th	75th	(MAX) 100th
ALL	416	2.122	1.270	2.126	0.967	0.305	1.240	1.785	2.550	8.905
BRLA	31	1.521	0.548	1.546	0.571	0.305	1.230	1.530	1.745	3.410
C4IL	30	2.073	1.259	2.104	1.050	0.510	1.135	1.855	2.570	6.520
CANJ	32	2.414	1.471	2.462	1.169	0.315	1.605	1.980	2.625	7.005
DLTX	29	2.010	0.799	2.018	0.591	0.625	1.510	1.935	2.390	4.775
FLFL	32	2.243	1.168	2.261	0.921	0.670	1.105	1.910	2.805	5.180
H1TX	38	2.319	1.106	2.337	0.817	0.465	1.565	1.930	2.985	5.805
M1FL	32	1.755	0.849	1.783	0.819	0.430	1.045	1.665	2.180	3.405
PEFL	7	1.591	0.592	1.612	0.528	0.765	1.295	1.530	1.940	2.655
S2MO	31	2.410	1.163	2.428	0.856	0.670	1.595	2.160	2.930	5.365
SAIL	30	1.450	0.737	1.452	0.643	0.505	0.935	1.290	1.740	3.575
W10C	28	3.768	1.633	3.805	1.016	1.495	1.985	3.580	4.770	7.320
W1KS	30	1.461	0.882	1.451	0.672	0.500	1.015	1.160	1.635	5.015
W20C	30	3.090	1.619	3.075	0.866	1.300	2.155	2.455	4.040	8.905
W2KS	36	1.403	0.667	1.408	0.617	0.395	0.890	1.200	1.730	3.145

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

TABLE 6-5. 95% CONFIDENCE INTERVALS IN PPBV FOR MEAN FORMALDEHYDE CONCENTRATIONS: CASE 2^a

SITE CODE	MEAN CONFIDENCE INTERVALS			MEDIAN CONFIDENCE INTERVALS		
	LOWER BOUND	LOGNORMAL DIST MEAN	UPPER BOUND	LOWER BOUND	MEDIAN	UPPER BOUND
BRLA	1.345	1.546	1.747	1.327	1.530	1.654
C4IL	1.728	2.104	2.479	1.544	1.855	2.315
CANJ	2.057	2.462	2.867	1.675	1.980	2.420
DLTX	1.803	2.018	2.232	1.666	1.935	2.196
FLFL	1.942	2.261	2.580	1.734	1.910	2.602
H1TX	2.077	2.337	2.597	1.791	1.930	2.423
M1FL	1.499	1.783	2.066	1.402	1.665	2.046
PEFL	1.221	1.612	2.003	1.030	1.530	2.044
S2MO	2.127	2.428	2.730	1.877	2.160	2.686
SAIL	1.222	1.452	1.682	1.120	1.290	1.617
W10C	3.429	3.805	4.182	3.044	3.580	4.413
W1KS	1.211	1.451	1.691	1.026	1.160	1.422
W20C	2.765	3.075	3.385	2.235	2.455	3.096
W2KS	1.207	1.408	1.610	1.090	1.200	1.522

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

TABLE 6-6. SUMMARY ARITHMETIC AND LOGNORMAL STATISTICS IN PPBV FOR MEAN ACETALDEHYDE CONCENTRATIONS: CASE 1^a

SITE CODE	N	NORMAL DIST		LOGNORMAL DIST		PERCENTILES				
		MEAN	STD	MEAN	STD	(MIN) 0th	25th	(MEDIAN) 50th	75th	(MAX) 100th
ALL	406	1.372	0.811	1.367	0.697	0.370	0.830	1.205	1.710	7.565
BRLA	30	1.249	0.458	1.259	0.483	0.410	0.860	1.230	1.600	2.225
C4IL	27	1.360	0.850	1.379	0.859	0.390	0.805	1.190	1.810	4.575
CANJ	32	1.606	0.981	1.606	0.813	0.440	0.945	1.275	1.930	4.585
DLTX	29	1.317	0.454	1.325	0.446	0.420	1.015	1.225	1.670	2.630
FLFL	32	1.313	0.692	1.318	0.671	0.455	0.740	1.190	1.715	3.435
H1TX	38	1.862	1.189	1.857	0.801	0.375	1.300	1.575	1.885	7.565
MIFL	31	1.170	0.591	1.175	0.608	0.500	0.630	1.100	1.490	2.740
PEFL	7	1.166	0.283	1.170	0.258	0.910	0.930	1.050	1.495	1.610
S2ND	30	1.489	0.698	1.490	0.590	0.630	0.935	1.210	1.860	3.345
SAIL	29	0.937	0.531	0.935	0.559	0.370	0.565	0.740	1.150	2.515
W1DC	28	1.823	0.880	1.839	0.753	0.640	1.005	1.715	2.285	4.160
W1KS	28	0.985	0.534	0.981	0.502	0.410	0.680	0.850	1.110	3.050
W2DC	30	1.636	1.049	1.613	0.704	0.665	1.090	1.285	1.695	5.790
W2KS	35	1.041	0.561	1.035	0.505	0.450	0.700	0.905	1.140	3.295

^a In Case 1, mean concentrations are calculated using detectable tube concentrations only.

TABLE 6-7. 95% CONFIDENCE INTERVALS IN PPBV FOR MEAN ACETALDEHYDE CONCENTRATIONS: CASE 2^a

SITE CODE	MEAN CONFIDENCE INTERVALS			MEDIAN CONFIDENCE INTERVALS		
	LOWER BOUND	LOGNORMAL DIST MEAN	UPPER BOUND	LOWER BOUND	MEDIAN	UPPER BOUND
BRLA	1.086	1.259	1.431	1.067	1.230	1.419
C4IL	1.055	1.379	1.703	1.008	1.190	1.553
CANJ	1.324	1.606	1.888	1.119	1.275	1.620
DLTX	1.163	1.325	1.487	1.116	1.225	1.464
FLFL	1.086	1.318	1.551	1.028	1.190	1.512
H1TX	1.602	1.857	2.111	1.400	1.575	1.807
MIFL	0.961	1.175	1.389	0.926	1.100	1.354
PEFL	0.979	1.170	1.361	0.864	1.050	1.398
S2ND	1.279	1.490	1.702	1.152	1.210	1.641
SAIL	0.731	0.935	1.138	0.668	0.740	1.017
W1DC	1.560	1.839	2.118	1.441	1.715	2.122
W1KS	0.795	0.981	1.167	0.744	0.850	1.027
W2DC	1.361	1.613	1.866	1.130	1.285	1.528
W2KS	0.868	1.035	1.202	0.797	0.905	1.054

^a In Case 1, mean concentrations are calculated using detectable tube concentrations only.

TABLE 6-8. SUMMARY ARITHMETIC AND LOGNORMAL STATISTICS IN PPBV FOR MEAN ACETALDEHYDE CONCENTRATIONS: CASE 2^a

SITE CODE	N	NORMAL DIST		LOGNORMAL DIST		PERCENTILES				
		MEAN	STD	MEAN	STD	(MIN) 0th	25th	(MEDIAN) 50th	75th	(MAX) 100th
ALL	406	1.360	0.819	1.361	0.746	0.275	0.820	1.200	1.705	7.565
BRLA	30	1.249	0.458	1.259	0.483	0.410	0.860	1.230	1.600	2.225
C4IL	27	1.356	0.854	1.384	0.908	0.285	0.805	1.190	1.810	4.575
CANJ	32	1.606	0.981	1.606	0.813	0.440	0.945	1.275	1.930	4.585
DLTX	29	1.317	0.454	1.325	0.446	0.420	1.015	1.225	1.670	2.630
FLFL	32	1.278	0.686	1.284	0.682	0.385	0.740	1.125	1.715	3.435
H1TX	38	1.862	1.189	1.857	0.801	0.375	1.300	1.575	1.885	7.565
H1FL	31	1.159	0.605	1.172	0.678	0.340	0.630	1.100	1.490	2.740
PEFL	7	1.166	0.283	1.170	0.258	0.910	0.930	1.050	1.495	1.610
S2MO	30	1.446	0.745	1.465	0.752	0.405	0.915	1.210	1.860	3.345
SA1L	30	0.989	0.653	0.989	0.716	0.275	0.555	0.740	1.155	2.960
SA1L	29	0.922	0.546	0.925	0.629	0.275	0.555	0.740	1.150	2.515
W10C	28	1.823	0.880	1.839	0.753	0.640	1.005	1.715	2.285	4.160
W1KS	28	0.975	0.545	0.978	0.564	0.295	0.680	0.850	1.110	3.050
W20C	30	1.613	1.059	1.588	0.713	0.665	1.040	1.270	1.695	5.790
W2KS	35	1.024	0.581	1.028	0.609	0.315	0.700	0.905	1.140	3.295

^a In Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

TABLE 6-9. 95% CONFIDENCE INTERVALS IN PPBV FOR MEAN ACETALDEHYDE CONCENTRATIONS: CASE 2^a

SITE CODE	MEAN CONFIDENCE INTERVALS			MEDIAN CONFIDENCE INTERVALS		
	LOWER BOUND	LOGNORMAL DIST MEAN	UPPER BOUND	LOWER BOUND	MEDIAN	UPPER BOUND
BRLA	1.086	1.259	1.431	1.067	1.230	1.419
C4IL	1.041	1.384	1.726	1.002	1.190	1.552
CANJ	1.324	1.606	1.888	1.119	1.275	1.620
DLTX	1.163	1.325	1.487	1.116	1.225	1.464
FLFL	1.048	1.284	1.520	0.985	1.125	1.451
H1TX	1.602	1.857	2.111	1.400	1.575	1.807
H1FL	0.933	1.172	1.411	0.911	1.100	1.351
PEFL	0.979	1.170	1.361	0.864	1.050	1.398
S2MO	1.196	1.465	1.734	1.095	1.210	1.634
SA1L	0.696	0.925	1.154	0.655	0.740	1.035
W10C	1.560	1.839	2.118	1.441	1.715	2.122
W1KS	0.769	0.978	1.187	0.730	0.850	1.027
W20C	1.333	1.588	1.843	1.119	1.270	1.538
W2KS	0.826	1.028	1.230	0.773	0.905	1.055

^a In Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

TABLE 6-10. SUMMARY ARITHMETIC AND LOGNORMAL STATISTICS IN PPBV FOR MEAN ACETONE CONCENTRATIONS: CASE 1^a

SITE CODE	N	NORMAL DIST		LOGNORMAL DIST		PERCENTILES				
		MEAN	STD	MEAN	STD	(MIN) 0th	25th	(MEDIAN) 50th	75th	(MAX) 100th
ALL	378	2.078	1.426	2.093	1.204	0.370	1.095	1.715	2.700	8.765
BRLA	26	1.689	1.408	1.682	1.094	0.370	0.825	1.480	2.000	7.490
C4IL	29	2.383	1.508	2.406	1.157	0.655	1.225	2.100	2.950	6.950
CANJ	30	2.654	1.845	2.708	1.464	0.440	1.410	2.155	3.525	8.425
DLTX	28	1.935	1.058	1.944	0.861	0.645	1.155	1.610	2.090	4.025
FLFL	27	1.015	0.768	0.997	0.719	0.370	0.530	0.730	1.375	3.645
H1TX	34	1.699	1.074	1.723	1.057	0.400	0.835	1.470	2.290	4.140
H1FL	19	1.332	1.070	1.317	0.878	0.370	0.660	1.085	1.680	5.125
PEFL	6	1.856	1.151	1.865	0.775	1.000	1.135	1.510	1.790	4.130
S2MO	30	2.706	1.748	2.710	1.126	0.580	1.490	2.085	3.770	8.765
SAIL	27	1.898	1.352	1.911	1.114	0.515	0.810	1.690	2.355	6.920
W1DC	28	2.214	1.300	2.231	1.003	0.530	1.255	1.690	2.790	5.625
W1KS	30	2.266	1.444	2.354	1.423	0.370	1.255	1.985	2.915	6.200
W2DC	28	2.546	1.584	2.551	1.088	0.710	1.355	1.920	3.235	7.030
W2KS	36	2.314	1.167	2.337	0.909	0.710	1.460	1.975	3.220	6.030

^a In Case 1, mean concentrations are calculated using detectable tube concentrations only.

TABLE 6-11. 95% CONFIDENCE INTERVALS IN PPBV FOR MEAN ACETONE CONCENTRATIONS: CASE 1^a

SITE CODE	MEAN CONFIDENCE INTERVALS			MEDIAN CONFIDENCE INTERVALS		
	LOWER BOUND	LOGNORMAL DIST MEAN	UPPER BOUND	LOWER BOUND	MEDIAN	UPPER BOUND
BRLA	1.261	1.682	2.102	1.110	1.480	1.769
C4IL	1.985	2.406	2.827	1.706	2.100	2.734
CANJ	2.184	2.708	3.231	1.743	2.155	2.864
DLTX	1.626	1.944	2.263	1.337	1.610	2.164
FLFL	0.726	0.997	1.268	0.615	0.730	0.979
H1TX	1.368	1.723	2.078	1.248	1.470	2.004
H1FL	0.923	1.317	1.712	0.784	1.085	1.418
PEFL	1.245	1.865	2.485	1.057	1.510	1.759
S2MO	2.307	2.710	3.112	1.878	2.085	2.831
SAIL	1.491	1.911	2.331	1.323	1.690	2.167
W1DC	1.859	2.231	2.603	1.573	1.690	2.536
W1KS	1.844	2.354	2.863	1.629	1.985	2.671
W2DC	2.148	2.551	2.954	1.750	1.920	2.817
W2KS	2.040	2.337	2.633	1.797	1.975	2.567

^a In Case 1, mean concentrations are calculated using detectable tube concentrations only.

TABLE 6-12. SUMMARY ARITHMETIC AND LOGNORMAL STATISTICS IN PPBV FOR MEAN ACETONE CONCENTRATIONS: CASE 2^a

SITE CODE	N	NORMAL DIST		LOGNORMAL DIST		PERCENTILES				
		MEAN	STD	MEAN	STD	(MIN) 0th	25th	(MEDIAN) 50th	75th	(MAX) 100th
ALL	378	2.052	1.445	2.093	1.347	0.275	1.060	1.690	2.700	8.765
BRLA	26	1.672	1.424	1.700	1.290	0.275	0.825	1.480	2.000	7.490
C4IL	29	2.383	1.508	2.406	1.157	0.655	1.225	2.100	2.950	6.950
CANJ	30	2.627	1.875	2.750	1.756	0.310	1.410	2.155	3.525	8.425
DLTX	28	1.917	1.075	1.932	0.909	0.645	1.155	1.610	2.090	4.025
FLFL	27	0.984	0.792	0.978	0.876	0.275	0.460	0.730	1.375	3.645
H1TX	34	1.684	1.091	1.736	1.211	0.290	0.835	1.470	2.290	4.140
M1FL	19	1.291	1.102	1.300	1.098	0.275	0.545	1.085	1.680	5.125
PEFL	6	1.856	1.151	1.865	0.775	1.000	1.135	1.510	1.790	4.130
S2MO	30	2.638	1.796	2.669	1.295	0.380	1.285	2.010	3.770	8.765
SAIL	27	1.856	1.371	1.872	1.174	0.445	0.810	1.605	2.355	6.920
W1DC	28	2.203	1.314	2.235	1.085	0.505	1.255	1.690	2.790	5.625
W1KS	30	2.225	1.469	2.346	1.593	0.275	1.150	1.955	2.915	6.200
W2DC	28	2.520	1.605	2.530	1.138	0.710	1.285	1.920	3.235	7.030
W2KS	36	2.305	1.179	2.343	0.981	0.490	1.460	1.975	3.220	6.030

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

TABLE 6-13. 95% CONFIDENCE INTERVALS IN PPBV FOR MEAN ACETONE CONCENTRATIONS: CASE 2^a

SITE CODE	MEAN CONFIDENCE INTERVALS			MEDIAN CONFIDENCE INTERVALS		
	LOWER BOUND	LOG NORM DIST MEAN	UPPER BOUND	LOWER BOUND	MEDIAN	UPPER BOUND
BRLA	1.204	1.700	2.196	1.084	1.480	1.766
C4IL	1.985	2.406	2.827	1.706	2.100	2.734
CANJ	2.121	2.750	3.378	1.701	2.155	2.863
DLTX	1.595	1.932	2.269	1.309	1.610	2.161
FLFL	0.648	0.978	1.309	0.597	0.730	1.062
H1TX	1.329	1.736	2.143	1.228	1.470	1.998
M1FL	0.806	1.300	1.794	0.721	1.085	1.459
PEFL	1.245	1.865	2.485	1.057	1.510	1.759
S2MO	2.206	2.669	3.133	1.768	2.010	2.763
SAIL	1.429	1.872	2.315	1.248	1.605	2.086
W1DC	1.833	2.235	2.637	1.555	1.690	2.532
W1KS	1.776	2.346	2.916	1.567	1.955	2.628
W2DC	2.108	2.530	2.951	1.713	1.920	2.802
W2KS	2.023	2.343	2.664	1.785	1.975	2.567

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

```

0 44455 555
0 66666 66667 77777 77777 7
0 88888 88888 89999 99999 9999
1 00000 00000 00000 00011 11111 11111 11111 1
1 H 22222 22222 22222 22222 22333 33333 33333 33333 3
1 44444 44444 44455 55555 55555 55555 555
1 M 66666 66666 66666 66666 66667 77777 77777 77777 77777
1 88888 88888 88888 99999 99999 99999 99999 9
2 00000 00000 00011 11111 11
2 22222 22223 33333 3333
2 H 44444 44444 44444 55555 55555 55555 5
2 66666 66677 77777
2 88888 89999 99
3 01111 111
3 22223 33
3 44445 5555
3 66667 7
3 88888 899
4 00011
4 2
4 455
4 56778 8
5 00001 23456 68899
6 35
7 03
8 9

```

Formaldehyde Concentrations, ppbv

Cases	416
Mean	2.134
Standard Deviation	1.265
Minimum	0.430
Lower Hinge (H) 25th percentile	1.265
Median (M) 50th percentile	1.795
Upper Hinge (H) 75th percentile	2.573
Maximum	8.905

Figure 6-1. Stem-and-leaf plot for all formaldehyde concentrations.

```

0      3333
0      44444 44444 44444 44555 55555 55555 55555 5
0      66666 66666 66666 66666 66667 77777 77777 77777 777
0 M    88888 88888 88888 88888 88888 88888 88999 99999 99999 99999 9999
1      00000 00000 00000 00000 00000 00000 00001 11111 11111 11111 11111 111
1 M    22222 22222 22222 22222 22222 22222 22222 22222 23333 33333 33333 3
1      44444 44444 44444 44555 55555 555
1 M    66666 66666 66666 66666 66667 77777 77777 77777 77
1      88888 88888 88888 88899 99999 99
2      00000 00011 11111 111
2      22223 33
2      45555 5
2      66667 7777
2      8
3      00122 33449
4      11455
5      7
7      5

```

Acetaldehyde Concentrations, ppbv	
Cases	406
Mean	1.372
Standard Deviation	0.811
Minimum	0.370
Lower Hinge (H) 25th percentile	0.830
Median (M) 50th percentile	1.205
Upper Hinge (H) 75th percentile	1.710
Maximum	7.565

Figure 6-2. Stem-and-leaf plot for all acetaldehyde concentrations.

```

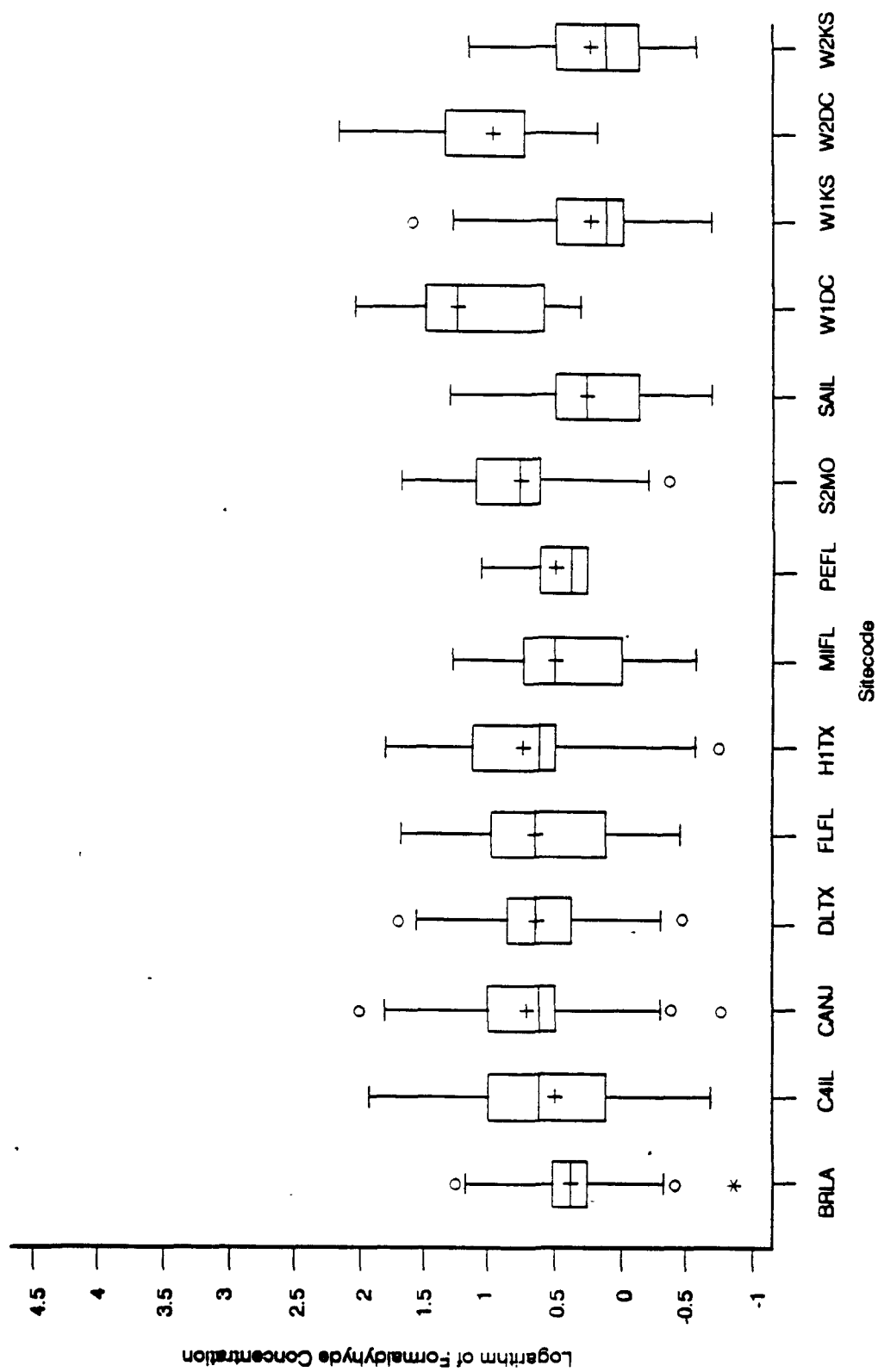
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0      44444 45555 55555 55555 55555 55
0      66666 66677 77777 77777 77777 77
0      88888 88888 88899 99999 99999
1 H    00000 00000 00111 11111 11111 111
1      22222 22222 22222 33333 33333 33333 33
1      44444 44444 45555 55555
1 M    66666 66666 66666 66667 77777 77777 77
1      88888 88888 89999 99999 99999
2      00000 00001 11111 11111 1
2      22222 22223 33333
2      44444 44455 55555 55555
2 H    66777 77
3      88888 99999 99999 99
3      00000 1
3      22223 33
3      44444 45555
3      66667 777
3      88888 999
4      00000 0111
4      233
4      45
4      667
5      12567
6      00256 899
7      04
8      47

```

Acetone Concentrations, ppbv

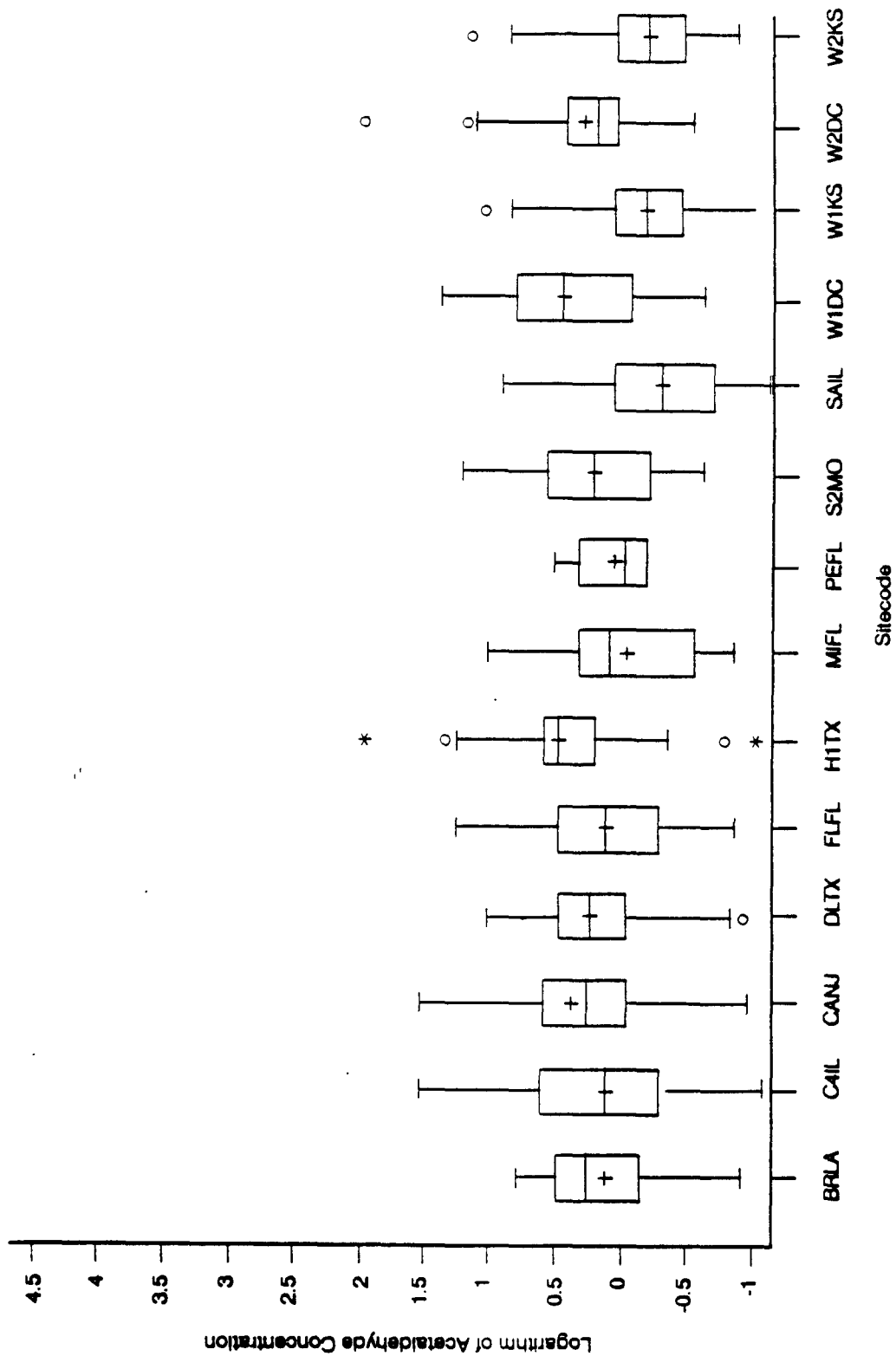
Cases	378
Mean	2.078
Standard Deviation	1.426
Minimum	0.370
Lower Hinge (H) 25th percentile	1.095
Median (M) 50th percentile	1.718
Upper Hinge (H) 75th percentile	2.700
Maximum	8.765

Figure 6-3. Stem-and-leaf plot for all acetone concentrations.



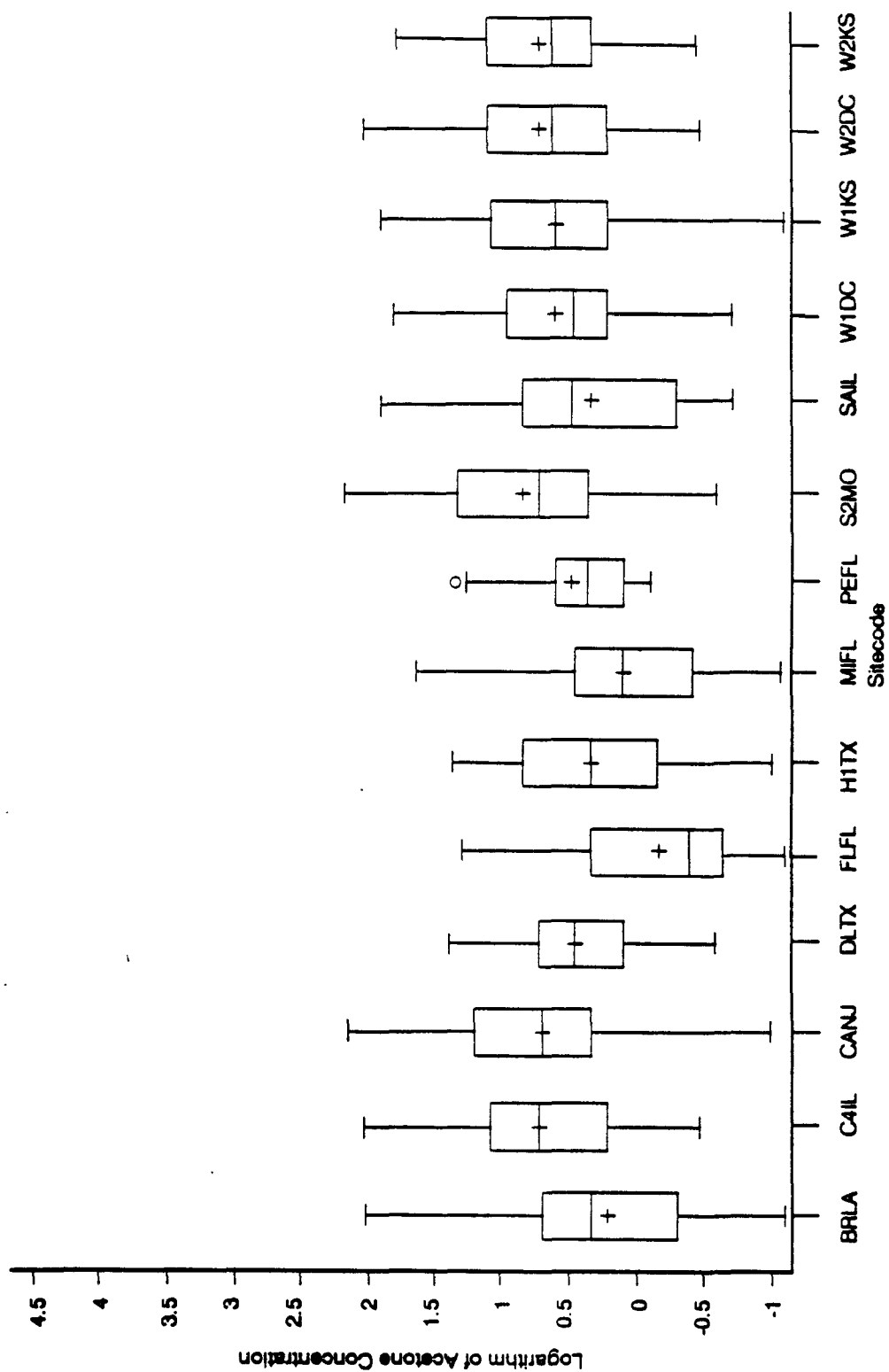
¹ In Case 1, mean concentrations are calculated using detectable tube concentrations only.

Figure 6-4. Formaldehyde Box Plots for Case 1¹



* In Case 1, mean concentrations are calculated using detectable tube concentrations only.

Figure 6-5. Acetaldehyde Box Plots for Case 1¹



¹ In Case 1, mean concentrations are calculated using detectable tube concentrations only.

Figure 6-6. Acetone Box Plots for Case 1¹

The top and bottom of the box are called hinges, and are located such that the lower hinge represents the 25th percentile and the upper hinge represents the 75th percentile. The median is represented by a line that splits the box into two pieces (not necessarily in the middle of the box) and the mean is indicated by a plus (+). The F-spread is defined as the difference between the 75th and 25th percentiles. "Whiskers" extend on either side of the box where data exist to a distance of up to 1.5 times the F-spread. Data located between 1.5 and 3 times the F-spread are indicated by a circle, while data values more extreme than 3 times the F-spread are indicated by an asterisk (*). Box plots are similar to stem-and-leaf plots in visually presenting a frequency distribution.

The box plots appear approximately symmetrical which further supports the postulate that the data are lognormally distributed.

6.4 SEASONALITY

Only a crude analysis can be made of aldehyde seasonality for this report because several years' data are needed for an accurate representation, and the aldehyde data set contain just one year's worth of data. However, by plotting monthly arithmetic mean concentrations by site and over all sites, and by examining the results from several analysis of variance (ANOVA) models, the 1989 aldehyde data may be generally characterized.

Figure 6-7 shows monthly overall average concentrations for formaldehyde, acetaldehyde, and acetone at all sites in the 1989 UATMP. Figures 6-8, 6-9, and 6-10 display the monthly arithmetic means by site for the formaldehyde data. For most of the sites, concentration data were obtained in January 1989 and January 1990 (see Appendices B and C). The January monthly averages plotted in Figures 6-7 through 6-10 include averages from January 1989 and January 1990. Since there is considerable scatter in the total data set, three plots are needed to minimize overlap between individual sites. The overall monthly means are shown on all three plots (Figures 6-8, 6-9, and 6-10) and are displayed using the box symbol. The data for site PEFL is not plotted because of the few number of observations and resulting gaps between months.

The plots show a considerable variability between sites; however, some patterns do emerge. For instance, nearly all sites show a local minimum concentration in March, and a local maximum concentration in October. In most

SELECTED CARBONYL MONTHLY VARIATION

1989 UATMP

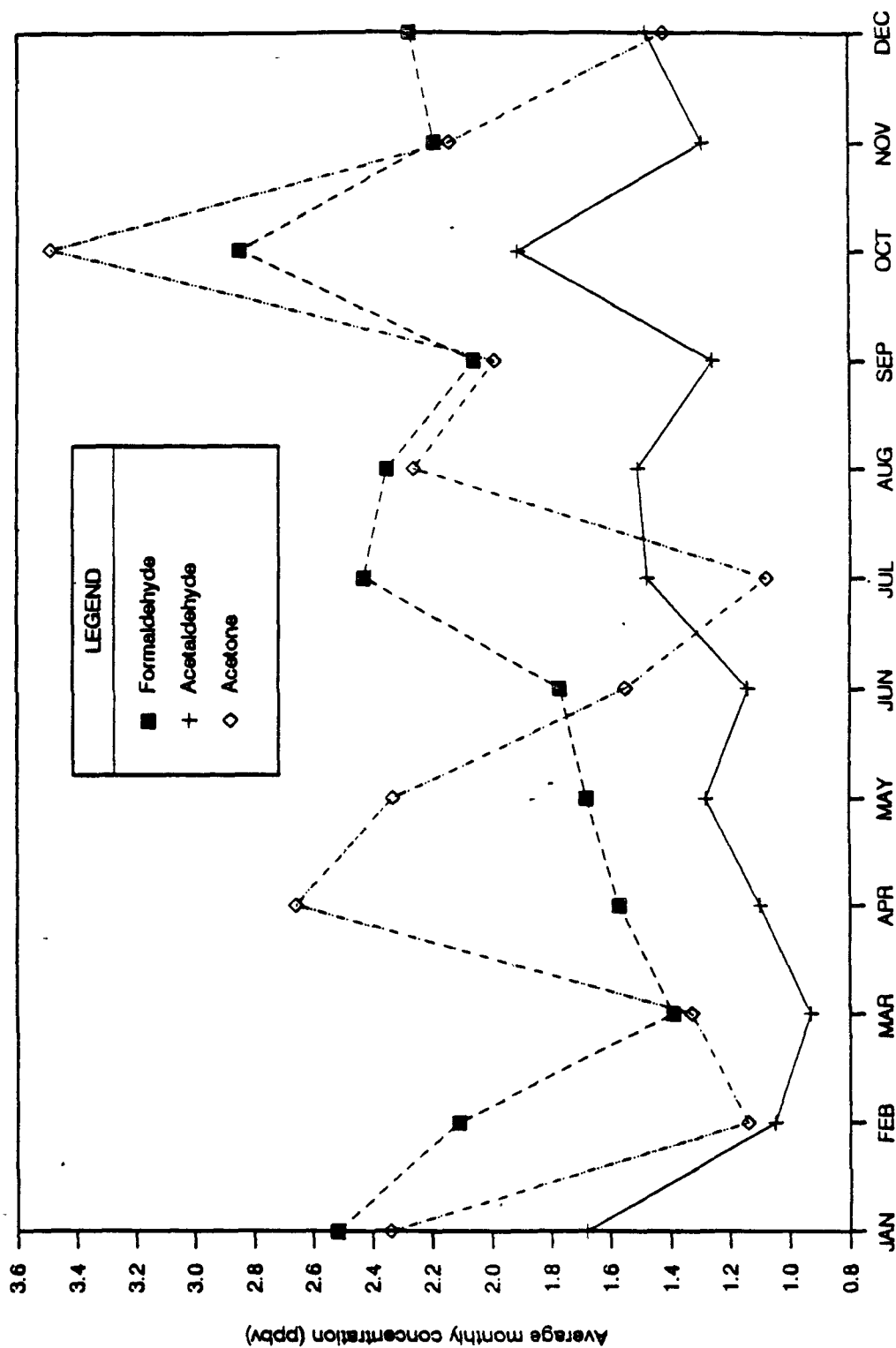


Figure 6-7. Formaldehyde, Acetaldehyde, and Acetone Monthly Concentrations
All Sites

FORMALDEHYDE MONTHLY VARIATION

1989 UATMP

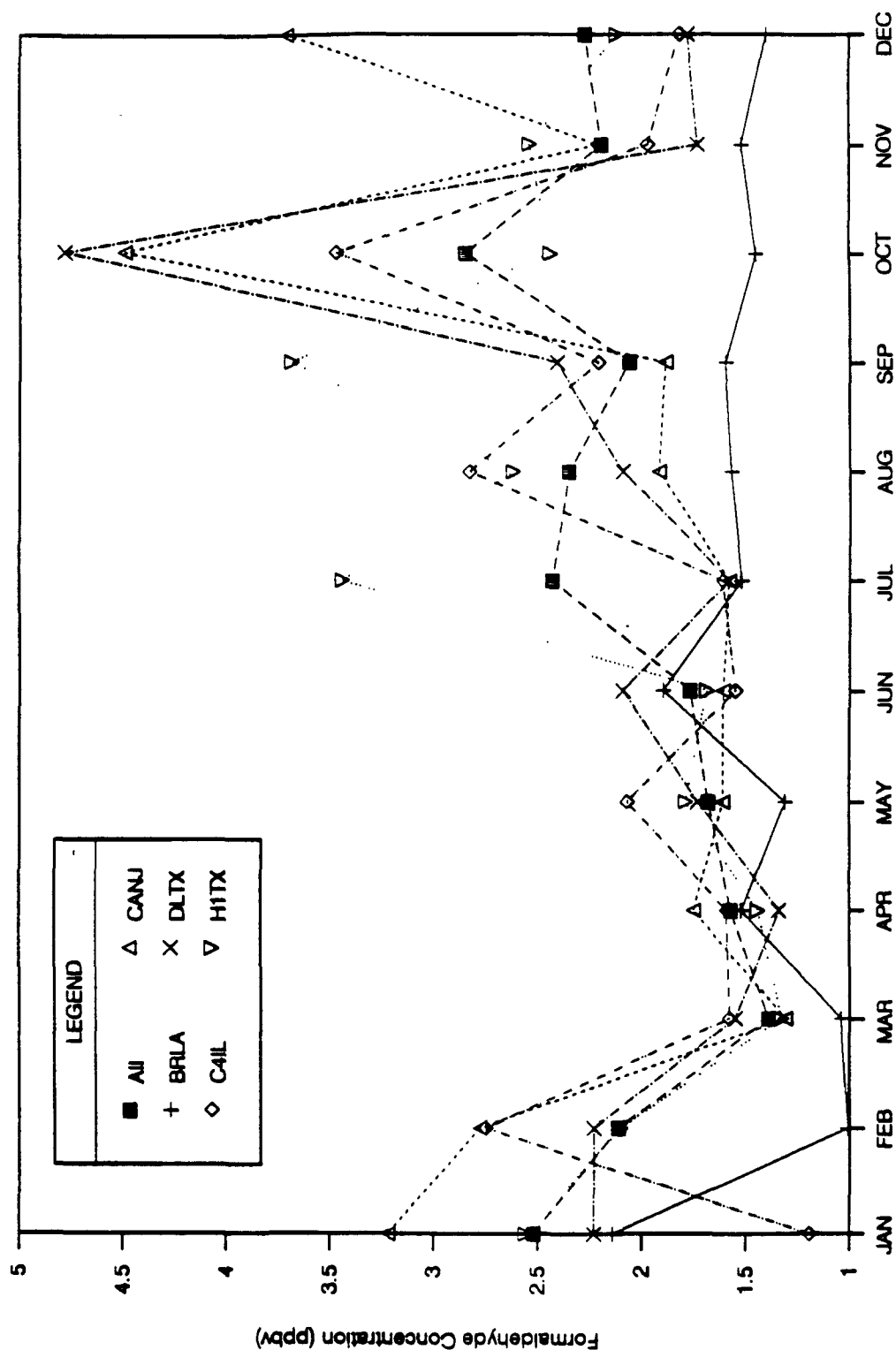


Figure 6-8. Formaldehyde Concentration Monthly Variation for 1989 for Selected Sites - Group 1

FORMALDEHYDE MONTHLY VARIATION

1989 UATMP

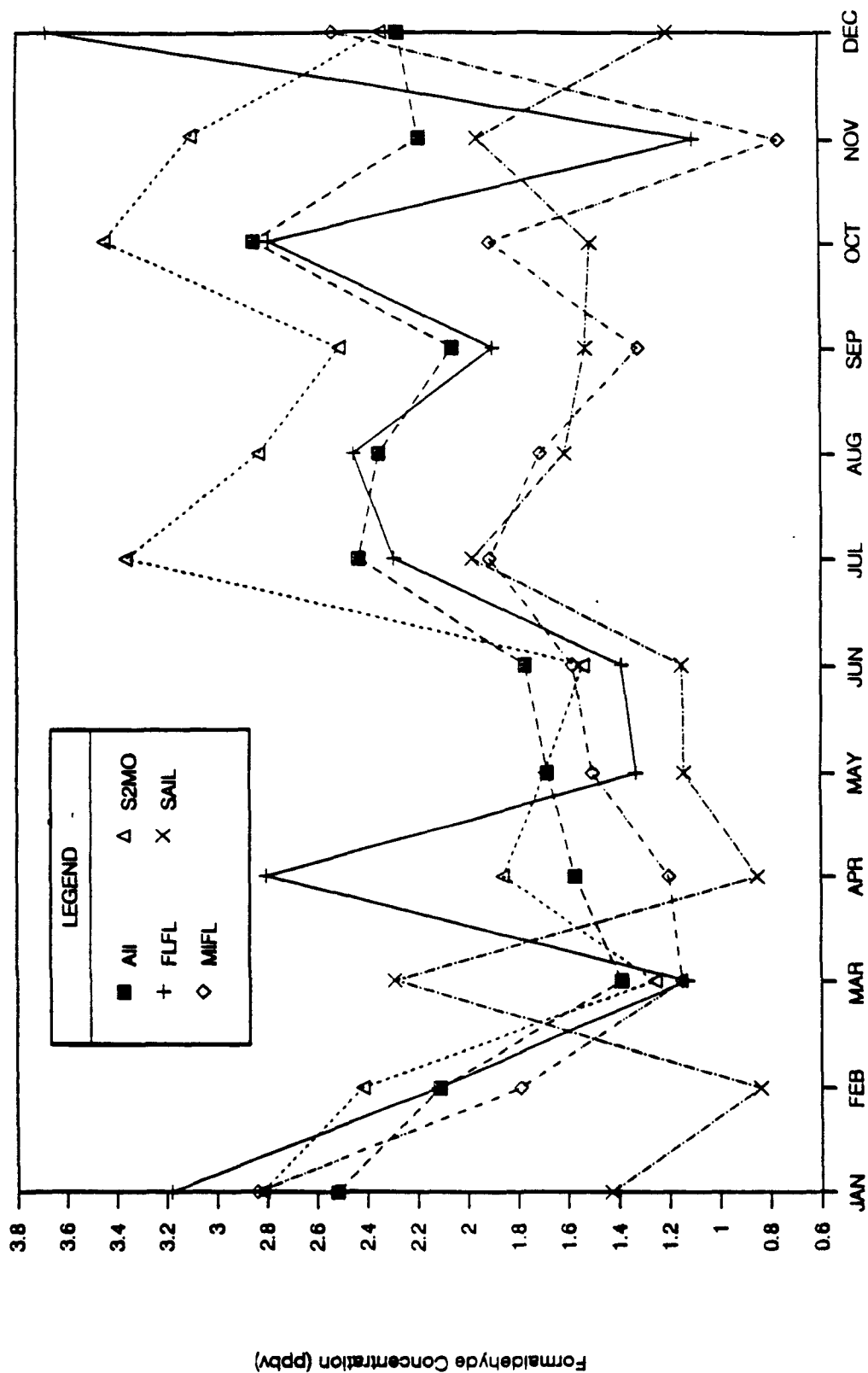


Figure 6-9. Formaldehyde Concentration Monthly Variation for 1989 for Selected Sites - Group 2

FORMALDEHYDE MONTHLY VARIATION

1989 LATMP

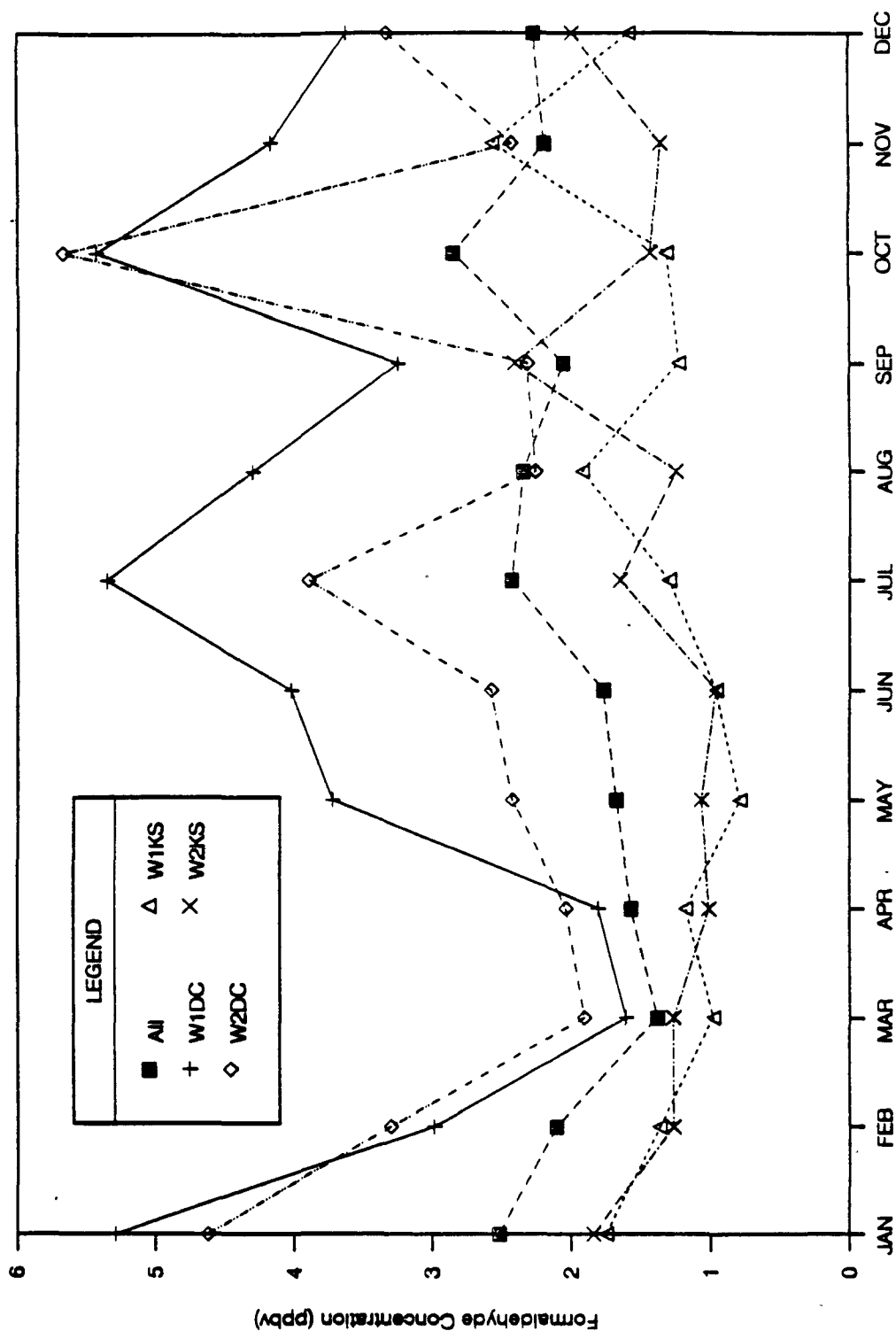


Figure 6-10. Formaldehyde Concentration Monthly Variation for 1989
for Selected Sites - Group 3

3103902R

cases these are absolute minima and maxima as well. Most sites also tend to reach other local maxima in January and also in July. Other local minima tend to be found in September and November.

Since two pairs of sites are located in the same city, some additional comments about Figure 6-10 may be made. The monthly arithmetic means for the two Wichita sites, W1KS and W2KS, track very closely for all 12 months. The two Washington, DC sites, W1DC and W2DC, track rather closely throughout the year as well, although some months show some separation. Thus, a measure of verification is provided for these two cities.

Figures 6-11, 6-12, and 6-13 display the monthly arithmetic means by site for the acetaldehyde data. The acetaldehyde plots show a bit more variability between sites than the formaldehyde data. However, there is still a tendency for local minima in March and local maxima in October. As with formaldehyde, these are usually absolute minima and maxima as well. Other local maxima and minima occur more frequently and sporadically than with the formaldehyde data. The two Wichita sites track closely from month-to-month, similarly to the formaldehyde data. There is one notable exception with the acetaldehyde data, however. There is a large difference between the Wichita sites in September. The Washington, DC sites track rather closely as they did for formaldehyde, but again not as closely as the Wichita sites.

Figures 6-14, 6-15, and 6-16 display the monthly arithmetic means by site for the acetone data. The acetone plots show the best correspondence from month-to-month between sites of the plots for the three compounds. However, acetone maxima and minima usually occur in different months. The one similarity between acetone and the other two compounds is for a local, and usually absolute, maximum concentration in October. The local minimum found in July for acetone is in sharp contrast to the local maxima found in July for formaldehyde and acetaldehyde. The local maximum in April is another acetone contrast with the other two compounds. Also in contrast to the other two compounds, the two Washington, DC sites track more closely than the two Wichita sites, particularly in the second half of the year.

The trends generalized from monthly plots of arithmetic means may or may not be representative of a typical year. However, it does appear that the time of year as described by month plays a fairly important role in influencing aldehyde concentrations, as shown by the differences in the

ACETALDEHYDE MONTHLY VARIATION

1989 LUATMP

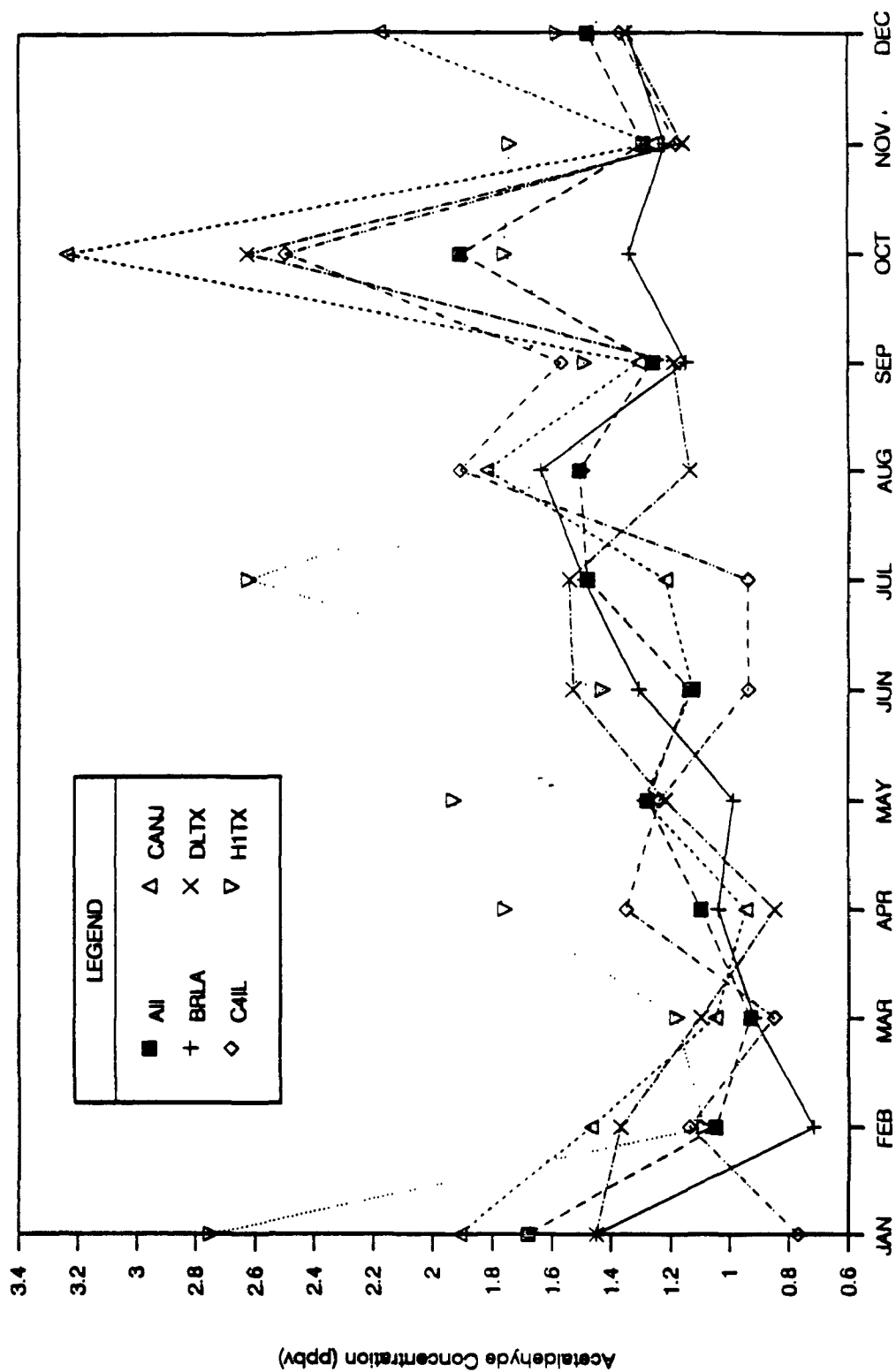


Figure 6-11. Acetaldehyde Concentration Monthly Variation for 1989 for Selected Sites - Group 1

3109003R

ACETALDEHYDE MONTHLY VARIATION

1989 LATMP

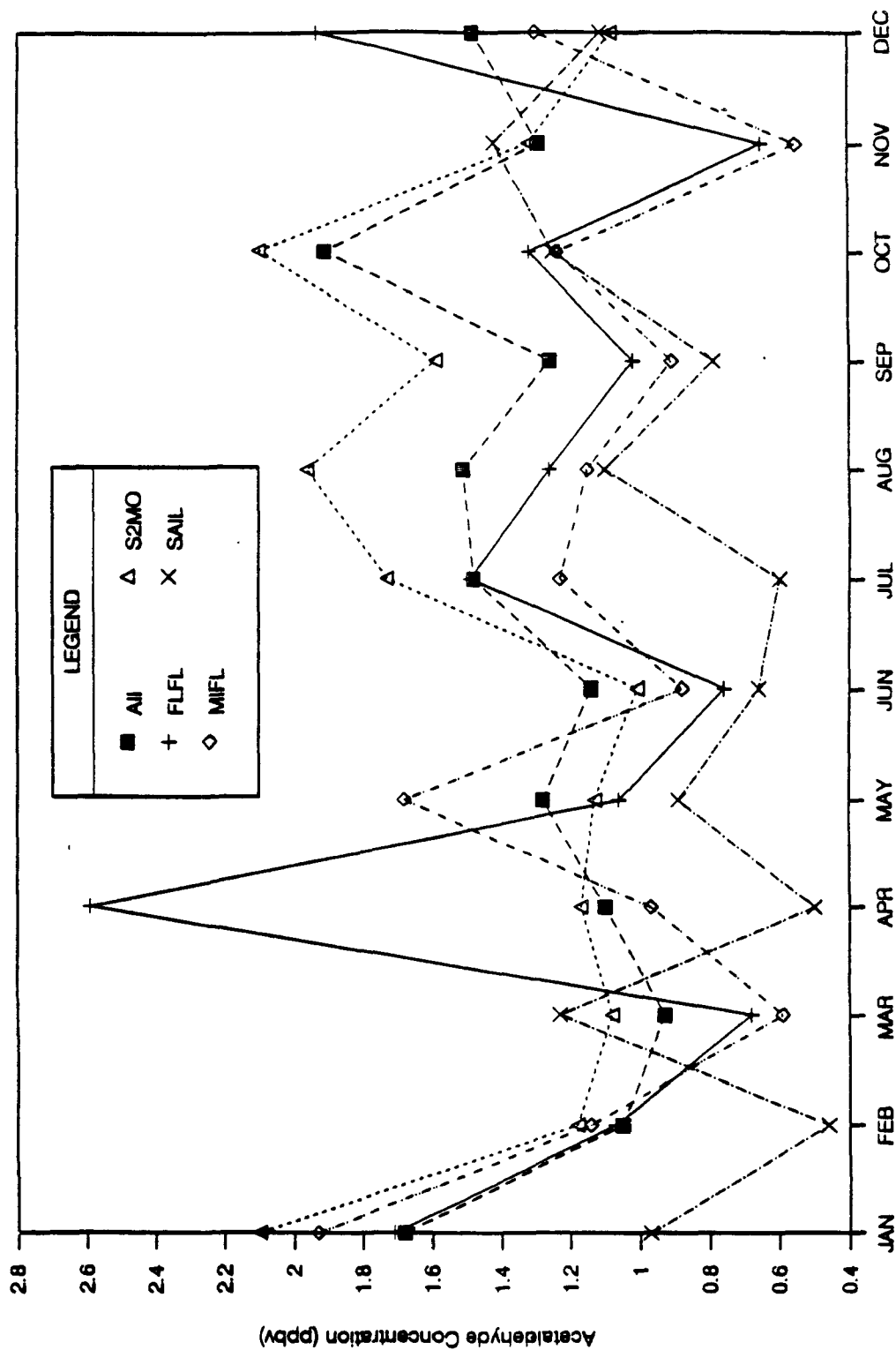


Figure 6-12. Acetaldehyde Concentration Monthly Variation for 1989 for Selected Sites - Group 2

ACETALDEHYDE MONTHLY VARIATION

1989 UATMP

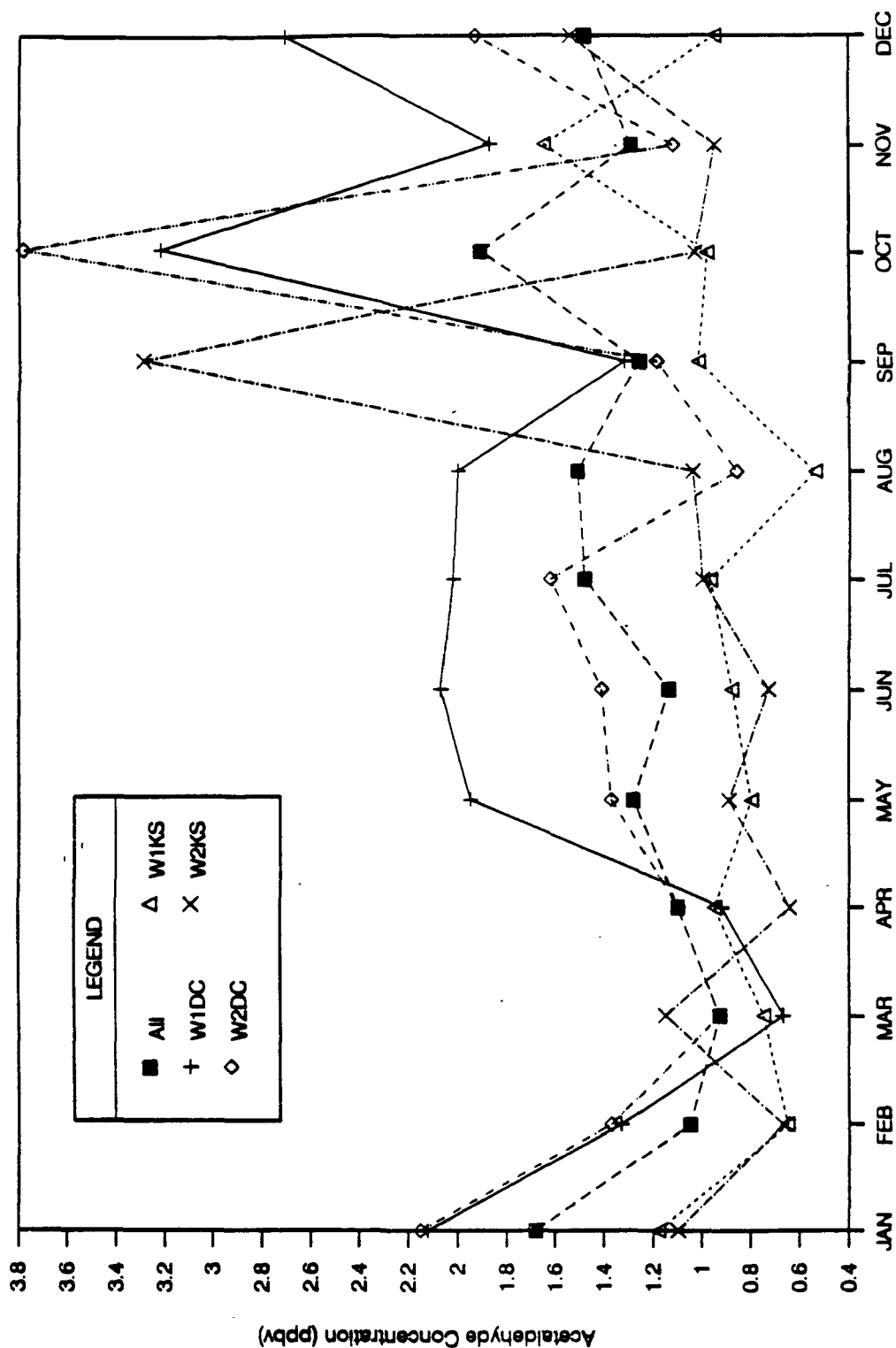


Figure 6-13. Acetaldehyde Concentration Monthly Variation for 1989
for Selected Sites - Group 3

ACETONE MONTHLY VARIATION

1989 LATMP

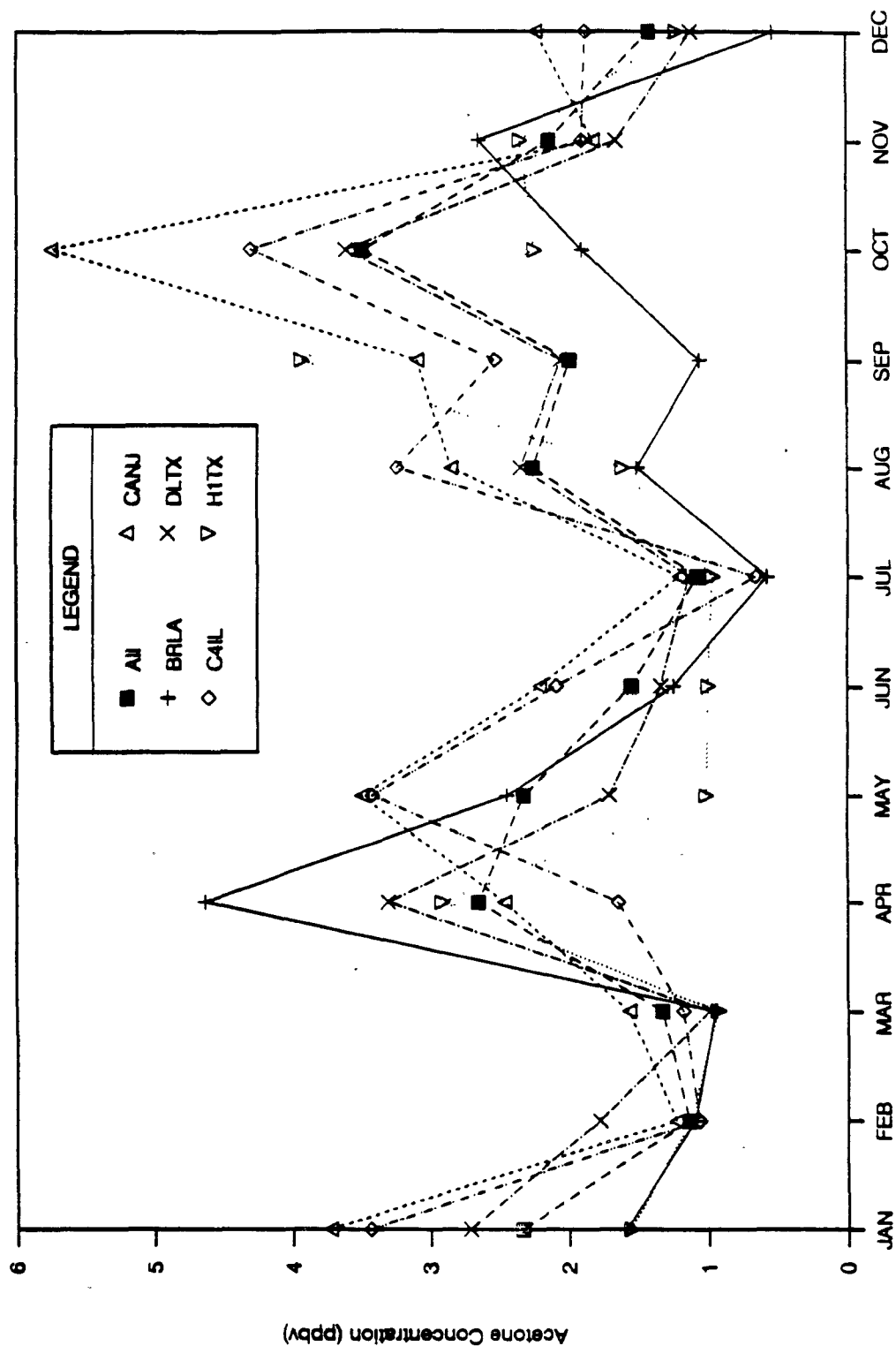


Figure 6-14. Acetone Concentration Monthly Variation for 1989 for Selected Sites - Group 1

ACETONE MONTHLY VARIATION

1989 UATMP

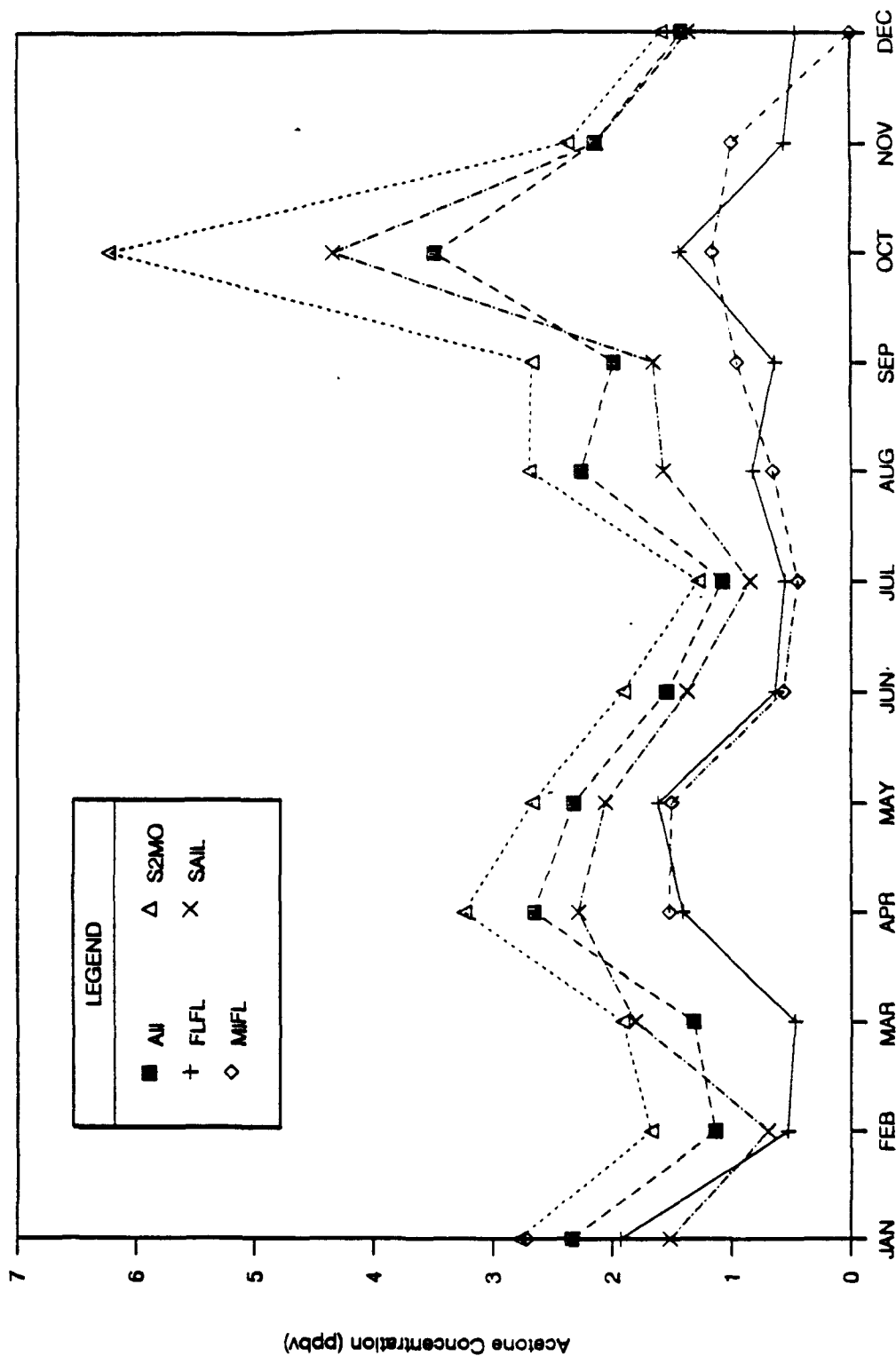


Figure 6-15. Acetone Concentration Monthly Variation for 1989
for Selected Sites - Group 2

3103907R

ACETONE MONTHLY VARIATION

1989 UATMP

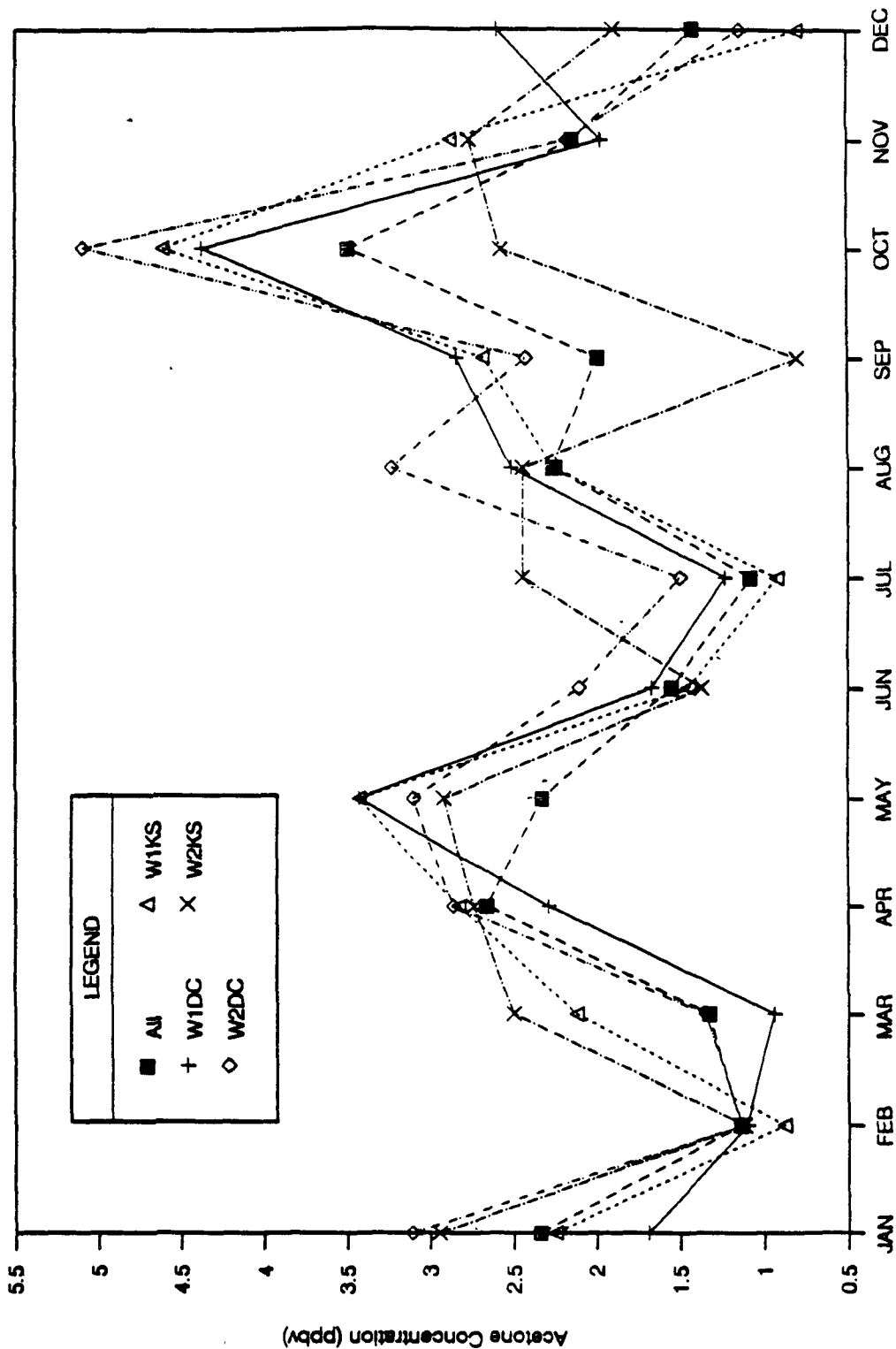


Figure 6-16. Acetone Concentration Monthly Variation for 1989
for Selected Sites - Group 3

3103906R

monthly means in the plots. Also, aldehyde concentrations appear to be site specific as demonstrated by the differences between sites in the plots. To test the role of site and month, several ANOVA models were processed. Table 6-14 lists the R^2 and p-values for Case 1 from several ANOVA models that also tested variables such as WEEKCLS (day-of-week classification: weekday or weekend) and QUARTER (JAN through MAR = quarter 1, APR through JUN = quarter 2, etc.). Case 2 results were similar; therefore, they are not shown.

The ANOVA results indicate that all variables tested were significant at the 95 percent confidence level, as indicated by p-values less than 0.05, except for WEEKCLS in the acetone models SITE-WEEKCLS and WEEKCLS. However, the amount of variability "explained" by the model variables was small, as shown by R^2 less than 0.45 and usually less than 0.20. For all three compounds, the SITE-MONTH model was best overall. However, the R^2 for this model was less for acetaldehyde (0.26) than the other two compounds (0.38-0.39). Even though R^2 for the SITE-MONTH-WEEKCLS model were slightly larger for each compound, the slight increase in the amount of "explained" variability does not justify the addition of another variable. Thus, the plots of monthly arithmetic means and the ANOVA results indicate that site and month are two important influences, along with other unspecified and unknown factors, on carbonyl concentrations.

6.5 INTERALDEHYDE CORRELATIONS

Table 6-15 lists the product-moment correlations and the covariances between the mean concentrations of formaldehyde, acetaldehyde, and acetone for each site and over all sites for Case 1. Differences between Case 1 and Case 2 were minimal, so only Case 1 results are shown. Formaldehyde and acetaldehyde appear more highly correlated than either formaldehyde and acetone or acetaldehyde and acetone.

Figure 6-17 shows the correlation between formaldehyde and acetaldehyde concentrations, while Figure 6-18 shows the correlation between formaldehyde and acetone concentrations. The correlation coefficient for the formaldehyde-acetaldehyde concentration data is 0.8088, whereas for the formaldehyde-acetone data the correlation coefficient is 0.3089. The line drawn in each graph locates the regression line. The data used for Figures 6-17 and 6-18 include each analysis, i.e. for Tube 1 and Tube 2, for each sampling episode in which the paired data was available. The acetone-acetaldehyde relationship was not explored.

TABLE 6-14. ANOVA MODELS WITH CORRESPONDING R²s AND P-VALUES FOR CASE 1^a

MODEL INDEPENDENT VARIABLES	FORMALDEHYDE			ACETALDEHYDE			ACETONE		
	R ²	P-VALUES		R ²	P-VALUES		R ²	P-VALUES	
SITE MONTH WEEKCLS	.43	.0001, .0001, .0001		.28	.0001, .0001, .0004		.39	.0001, .0001, .0058	
SITE MONTH	.39	.0001, .0001		.26	.0001, .0001		.38	.0001, .0001	
SITE QUARTER	.33	.0001, .0001		.17	.0001, .0005		.16	.0001, .0001	
SITE WEEKCLS	.30	.0001, .0001		.15	.0001, .0070		.12	.0001, .0811 ^b	
SITE	.27	.0001		.13	.0001		.11	.0001	
MONTH WEEKCLS	.14	.0001, .0001		.15	.0001, .0013		.26	.0001, .0198	
MONTH	.11	.0001		.12	.0001		.25	.0001	
QUARTER	.05	.0001		.04	.0016		.05	.0001	
WEEKCLS	.03	.0007		.01	.0136		.01	.1311 ^b	

^a In case 1, mean concentrations are calculated using detectable tube concentrations only. Formaldehyde, acetaldehyde, and acetone concentrations are the dependent variables in the ANOVA's.

^b Indicates p-value is not significant at the 95% confidence level.

NOTES: QUARTERS are defined as follows:

quarter 1 = JAN - MAR
quarter 2 = APR - JUN
quarter 3 = JUL - SEP
quarter 4 = OCT - DEC

WEEKCLS indicates day-of-week classification: weekday or weekend.

TABLE 6-15. CORRELATION (COR) AND COVARIANCE (COV) OF
MEAN CONCENTRATIONS BY SITES FOR CASE 1^a

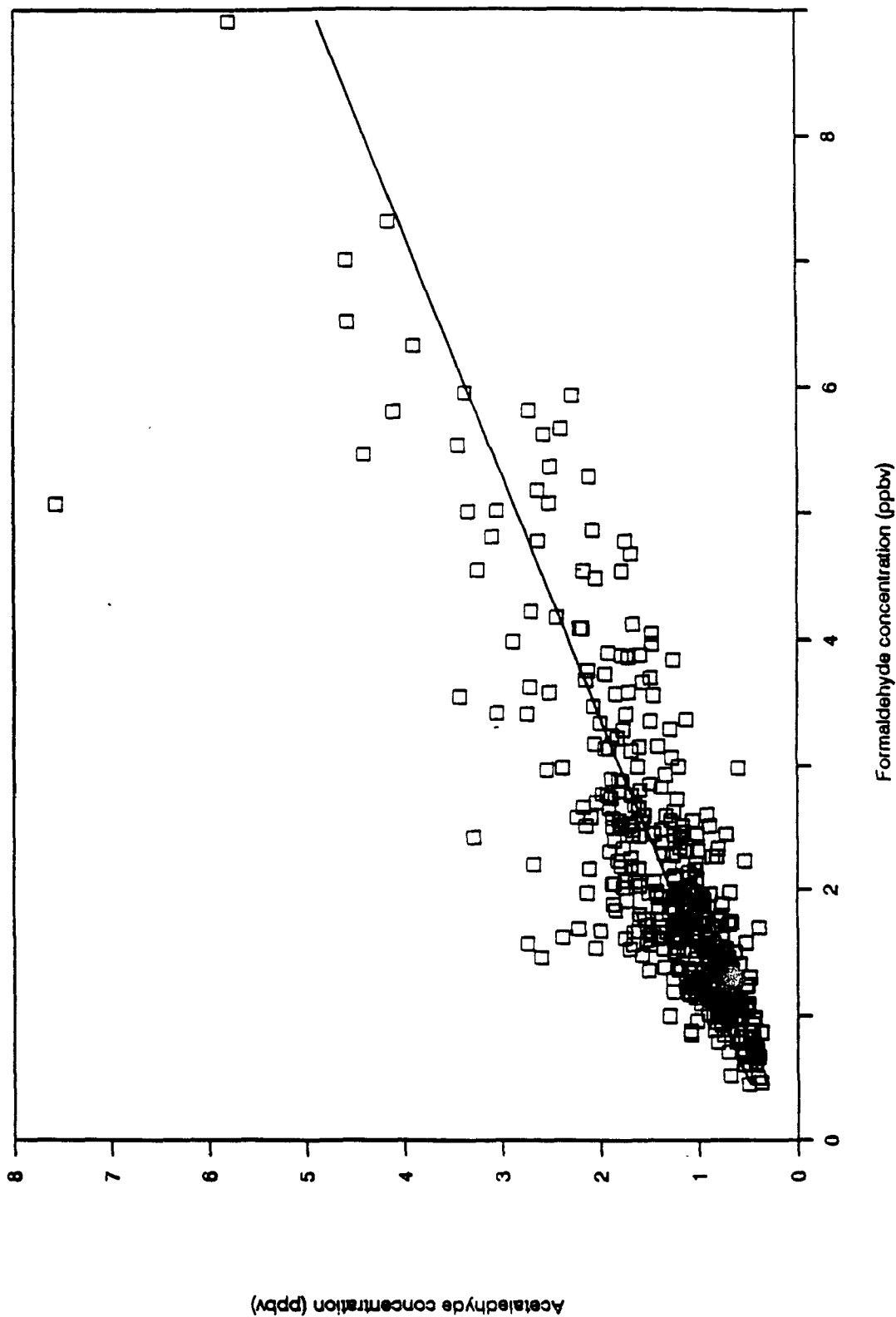
SITE CODE	N	FORMALDEHYDE VERSUS ACETALDEHYDE		FORMALDEHYDE VERSUS ACETONE		ACETALDEHYDE VERSUS ACETONE	
		COR	COV	COR	COV	COR	COV
ALL	370	0.82	0.88	0.40	0.72	0.43	0.51
BRLA	25	0.55	0.13	-0.01 ^b	-0.01	0.19 ^b	0.12
C4IL	26	0.92	0.96	0.56	1.07	0.69	0.90
CANJ	30	0.91	1.36	0.65	1.78	0.69	1.28
DLTX	28	0.85	0.31	0.25 ^b	0.21	0.16 ^b	0.08
FLFL	27	0.84	0.72	0.48	0.44	0.42	0.22
H1TX	34	0.68	0.98	0.35	0.44	0.34	0.46
MIFL	18	0.94	0.55	0.45 ^b	0.41	0.52	0.38
PEFL	6	0.64 ^b	0.10	-0.15 ^b	-0.09	-0.08 ^b	-0.03
S2MO	30	0.79	0.60	0.44	0.84	0.52	0.63
SAIL	27	0.86	0.33	0.40	0.38	0.60	0.44
W1DC	28	0.89	1.28	0.44	0.93	0.60	0.69
W1KS	28	0.86	0.41	0.24 ^b	.31	0.36 ^b	0.28
W2DC	28	0.93	1.63	0.60	1.55	0.71	1.20
W2KS	34	0.74	0.27	0.10 ^b	.07	-0.01 ^b	-0.01

^a In Case 1, mean concentrations are calculated using detectable tube concentrations only.

^b Indicates correlation not significant at the 95% confidence level.

FORMALDEHYDE/ACETALDEHYDE CORRELATION

1989 UATMP

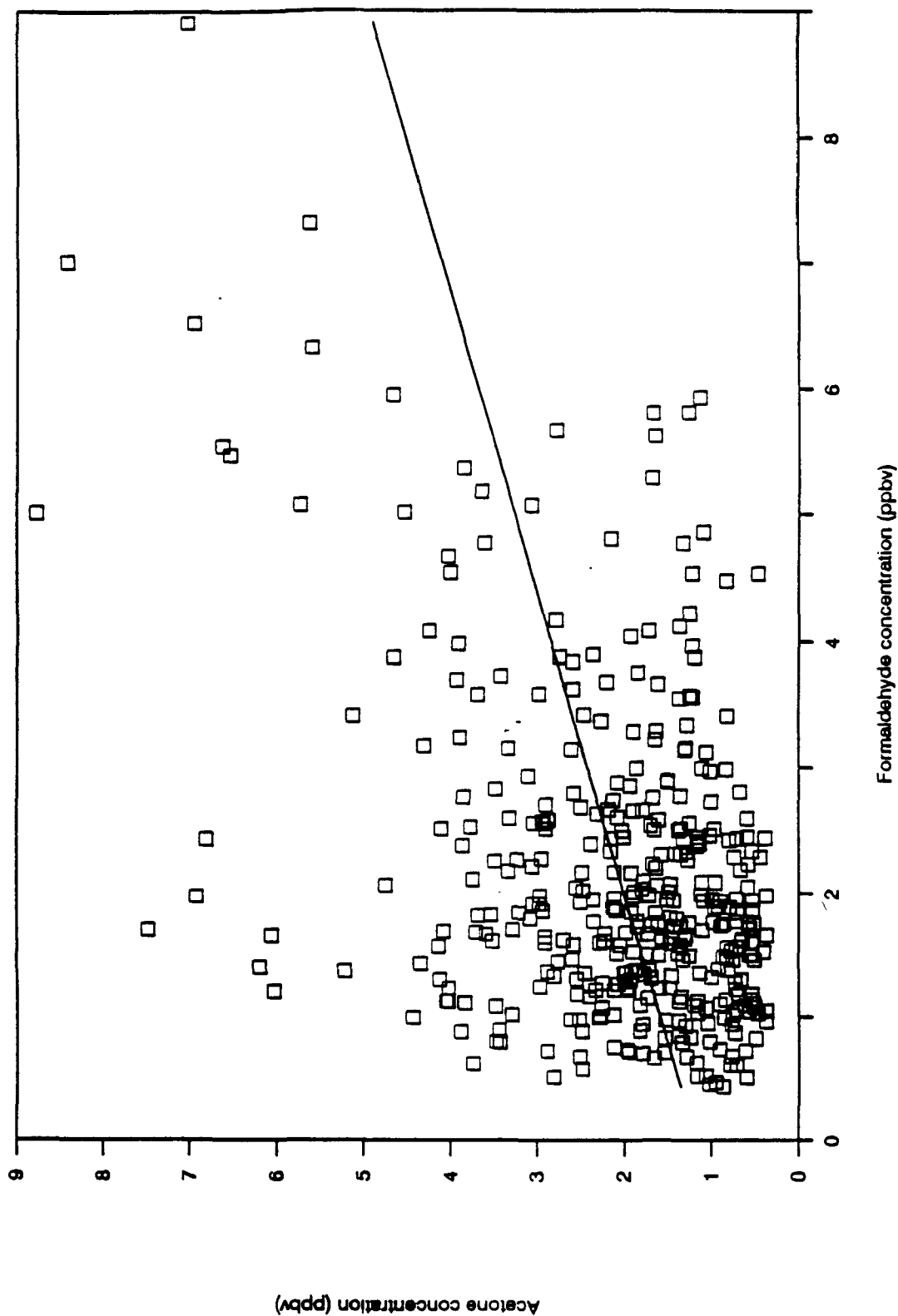


3103916R

Figure 6-17. Formaldehyde/Acetaldehyde Correlation.

FORMALDEHYDE/ACETONE CORRELATION

1989 UATMP



5103017R

Figure 6-18. Formaldehyde/Acetone Correlation.

6.6 PRECISION AND PERCENT DIFFERENCES

Tables 6-16, 6-17, and 6-18 list the summary statistics by site and over all sites for the absolute percent difference and for the absolute standard deviation of the tube concentration data. Since the absolute percent difference and the absolute standard deviation were calculated only when both tube concentrations were above the ADL, only results from Case 1 are shown. The absolute percent DIF, a measure of variability, is defined as the absolute value of the difference between the two tube concentrations, divided by the arithmetic average of the two tube concentrations, times 100:

$$\text{Absolute percent DIF} = \text{ABS } (X_2 - X_1) / ((X_2 + X_1) / 2) \times 100$$

where: ABS indicates the absolute value;
 X_1 = concentration from tube 1; and
 X_2 = concentration from tube 2.

Precision was estimated from absolute percent difference of duplicate sample analysis. For formaldehyde the absolute percent difference averaged 11.8; for acetaldehyde 14.5; and for acetone 16.7.

The maximum of any of the percent differences derived from the pairs of tube concentrations was 40 percent or less for six formaldehyde sites, four acetaldehyde sites, and four acetone sites. The maximum percent difference was larger than 100 percent for only one formaldehyde site and one acetone site. The largest percent difference for any of the acetaldehyde sites was near 81 percent. These results show good precision, and speak well for the sampling and analytical procedures.

The mean standard deviation over all sites was near 0.16 for formaldehyde, near 0.13 for acetaldehyde, and near 0.21 for acetone. At individual sites the mean standard deviations ranged roughly from 0.11 to 0.28 for formaldehyde, from 0.10 to 0.19 for acetaldehyde, and from 0.13 to 0.29 for acetone. Maximum standard deviations were below 0.7 for all acetaldehyde sites. However, the maximum standard deviations were above 1.0 for two formaldehyde sites and for four acetone sites. Nevertheless, like the percent differences, the standard deviations also demonstrate that the precision of the aldehyde concentration measurements was good.

Figures 6-19 through 6-24 show the precision as a function of composition for formaldehyde, acetaldehyde, and acetone. For each compound, concentration differences, and absolute percent differences are plotted against average sample concentration. The graphs show that no trends are apparent relating

TABLE 6-16. SUMMARY OF FORMALDEHYDE ABS PERCENT DIFFERENCES (DIF) AND STANDARD DEVIATIONS (STD) FOR CASE 1^a

SITE CODE	N		MEAN		STD		MINIMUM VALUE		MAXIMUM VALUE	
	DIF	STD	DIF	STD	DIF	STD	DIF	STD	DIF	STD
ALL	405	405	11.779	0.155	13.180	0.170	0.000	0.000	150.442	1.803
BRLA	30	30	10.170	0.115	12.256	0.143	0.573	0.007	62.651	0.735
C4IL	30	30	13.474	0.157	27.120	0.325	0.000	0.000	150.442	1.803
CANJ	30	30	8.421	0.118	10.934	0.118	0.000	0.000	55.556	0.601
DLTX	29	29	12.633	0.179	8.090	0.127	0.517	0.007	34.758	0.516
FLFL	32	32	9.796	0.137	8.686	0.115	0.282	0.007	34.146	0.396
H1TX	38	38	9.067	0.130	8.614	0.127	0.394	0.007	36.559	0.587
MIFL	31	31	9.874	0.110	8.304	0.093	0.317	0.007	34.361	0.368
PEFL	6	6	19.359	0.212	19.990	0.208	5.505	0.064	57.516	0.622
S2MO	28	28	8.466	0.136	7.767	0.126	0.000	0.000	35.052	0.601
SAIL	30	30	16.533	0.141	14.942	0.123	0.664	0.007	48.062	0.502
W1DC	28	28	7.945	0.210	4.951	0.177	1.105	0.028	19.929	0.792
W1KS	29	29	14.808	0.149	10.085	0.117	0.717	0.007	43.750	0.495
W2DC	29	29	13.878	0.282	14.651	0.278	0.367	0.007	74.409	1.223
W2KS	35	35	16.422	0.153	15.800	0.142	0.631	0.007	77.966	0.651

^a In Case 1, mean concentrations are calculated using detectable tube concentrations only.

TABLE 6-17. SUMMARY OF ACETALDEHYDE ABS PERCENT DIFFERENCES (DIF) AND STANDARD DEVIATIONS (STD) FOR CASE 1^a

SITE CODE	N		MEAN		STD		MINIMUM VALUE		MAXIMUM VALUE	
	DIF	STD	DIF	STD	DIF	STD	DIF	STD	DIF	STD
ALL	386	386	14.469	0.130	13.612	0.121	0.000	0.000	81.481	0.686
BRLA	30	30	13.474	0.112	11.702	0.092	0.000	0.000	43.478	0.389
C4IL	26	26	11.241	0.109	9.827	0.106	0.000	0.000	33.526	0.410
CANJ	31	31	12.181	0.122	11.524	0.111	0.000	0.000	58.128	0.417
DLTX	29	29	12.960	0.123	8.304	0.090	1.093	0.014	30.252	0.311
FLFL	30	30	16.238	0.130	16.444	0.122	0.000	0.000	81.481	0.544
H1TX	38	38	9.951	0.126	8.650	0.132	0.000	0.000	28.205	0.686
MIFL	29	29	13.557	0.104	15.488	0.115	0.000	0.000	74.872	0.516
PEFL	7	7	14.851	0.124	8.398	0.082	6.020	0.057	27.386	0.240
S2MO	26	26	10.380	0.117	10.917	0.134	0.000	0.000	43.000	0.608
SAIL	26	26	19.221	0.125	16.913	0.107	0.000	0.000	60.000	0.424
W1DC	28	28	14.331	0.175	13.011	0.151	0.000	0.000	50.323	0.580
W1KS	26	26	19.392	0.134	16.034	0.111	0.000	0.000	65.625	0.445
W2DC	29	29	19.343	0.188	17.961	0.165	0.000	0.000	60.870	0.651
W2KS	31	31	17.313	0.130	15.388	0.118	0.922	0.007	62.774	0.424

^a In Case 1, mean concentrations are calculated using detectable tube concentrations only.

TABLE 6-18. SUMMARY OF ACETONE ABS PERCENT DIFFERENCES (DIF) AND STANDARD DEVIATIONS (STD) FOR CASE 1^a

SITE CODE	N		MEAN		STD		MINIMUM VALUE		MAXIMUM VALUE	
	DIF	STD	DIF	STD	DIF	STD	DIF	STD	DIF	STD
ALL	346	346	16.674	0.212	16.725	0.215	0.000	0.000	126.531	1.492
BRLA	23	23	11.205	0.134	6.523	0.109	1.342	0.014	27.879	0.523
C4IL	29	29	18.320	0.241	24.338	0.277	0.000	0.000	126.531	1.096
CANJ	26	26	10.676	0.175	13.780	0.212	0.000	0.000	63.573	0.969
DLTX	27	27	22.397	0.255	17.656	0.162	1.047	0.007	75.862	0.530
FLFL	21	21	20.637	0.190	13.551	0.217	2.182	0.014	39.831	0.799
H1TX	31	31	19.219	0.216	15.714	0.203	0.000	0.000	55.238	0.919
H1FL	15	15	17.246	0.159	18.246	0.134	1.729	0.021	69.281	0.417
PEFL	6	6	27.638	0.256	31.560	0.236	0.969	0.028	86.000	0.608
S2NO	27	27	9.256	0.164	5.169	0.109	2.091	0.028	19.512	0.523
SAIL	25	25	19.243	0.237	15.956	0.198	0.000	0.000	57.988	0.728
W1DC	27	27	19.008	0.277	15.546	0.304	0.738	0.007	58.575	1.492
W1KS	27	27	12.124	0.169	11.507	0.207	0.651	0.007	40.000	1.047
W2DC	27	27	20.357	0.291	24.308	0.301	0.364	0.007	92.237	1.273
W2KS	35	35	14.941	0.201	14.189	0.180	0.654	0.014	64.151	0.806

^a In Case 1, mean concentrations are calculated using detectable tube concentrations only.

1989 UATMP Formaldehyde Duplicates

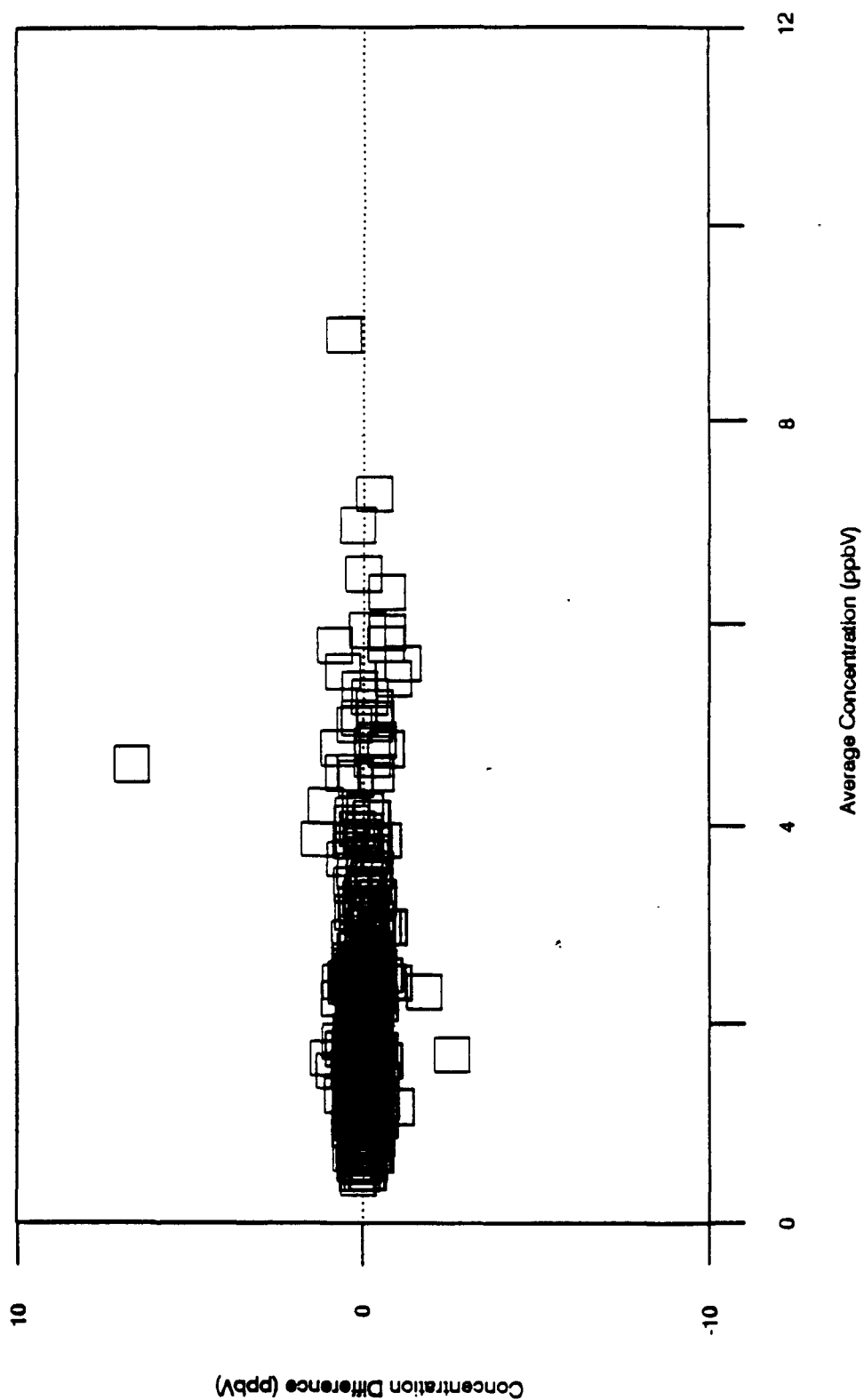


Figure 6-19. Formaldehyde Concentration Difference as a Function of Average Concentrations

3103908R

1989 UATMP Formaldehyde Duplicates

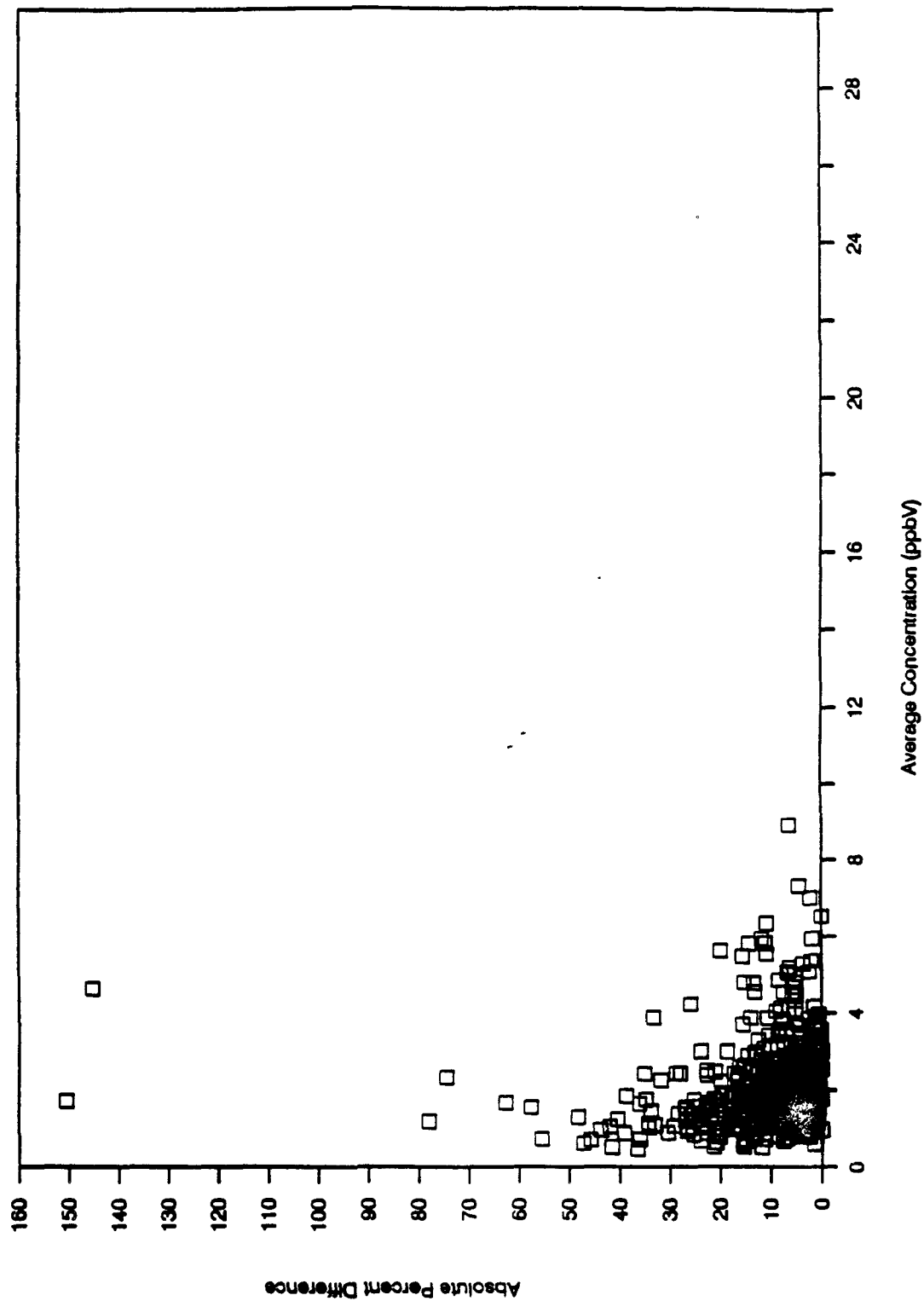


Figure 6-20. Formaldehyde Absolute Percent Difference as a Function of Average Concentrations

1989 UATMP Acetaldehyde Duplicates

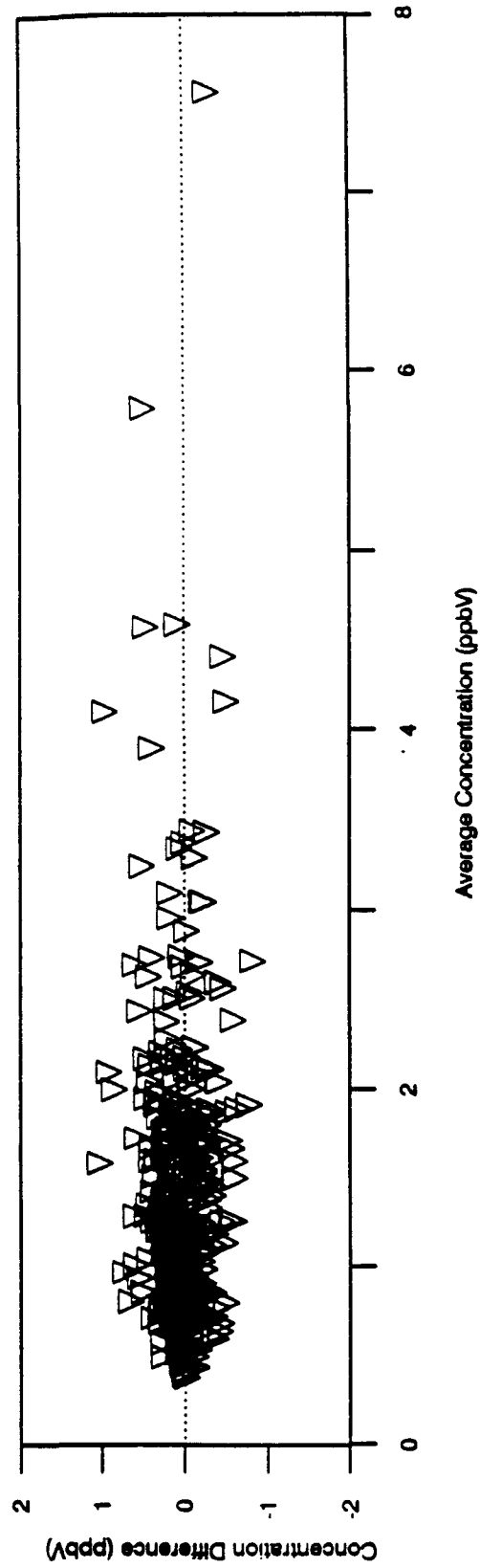


Figure 6-21. Acetaldehyde Concentration Difference
as a Function of Average Concentrations

1989 UATMP Acetaldehyde Duplicates

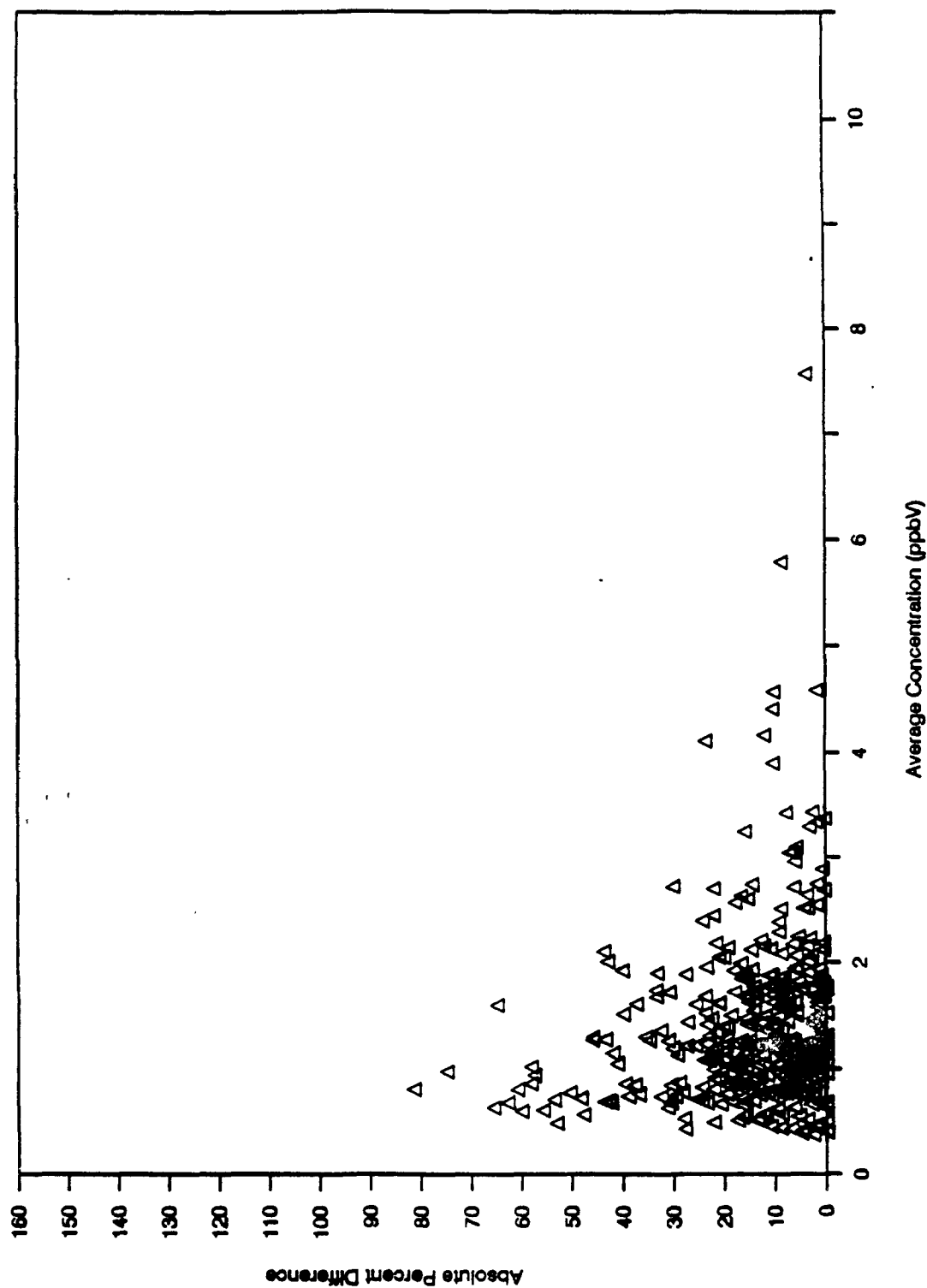


Figure 6-22. Acetaldehyde Absolute Percent Difference as a Function of Average Concentrations

31038125

1989 UATMP Acetone Duplicates

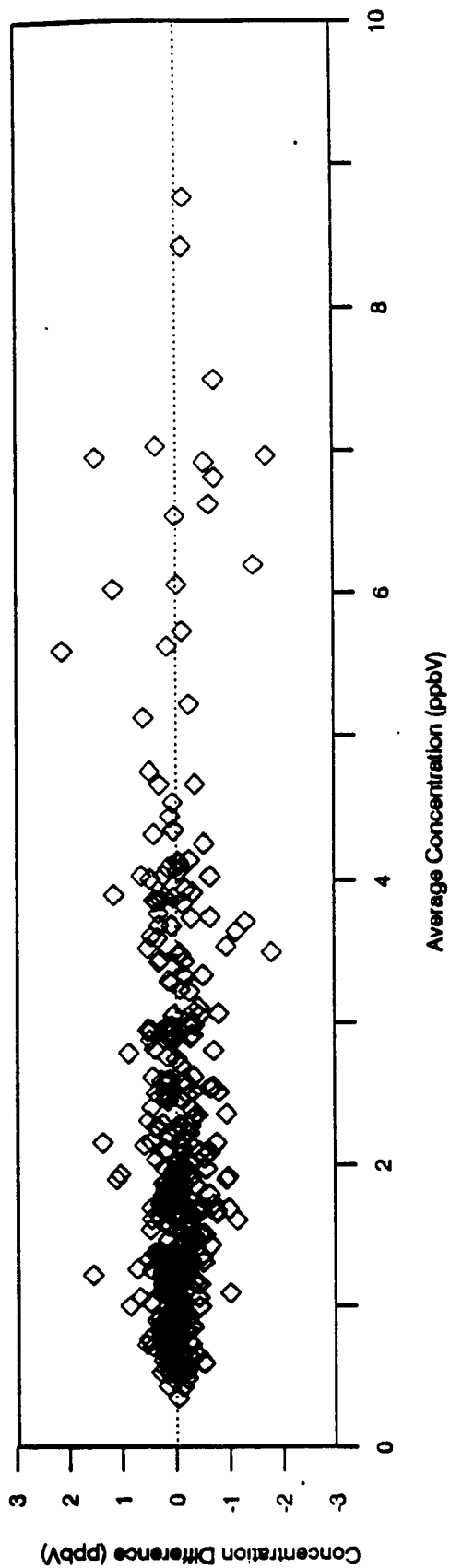


Figure 6-23. Acetone Concentration Difference
as a Function of Average Concentrations

3100013R

1989 UATMP Acetone Duplicates

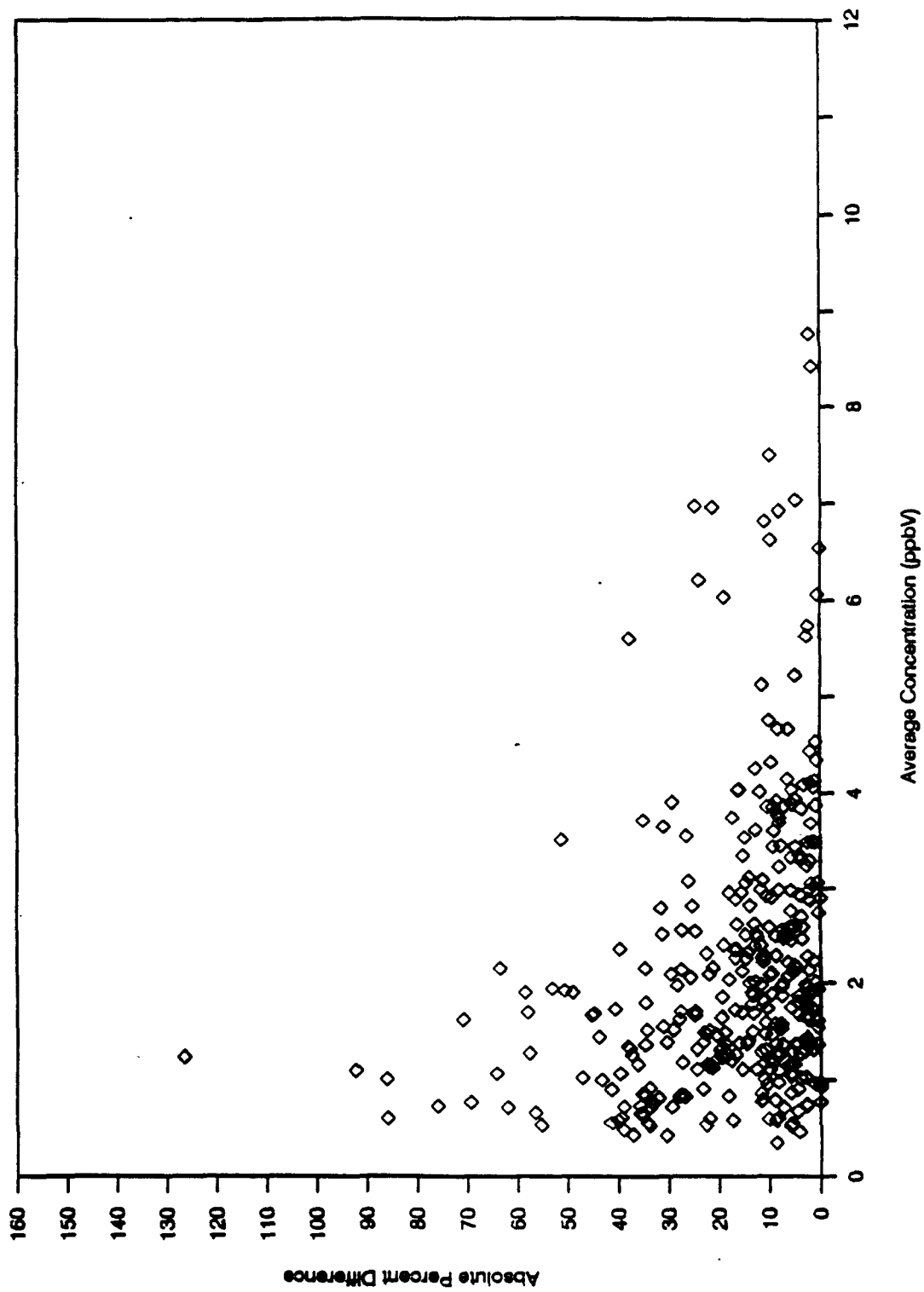


Figure 6-24. Acetone Percent Difference as a Function of Average Concentrations

3103914R

concentration differences to average concentration. When absolute percent differences are used as the dependent variables, more variability is seen at lower concentrations as expected.

6.7 AUDIT SAMPLES

Table 6-19 displays the results from the audit samples for formaldehyde, acetaldehyde, and acetone. Figure 6-25 displays bar charts for the percent differences between the spiked and reported samples for formaldehyde, acetaldehyde, and acetone. A positive bias is evident for all three compounds in both Table 6-19 and Figure 6-25. This positive bias was over twice as much for acetaldehyde as it was for formaldehyde. The bias for acetone was four times as much for acetone as it was for formaldehyde. However, there were only five values reported for the acetone audit samples versus 14 for formaldehyde and 13 for acetaldehyde. Acetone was included in the audit samples, but acetone audit results were not always reported.

The biases for all three compounds are relatively small and speak well for the analytical procedures. This further supports the precision data presented in Section 6.6. The audit results are well within the program data quality objectives as stated in the project Quality Assurance Program Plan.⁶

Table 6-19. Spiked QA Cartridge Results for 1989 UATMP Aldehyde Monitoring

Sample No.	Formaldehyde			Acetaldehyde			Acetone		
	Spiked	Reported	% Diff	Spiked	Reported	% Diff	Spiked	Reported	% Diff
1913	3.67	4.33	18.00	3.41	3.81	12.00	-	-	-
1937	3.67	3.47	-5.40	3.41	2.92	-14.00	-	-	-
1866	0.92	0.87	-5.40	0.85	1.07	26.00	-	-	-
2047	0.92	1.08	17.00	0.85	1.23	45.00	-	-	-
1846	2.35	2.06	-12.00	0.88	1.34	52.00	4.20	4.90	17.00
1929	0.88	1.03	17.00	1.41	1.57	11.00	1.05	1.44	37.00
2030	5.29	5.04	-4.70	4.39	2.74	-38.00	3.68	4.31	17.00
2038	1.76	1.93	9.70	0.66	<0.42	-	3.16	3.55	12.00
2042	1.76	1.91	8.50	0.66	0.90	36.00	3.16	4.53	43.00
1852	2.12	2.18	2.80	1.94	1.95	0.50	-	-	-
2012	3.67	4.09	11.00	3.41	3.74	9.70	-	-	-
1993	3.53	3.63	2.80	2.82	3.01	6.70	-	-	-
2018	2.58	2.57	-0.40	3.96	3.72	-6.10	-	-	-
2006	0.92	1.18	28.00	0.85	1.18	39.00	-	-	-
Averages			6.207			13.831			25.200

QUALITY ASSURANCE - AUDIT RESULTS

1989 UATMP

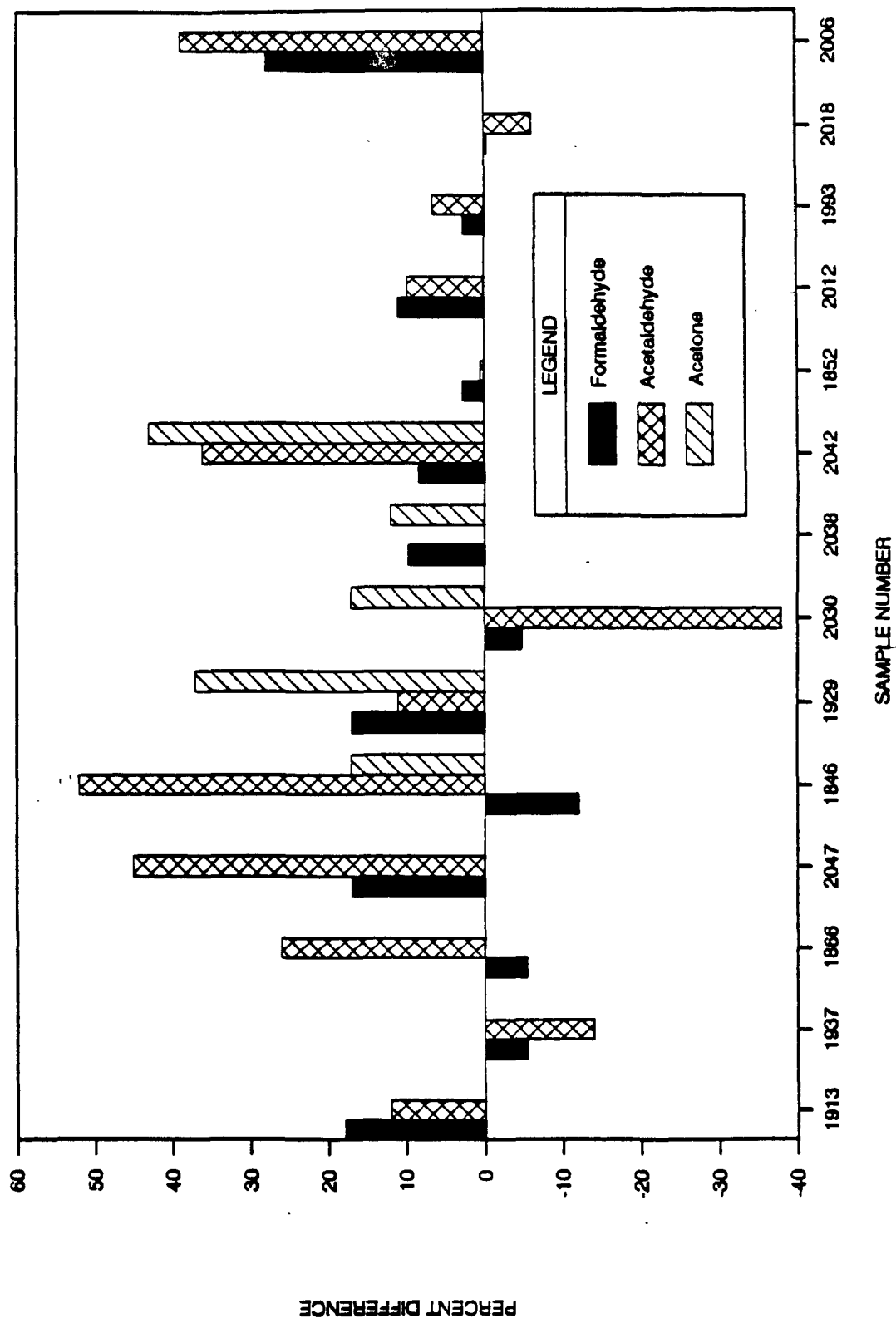


Figure 6-25. Quality Assurance - Audit Results

7.0 CONCLUSIONS

Based on the discussion in the data analysis section, the following conclusions were reached:

- 1) The mean concentration data for all three compounds are more nearly lognormally than normally distributed.
- 2) Mean concentrations varied from month-to-month for all three compounds, but the variation of acetone concentrations was somewhat different than the variation of formaldehyde or acetaldehyde concentrations. This variation did not appear to be represented by regular cycles. In addition, the monthly concentrations also appeared to be site specific, particularly for acetaldehyde. Concentrations at nearly all sites for all three compounds reached a maximum level in the month of October. Analysis of variance results indicated that both site and month played a role in influencing mean concentrations for all three compounds; however, other unknown factors appear to have an even greater influence.
- 3) Formaldehyde concentrations were fairly highly correlated with acetaldehyde concentrations at all sites. However, neither formaldehyde nor acetaldehyde concentrations were well correlated with acetone concentrations. In fact, the correlation coefficients of formaldehyde and acetaldehyde concentrations with acetone concentrations were non-significant at some sites.
- 4) Absolute percent differences, absolute standard deviations, and audit samples biases revealed that the sampling and analytical methodology employed is repeatable and valid.

8.0 REFERENCES

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2. McAllister, Robert A., Bradley, W. Nelson, Wendy H. Moore, Dave-Paul Dayton, Joann Rice, Robert F. Jongleux, Raymond G. Merrill, Jr., Joan T. Bursey, and Phyllis L. O'Hara, "1989 Nonmethane Organic Compound and Three-Hour Air Toxics Monitoring Program," Final Report, prepared for Neil J. Berg, Jr.; U.S. Environmental Protection Agency, Research Triangle Park, NC, Radian Corporation DCN: 89-262-045-89, Research Triangle Park, NC, February 16, 1990.
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5. Hoaglin, D. C., F. Mosteller, and J. W. Tukey, "Understanding Robust and Exploratory Data Analysis," John Wiley & Sons, New York, NY (1983).
6. Radian Corporation, "1989 Urban Air Toxics Monitoring Program. Work Plan and Quality Assurance Project Plan," prepared for Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC, Radian Corporation DCN No. 82-262-045-68, Research Triangle Park, NC.

Appendix A - Site Information from AIRS

DATE: 90/02/14
AMP215

ENVIRONMENTAL PROTECTION AGENCY
AEROMETRIC INFORMATION RETRIEVAL SYSTEM

PAGE: 1

MUNITION SELECTION REPORT

CARD NO.	STATE	COUNTY	SITE	PARAMETER	METHOD	INTERVAL	DATE	END DATE	REGION	TYPE	CITY	AHLR	URG	REPORT AREA	URBAN AREA	NUMBER SELECTED
1	17	153	1010	12110												1
2	20	173	0010	11201												1

SUMMARY:

2 SELECTION CARDS PROCESSED
2 MUNITION RECORDS SELECTED

DATE 02/14/90
AMP340

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

PAGE 1

EPA-REGION 03

STATE (11): DISTRICT OF COLUMBIA

UATMP SITE CODE: W2DC

SITE ID : 11-001-0025 CITY (00000): NOT IN A CITY
CITY POPULATION : 1 COUNTY (001): WASHINGTON
AUCH POPULATION : 2,950,793 AUCH (047): NATIONAL CAPITAL
DATE ESTABLISHED : / / LAND USE (2): COMMERCIAL
DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
SITE ADDR: TAKOMA SC. PINEY BRANCH RD & DAHLIA ST N
URBAN AREA (8840): WASHINGTON, DC-MD-VA
SUPPORTING AGENCY (001): ENVIRONMENTAL CONTROL DIV., D.C., DCMA
COMMENTS: TSP ON ROOF OF GYMNASIUM BLDG. 03 MONITOR IN BUIER ROOM OF GYM-
SITE-USER-INFO: GASIUM BUILDING (FIRST FLOOR). START DATE 03-01-80.

UATMP SITE CODE: W2DC

SITE ID : 11-001-0039 CITY (00000): NOT IN A CITY
CITY POPULATION : 1 COUNTY (001): WASHINGTON
AUCH POPULATION : 2,950,793 AUCH (047): NATIONAL CAPITAL
DATE ESTABLISHED : / / LAND USE (2): COMMERCIAL
DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
SITE ADDR: 2150 RAILROAD AVE. S.E. WASHINGTON D.C.
URBAN AREA (8840): WASHINGTON, DC-MD-VA
SUPPORTING AGENCY (001): ENVIRONMENTAL CONTROL DIV., D.C., DCMA
COMMENTS: DC POLICE PROPERTY DIVISION WAREHOUSE NEXT TO ROUTE I-295.
SITE-USER-INFO: NEIGHBOURHOOD SCALE LEAD MONITORING SITE. SAMPLING BEGUN 00-01-83

LATITUDE : 38150131 N UTM EASTING : 324771
LONGITUDE : 77101122 W DIFF. GMT : 05
UTM ZONE : 18 ELEVATION ABOVE MSL : 91 M
UTM NORTHING : 4315771 RECORD LAST UPDATED : 89/11/22
HW EVAL DATE : / / LAST REU EVAL : 82/08/31
DISTANCE CITY : 008 COMPASS SECTOR : NW
MC IND : N
MSA (8840): WASHINGTON, DC-MD-VA

LATITUDE : 38151151 N UTM EASTING : 327173
LONGITUDE : 76159131 W DIFF. GMT : 05
UTM ZONE : 18 ELEVATION ABOVE MSL : 24 M
UTM NORTHING : 4303381 RECORD LAST UPDATED : 89/11/22
HW EVAL DATE : / / LAST REU EVAL : 83/03/30
DISTANCE CITY : COMPASS SECTOR : SE
MC IND : N
MSA (8840): WASHINGTON, DC-MD-VA

DATE 02/14/90
AMP300

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

PAGE 1

EPA-REGION: J5

STATE (17): ILLINOIS

UATMP SITE CODE: SAIL

SITE ID : 17-103-110 CITY (0000): LOT IN A CITY
CITY POPULATION : COUNTY (103): ST CLAIR CO
AQR POPULATION : 2,423,778 AQR (070): METROPOLITAN ST. LOUIS
DATE ESTABLISHED : / / LAND USE (3): INDUSTRIAL
DATE TERMINATED : / / LOCATION SETTING (2): SUBURBAN
SITE ADDR: EPA TRAILER, LITTLE AVE.
URBAN AREA (7040): ST. LOUIS, MO-IL
SUPPORTING AGENCY (001): ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
COMMENTS:

LATITUDE : 383531 N UTM EASTING : 747037
LONGITUDE : 90109149 W UTM DIFF. GMT : 06
UTM ZONE : 15 ELEVATION ABOVE MSL : 198 M
UTM NORTHING : 4275122 RECORD LAST UPDATED: 09/11/22
HW EVAL DATE : / / LAST REV EVAL : / /
DISTANCE CITY : COMPASS SECTOR :
MC IND : MET DATA :
MSA (7040): ST. LOUIS, MO-IL

EPA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS)

AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

DATE 02/14/90
AMP380

STATE (20): KANSAS

EPA-REGION 07

UATMP SITE CODE: WKS

SITE ID 1 20-173-0010 CITY (79000): WICHITA
CITY POPULATION 1 279,835 COUNTY (173): SEDGWICK CO
AUCK POPULATION 1 002,705 AUCK (099): SOUTH CENTRAL KANSAS
DATE ESTABLISHED: / / LAND USE (1): RESIDENTIAL
DATE TERMINATED: / / LOCATION SETTING (1): URBAN AND CENTER CITY
SITE ADDRESS HEALTH DEPT., 1900 EAST 9TH ST.
URBAN AREA (9040): WICHITA, KS
SUPPORTING AGENCY (001): KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT
COMMENTS: SITE OPERATED BY WICHITA-SENGWICK CO HEALTH DEPT
SITE-USER-INFO: AT CITY-COUNTY HEALTH BLDG ACTIVE 1/1/73

LATITUDE 1 37.42104 N
LONGITUDE 1 97.18150 W
UTM ZONE 1 14
UTM NORTHING 1 4173780
UTM EASTING 1 648644
DIFF. G41
ELEVATION ABOVE MSL 1 396 M
RECORD LAST UPDATED 1 09/11/22
LAST REEVAL 1 79/09/17
COMPASS SECTOR 1 NE
MET DATA 1 N
DISTANCE CITY: 003
MC IND: 1
MSA (9040): WICHITA, KS

AMP300

AIR QUALITY SUBSYSTEM

SITE DESCRIPTION INVENTORY

CPA-REGIONS V4

STATE (12): FLORIDA

UATMP SITE CODE: FLFL

SITE ID : 12-011-1703 CITY (240000): FORT LAUDERDALE
 CITY POPULATION : 153,279 COUNTY (011): BROWARD CO
 AUCM POPULATION : 5,515,308 AUCM (050): SOUTHEAST FLORIDA
 DATE ESTABLISHED : / / LAND USE (2): COMMERCIAL
 DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
 SITE ADDRESS: 2101 NW SIXTH STREET
 URBAN AREA (6000): FORT LAUDERDALE-HOLLYWOOD, FL
 SUPPORTING AGENCY (000): ***** DESCRIPTION UNKNOWN *****
 COMMENTS: FT LAUDERDALE UTILITIES PLANT "A"

UATMP SITE CODE: MIFL

SITE ID : 12-025-4002 CITY (45000): MIAMI
 CITY POPULATION : 346,805 COUNTY (025): DADE CO
 AUCM POPULATION : 5,515,308 AUCM (050): SOUTHEAST FLORIDA
 DATE ESTABLISHED : / / LAND USE (2): COMMERCIAL
 DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
 SITE ADDRESS: METRO ANNEX 804 NW 5TH STREET
 URBAN AREA (5000): MIAMI, FL
 SUPPORTING AGENCY (000): DADE COUNTY DEPARTMENT ENVIRONMENTAL RESOURCES MANA
 COMMENTS: UCPC 41

UATMP SITE CODE: PEFL

SITE ID : 12-033-0004 CITY (10225): CANTONMENT
 CITY POPULATION : 23,309 COUNTY (033): ESCAMBIA CO
 AUCM POPULATION : 2,512,539 AUCM (005): MOBILE-PENSACOLA-PANAMA CITY-9
 DATE ESTABLISHED : 75/01/01 LAND USE (3): INDUSTRIAL
 DATE TERMINATED : / / LOCATION SETTING (2): SUBURBAN
 SITE ADDRESS: ELLYSON INDUSTRIAL PARK-PICTER ROAD
 URBAN AREA (6000): PENSACOLA, FL
 SUPPORTING AGENCY (001): FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHWEST DI
 COMMENTS: ADD BOX INSTRUMENT--DELETE CO INSTRUMENT

LATITUDE : 26107144 N UTM EASTING : 503110
 LONGITUDE : 08110107 W DIFF. GMT : 05
 UTM ZONE : 17 ELEVATION ABOVE MSL : 2 M
 UTM NORTHING : 2890085 RECORD LAST UPDATED : 09/11/22
 HW EVAL DATE : / / LAST REV EVAL : / /
 DISTANCE CITY : COMPASS SECTOR :
 HC IND : MET DATA :
 MSA (2680): FT LAUDERDALE-HOLLYWOOD-POMPANO BE

LATITUDE : 25147152 N UTM EASTING : 579171
 LONGITUDE : 08112137 W DIFF. GMT : 05
 UTM ZONE : 17 ELEVATION ABOVE MSL : 5 M
 UTM NORTHING : 2853365 RECORD LAST UPDATED : 09/11/22
 HW EVAL DATE : / / LAST REV EVAL : / /
 DISTANCE CITY : 029 COMPASS SECTOR :
 HC IND : Y MET DATA :
 MSA (5000): MIAMI-MIALEAH, FL

LATITUDE : 30132100 N UTM EASTING : 400814
 LONGITUDE : 07112100 W DIFF. GMT : 06
 UTM ZONE : 16 ELEVATION ABOVE MSL : 35 M
 UTM NORTHING : 3377710 RECORD LAST UPDATED : 09/11/22
 HW EVAL DATE : / / LAST REV EVAL : 08/01/20
 DISTANCE CITY : 008 COMPASS SECTOR :
 HC IND : Y MET DATA :
 MSA (6080): PENSACOLA, FL

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

DATE 02/14/90
 AMPJBU

STATE (17): ILLINOIS

EPA-REGION: 05

UATMP SITE CODE: C4IL

SITE ID: 17-051-0060 CITY (14000): CHICAGO
 CITY POPULATION: 3,005,072 COUNTY (031): COOK CO
 AUCM POPULATION: 7,917,109 AUCM (067): METROPOLITAN CHICAGO
 DATE ESTABLISHED: 87/10/30 LAND USE (1): RESIDENTIAL
 DATE TERMINATED: / / LOCATION SETTING (2): SUBURBAN
 SITE ADJUT: 13100 S DUTY
 URBAN AREA (1601): CHICAGO, IL-NORTHWESTERN IN
 SUPPLEMENTING AGENCY (031): ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
 COMMENTS:
 SITE-USER=INFU; CARVEN H.S.

LATITUDE: 41139804 N UTM EASTING: 449860
 LONGITUDE: 87136804 W DIFF. GMS: 06
 UTM ZONE: 16 ELEVATION ABOVE MSL: 177 M
 UTM NORTHING: 4611156 RECORD LAST UPDATED: 90/01/04
 HQ EVAL DATE: / / LAST REG EVAL: / /
 DISTANCE CITY: COMPASS SECTOR: N
 HQ IND: N MET DATA: .
 MSA (1600): CHICAGO, IL

DATE 02/14/00
AMP300

1. PA AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRMS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

PAGE 4

EPA-REGULID: 07

STATE (20): KANSAS

UATMP SITE CODE: W2KS

SITE ID: 20-173-0009 CITY (9000): WICHITA
CITY POPULATION: 279,035 COUNTY (173): SEDGWICK CO
AUCH POPULATION: 602,705 AUCH (099): SOUTH CENTRAL KANSAS
DATE ESTABLISHED: / / LAND USE (1): RESIDENTIAL
DATE TERMINATED: / / LOCATION SETTING (2): SUBURBAN
SITE ADDR: FINE ST #12 GLEN & PARKER
URBAN AREA (9000): WICHITA, KS
SUPPORTING AGENCY (001): KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT
COMMENT: SITE OPERATED BY WICHITA SEDGWICK CO HEALTH DEPT.
SITE-USER-INFO: AT FIRE STATION #12 ACTIVE 9/1/72

LATITUDE: 37139104 N UTM EASTING: 1 644480
LONGITUDE: 97121144 W DIFF. GMT: 1 06
UTM ZONE: 14 ELEVATION ABOVE MSL: 343 M
UTM NORTHING: 4168163 RECORD LAST UPDATED: 09/12/20
HW EVAL DATE: / / LAST REV EVAL: 79/09/18
DISTANCE CITY: 005 COMPASS SECTOR: 1 SW
HC IND: 1 N
MSA (9040): WICHITA, KS

LP# DEMONSTRATION INFORMATION ELIMINATION SYSTEM (AIRS)
 AIR QUALITY SUBSYSTEM
 SITE DESCRIPTION INVENTORY

STATE (22): LOUISIANA

UATMP SITE CODE: BRLA

SITE ID : 22-0034-0000 CITY (051000): EAST BATON ROUGE
 CITY POPULATION : 219,419 COUNTY (0333): EAST BATON ROUGE PAR
 AGRIC POPULATION : 3,921,500 AGRIC (1000): SOUTHERN LOUISIANA-SOUTHEAST T
 DATE ESTABLISHED : / / LAND USE (2): COMMERCIAL
 DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
 SITE ADDR: 1500 KILBENSIDE ROAD
 URBAN AREA (0760): BATON ROUGE, LA
 SUPPORTING AGENCY (001): LOUISIANA STATE DEPARTMENT OF NATURAL RESOURCES
 COMMENTS:
 LATITUDE : 30.27139 N UTM EASTING : 673989
 LONGITUDE : 91.11116 W DIFF. GMT : 00
 UTM ZONE : 15 ELEVATION ABOVE MSL : 9 M
 UTM NORTHING : 3371065 RECORD LAST UPDATED: 89/11/22
 HQ EVAL DATE: 80/09/10 LAST NEW EVAL : 87/03/25
 DISTANCE CITY: 001 CUMPASS SECTOR : N
 MC IND: Y MET DATA : N
 MSA (0760): BATON ROUGE, LA

DATE 02/14/90
AMPJND

CIA AERIAL PHOTO INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

PAGE 6

EPA-REGION 07

STATE (29): MISSOURI

UATMP SITE CODE: S2M0

SITE ID : 29-510-0072 CITY (050000) ST LOUIS
CITY POPULATION : 454,005 COUNTY (5100) ST LOUIS
AUCH POPULATION : 2,423,778 AUCH (0700) METROPOLITAN ST. LOUIS
DATE ESTABLISHED : / / LAND USE (20) COMMERCIAL
DATE TERMINATED : / / LOCATION SETTING (10) URBAN AND CENTEN CITY
SITE ADDR: 1122 CLARK
URBAN AREA (7040) ST. LOUIS, MO-IL
SUPPORTING AGENCY (063) ST LOUIS CITY DIVISION OF AIR POLLUTION CONTROL
COMMENTS: STARTED UP 74

LATITUDE : 3813712A N UTM EASTING : 743882
LONGITUDE : 9011155 W DIFF. GMT : 00
UTM ZONE : 15 ELEVATION ABOVE MSL : 154 M
UTM NORTHING : 4278610 RECORD LAST UPDATED : 89/08/10
HW EVAL DATE : / / LAST REG EVAL : / /
DISTANCE CITY : 001 COMPASS SECTOR : M
MC IND : Y MET DATA :
MSA (7040) ST. LOUIS, MO-IL

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

DATE 02/14/90
AMPJAU

STATE (34): NEW JERSEY

EPA-REGION: 02

UATMP SITE CODE: CANJ

SITE ID : 34-007-0003 CITY (10000): CAMDEN
CITY POPULATION : 84,910 COUNTY (007): CAMDEN CO
AUCK POPULATION : 5,407,472 AUCK (045): METROPOLITAN PHILADELPHIA
DATE ESTABLISHED : / / LAND USE (1): RESIDENTIAL
DATE TERMINATED : / / LOCATION SETTING (2): SUBURBAN
SITE ADDR: CAMDEN TRAILER, CUPENHOLD AND DAVIS STREET
URBAN AREA (6160): PHILADELPHIA, PA-NJ
SUPPORTING AGENCY (03): NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION
COMMENTS: NJ #04001, START 802,03,1/1/08,NJ #050(TSP)START 9/3/83, 804 10/83
SITE-USER-INFO: START IP #2 10/83,881,SLANS-TSP,CU 10/1/84,TSP DISC.12/31/86

LATITUDE : 39.55123 " UTM EASTING : 4916
LONGITUDE : 75.105150 " DIFF. CM : 05
UTM ZONE : 18 ELEVATION ABOVE MSL : 6
UTM NORTHING : 4419012 RECORD LAST UPDATED : 89/11/8
MO EVAL DATE: 81/09/16 LAST REV EVAL : 80/02/1
DISTANCE CITY: 007 CAMPASH SECTOR : SE
MC IND: Y MET DATA : Y

MSA (6160): PHILADELPHIA, PA-NJ

DATE 02/14/90
AMP300

DATA ACQUISITION, INFORMATION RETRIEVAL SYSTEM (AIRS)
AIR QUALITY SUBSYSTEM
SITE DESCRIPTION INVENTORY

PAGE 8

EPA-REGULUS 00

STATE (40): TEXAS

UATMP SITE CODE: DLTX

SITE ID : 10-113-0009 CITY (19000): DALLAS
CITY POPULATION : 904,078 COUNTY (113): DALLAS CO
AQUA POPULATION : 3,257,903 AUCH (215): METROPOLITAN DALLAS-FORT WORTH
DATE ESTABLISHED : / / LAND USE (2): COMMERCIAL
DATE TERMINATED : / / LOCATION SETTING (1): URBAN AND CENTER CITY
SITE ADDR: 1415 MILLER ST.
URBAN AREA (1920): DALLAS-FORT WORTH, TX
SUPPORTING AGENCY (000): ***** DESCRIPTION UNKNOWN *****
COMMENTS: FORMERLY POLICE/INVEST SITE 45131004001
SITE-USER-INFORM OFFICES MOVED, NEW SITE NEEDED

UATMP SITE CODE: HITX

SITE ID : 10-201-1034 CITY (35000): HOUSTON
CITY POPULATION : 1,595,138 COUNTY (201): HARRIS CO
AQUA POPULATION : 3,270,239 AUCH (215): METROPOLITAN HOUSTON-BALVESTON
DATE ESTABLISHED : / / LAND USE (1): RESIDENTIAL
DATE TERMINATED : / / LOCATION SETTING (2): SUBURBAN
SITE ADDR: HARRIS CLEM SCH 1202 WAE DRIVE
URBAN AREA (3300): HOUSTON, TX
SUPPORTING AGENCY (001): TEXAS AIR CONTROL BOARD
COMMENTS: LMSL TRACE METALS SAMPLING SITE

Appendix B - Summary Statistics for Cases 1 and 2 for All Sites

TABLE B-1. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

CITY: BATON ROUGE, LA (BRLA)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE				ACETALDEHYDE				ACETONE	
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	STD ^c (ppbv)
16JAN89	2	0666	1.630	7.3620	0.08485	1.045	4.7847	0.03536	1.310	1.5267	0.01414	
31JAN89	3	0678	3.410	10.5572	0.25456	1.740	4.5977	0.05657	0.825	18.1818	0.10607	
09FEB89	5	06910	1.100	1.8182	0.01414	0.675	1.4815	0.00707	0.900	4.4444	0.02828	
21FEB89	3	0708	0.925	5.4054	0.03536	0.770	7.7922	0.04243	1.300	10.7692	0.09899	
05MAR89	1	0719	0.430	.	.	.	.	.	0.865	5.7803	0.03536	
17MAR89	6	0733	1.455	3.4364	0.03536	0.760	5.2632	0.02828	0.500	.	.	
31MAR89	6	0755	1.230	3.2520	0.02828	1.075	4.6512	0.03536	1.480	18.9189	0.19799	
10APR89	2	0766	1.340	2.9851	0.02828	0.680	23.5294	0.11314	1.780	13.4831	0.16971	
22APR89	7	0783	1.700	3.5294	0.04243	1.405	10.6762	0.10607	7.490	9.8798	0.52326	
10MAY89	4	0806	1.345	15.6134	0.14849	0.975	7.1795	0.04950	2.450	5.7143	0.09899	
16MAY89	3	08170	1.280	21.8750	0.19799	1.005	16.9154	0.12021	.	.	.	
09JUN89	6	0846	2.055	6.3260	0.09192	1.455	22.6804	0.23335	1.630	19.6319	0.22627	
21JUN89	4	0865	1.745	0.5731	0.00707	1.165	4.2918	0.03536	0.860	11.6279	0.07071	
03JUL89	2	0877	1.760	6.8182	0.08485	1.380	20.2899	0.19799	0.580	17.2414	0.07071	
15JUL89	7	0891	1.120	1.7857	0.01414	0.860	39.5349	0.24042	.	.	.	
27JUL89	5	0907	1.685	5.3412	0.06364	2.225	3.1461	0.04950	.	.	.	
08AUG89	3	09240	1.610	14.9068	0.16971	1.230	17.8862	0.15556	2.235	1.3423	0.02121	
20AUG89	1	09390	1.530	10.4575	0.11314	2.060	5.8252	0.08485	0.775	11.6129	0.06364	
01SEP89	6	0951	1.975	2.5316	0.03536	0.685	30.6569	0.14849	0.370	.	.	
13SEP89	4	0968	1.555	8.3601	0.09192	1.495	2.0067	0.02121	0.825	27.8788	0.16263	
25SEP89	2	0981	1.280	1.5625	0.01414	1.260	34.9206	0.31113	2.000	14.0000	0.19799	
07OCT89	7	1000	1.670	14.3713	0.16971	2.005	3.4913	0.04950	2.225	11.2360	0.17678	
19OCT89	5	1014	0.665	7.5188	0.03536	0.410	0.0000	0.00000	1.665	4.2042	0.04950	
31OCT89	3	1029	2.030	12.8079	0.18385	1.600	7.5000	0.08485	1.800	11.1111	0.14142	
12NOV89	1	10500	1.660	62.6506	0.73539	1.665	9.0090	0.10607	3.595	16.9096	0.23335	
24NOV89	6	1064	1.375	28.3636	0.27577	0.785	11.4650	0.06364	1.715	.	.	
06DEC89	4	1085	2.185	5.0343	0.07778	1.690	10.6509	0.12728	.	.	.	
17DEC89	1	1099	1.180	3.3898	0.02828	1.265	43.4783	0.38891	0.530	.	.	
30DEC89	7	1115	0.850	2.3529	0.01414	1.080	24.0741	0.18385	.	.	.	
11JAN90	5	1130	2.015	7.4442	0.10607	1.770	11.2994	0.14142	2.470	7.2874	0.12728	
23JAN90	3	1151	1.500	26.6667	0.28284	1.255	15.1394	0.13435	1.740	5.7471	0.07071	
AVERAGES			1.525	10.1699	0.11549	1.249	13.4739	0.11172	1.689	11.2047	0.13435	

^aIn Case 1, mean concentrations are calculated using detectable tube concentrations only.^bu." indicates missing value resulting from invalidated samples and/or data below ADL.^cn." indicates insufficient data to perform the calculation.

TABLE B-2. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

CITY: BATON ROUGE, LA (BRLA)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE				ACETALDEHYDE				ACETONE	
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	STD ^c (ppbv)
16JAN89	2	0666	1.630	7.3620	0.08485	1.045	4.7847	0.03536	1.310	1.5267	0.01414	
31JAN89	3	0678	3.410	10.5572	0.25456	1.740	4.5977	0.05657	0.825	18.1818	0.10607	
09FEB89	5	06910	1.100	1.8182	0.01414	0.675	1.4815	0.00707	0.900	4.4444	0.02828	
21FEB89	3	0708	0.925	5.4054	0.03536	0.770	7.7922	0.04243	1.300	10.7692	0.09899	
05MAR89	1	0719	0.305						0.865	5.7803	0.03536	
17MAR89	6	0733	1.455	3.4364	0.03536	0.760	5.2632	0.02828	0.340			
31MAR89	6	0755	1.230	3.2520	0.02828	1.075	4.6512	0.03536	1.480	18.9189	0.19799	
10APR89	2	0766	1.340	2.9851	0.02828	0.680	23.5294	0.11314	1.780	13.4831	0.16971	
22APR89	7	0783	1.700	3.5294	0.04243	1.405	10.6762	0.10607	7.490	9.8798	0.52326	
10MAY89	4	0806	1.345	15.6134	0.14849	0.975	7.1795	0.04950	2.450	5.7143	0.09899	
16MAY89	3	08170	1.280	21.8750	0.19799	1.005	16.9154	0.12021				
09JUN89	6	0846	2.055	6.3260	0.09192	1.455	22.6804	0.23335	1.630	19.6319	0.22627	
21JUN89	4	0865	1.745	0.5731	0.00707	1.165	4.2918	0.03536	0.860	11.6279	0.07071	
03JUL89	2	0877	1.760	6.8182	0.08485	1.380	20.2899	0.19799	0.580	17.2414	0.07071	
15JUL89	7	0891	1.120	1.7857	0.01414	0.860	39.5349	0.24042				
27JUL89	5	0907	1.685	5.3412	0.06364	2.225	3.1461	0.04950				
08AUG89	3	09240	1.610	14.9068	0.16971	1.230	17.8862	0.15556	2.235	1.3423	0.02121	
20AUG89	1	09390	1.530	10.4575	0.11314	2.060	5.8252	0.08485	0.775	11.6129	0.06364	
01SEP89	6	0951	1.975	2.5316	0.03536	0.685	30.6569	0.14849	0.275			
13SEP89	4	0968	1.555	8.3601	0.09192	1.495	2.0067	0.02121	0.825	27.8788	0.16263	
25SEP89	2	0981	1.280	1.5625	0.01414	1.260	34.9206	0.31113	2.000	14.0000	0.19799	
07OCT89	7	1000	1.670	14.3713	0.16971	2.005	3.4913	0.04950	2.225	11.2360	0.17678	
19OCT89	5	1014	0.665	7.5188	0.03536	0.410	0.0000	0.00000	1.665	4.2042	0.04950	
31OCT89	3	1029	2.030	12.8079	0.18385	1.600	7.5000	0.08485	1.800	11.1111	0.14142	
12NOV89	1	10500	1.660	62.6506	0.73539	1.665	9.0090	0.10607	3.595	9.1794	0.23335	
24NOV89	6	1064	1.375	28.3636	0.27577	0.785	11.4650	0.06364	1.715	16.9096	0.20506	
06DEC89	4	1085	2.185	5.0343	0.07778	1.690	10.6509	0.12728				
17DEC89	1	1099	1.180	3.3898	0.02828	1.265	43.4783	0.38891	0.355			
30DEC89	7	1115	0.850	2.3529	0.01414	1.080	24.0741	0.18385				
11JAN90	5	1130	2.015	7.4442	0.10607	1.770	11.2994	0.14142	2.470	7.2874	0.12728	
23JAN90	3	1151	1.500	26.6667	0.28284	1.255	15.1394	0.13435	1.740	5.7471	0.07071	
AVERAGES			1.521	10.1699	0.11549	1.249	13.4739	0.11172	1.672	11.2047	0.13435	

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

^b"." indicates missing value resulting from invalidated samples and/or data below ADL.

^c"." indicates insufficient data to perform the calculation.

TABLE B-3. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

CITY: CHICAGO, IL (C4IL)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE			ACETALDEHYDE			ACETONE			
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	
22JAN89	1	0673	0.670	23.881	0.11314	0.390	5.1282	0.01414	1.285	5.447	0.04950	
06FEB89	2	0688	2.425	6.186	0.10607	1.180	0.0000	0.00000	1.320	19.697	0.18385	
15FEB89	4	0698	4.530	13.245	0.42426	1.780	11.2360	0.14142	1.225	126.531	1.09602	
27FEB89	2	07140	1.295	5.405	0.04950	0.475	2.1053	0.00707	0.655	35.115	0.16263	
17MAR89	6	07350	0.795	8.805	0.04950				1.020	3.922	0.02828	
23MAR89	5	0743	2.375	6.316	0.10607	1.190	8.4034	0.07071	1.170	27.350	0.22627	
29MAR89	4	0752	1.570	5.096	0.05657	0.520	3.8462	0.01414	1.360	8.824	0.08485	
04APR89	3	0757	0.515	21.359	0.07778				1.165	11.159	0.09192	
16APR89	1	0782	1.120	14.286	0.11314	0.805	3.7267	0.02121	1.160	5.172	0.04243	
28APR89	6	0794	3.140	10.191	0.22627	1.905	3.6745	0.04950	2.615	16.444	0.30406	
10MAY89	4	0811	0.975	7.179	0.04950	0.430	27.9070	0.08485	2.520	12.698	0.22627	
22MAY89	2	0827	3.170	2.524	0.05657	2.060	2.9126	0.04243	4.315	9.502	0.28991	
03JUN89	7	08450	1.120	5.357	0.04243	0.640	31.2500	0.14142	1.370	14.599	0.14142	
16JUN89	6	0860	0.510	11.765	0.04243				2.815	13.854	0.27577	
21JUN89	4	0902	1.695	150.442	1.80312	0.390						
27JUN89	3	0869	2.875	0.348	0.00707	1.785	8.4034	0.10607	2.090	22.010	0.32527	
09JUL89	1	0890	1.610	3.727	0.04243	0.935	1.0695	0.00707	0.655	56.489	0.26163	
02AUG89	4	0911	3.235	5.255	0.12021	1.880	10.6383	0.14142	3.900	29.231	0.80610	
14AUG89	2	0935	2.550	0.000	0.00000	1.810	15.4696	0.19799	2.930	4.096	0.08485	
26AUG89	7	09500	2.695	8.534	0.16263	2.045	20.0489	0.28991	2.900	9.655	0.19799	
07SEP89	5	0964	1.855	12.399	0.16263	1.255	10.3586	0.09192	2.100	9.524	0.14142	
21SEP89	5	0984	2.570	8.560	0.15556	1.880	1.0638	0.01414	2.950	15.593	0.32527	
01OCT89	1	0995	1.910	5.236	0.07071	1.730	33.5260	0.41012	2.980	8.054	0.16971	
13OCT89	6	1012	6.520	0.000	0.00000	4.575	10.2732	0.33234	6.950	21.295	1.04652	
25OCT89	4	1031	1.975	5.570	0.07778	1.200	11.6667	0.09899	2.975	2.353	0.04950	
30NOV89	5	10810	1.970	1.015	0.01414	1.185	0.8439	0.00707	1.905	1.575	0.02121	
13DEC89	4	1104	2.505	3.593	0.06364	1.710	14.0351	0.16971	2.900	0.000	0.00000	
24DEC89	1	1120	1.135	7.930	0.06364	1.040	13.4615	0.09899	0.835	34.731	0.20506	
05JAN90	6	1140	1.650	9.697	0.11314	1.055	12.3223	0.09192	6.060	0.660	0.02828	
17JAN90	4	1155	1.240	40.323	0.35355	0.865	28.9017	0.17678	2.975	5.714	0.12021	
AVERAGES			2.073	13.474	0.15745	1.360	11.2412	0.10851	2.383	18.3204	0.24090	

^aIn Case 1, mean concentrations are calculated using detectable tube concentrations only.^b,"" indicates missing value resulting from invalidated samples and/or data below ADL.^c,"" indicates insufficient data to perform the calculation.

TABLE B-4. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

CITY: CHICAGO, IL (C4IL)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE				ACETALDEHYDE				ACETONE	
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	STD ^c (ppbv)
22JAN89	1	0673	0.670	23.881	0.11314	0.390	5.1282	0.01414	1.285	5.447	0.04950	0.04950
06FEB89	2	0688	2.425	6.186	0.10407	1.180	0.0000	0.00000	1.320	19.697	0.18385	0.18385
15FEB89	4	0698	4.530	13.245	0.42426	1.780	11.2360	0.14142	1.225	126.531	1.09602	1.09602
27FEB89	2	07140	1.295	5.405	0.04950	0.475	2.1053	0.00707	0.655	35.115	0.16263	0.16263
17MAR89	6	07350	0.795	8.805	0.04950	.	.	.	1.020	3.922	0.02828	0.02828
23MAR89	5	0743	2.375	6.316	0.10607	1.190	8.4034	0.07071	1.170	27.350	0.22627	0.22627
29MAR89	4	0752	1.570	5.096	0.05657	0.520	3.8462	0.01414	1.360	8.824	0.08485	0.08485
04APR89	3	0757	0.515	21.359	0.07778	.	.	.	1.165	11.159	0.09192	0.09192
16APR89	1	0782	1.120	14.286	0.11314	0.805	3.7267	0.02121	1.160	5.172	0.04243	0.04243
28APR89	6	0794	3.140	10.191	0.22627	1.905	3.6745	0.04950	2.615	16.444	0.30406	0.30406
10MAY89	4	0811	0.975	7.179	0.04950	0.430	27.9070	0.08485	2.520	12.698	0.22627	0.22627
22MAY89	2	0827	3.170	2.524	0.05657	2.060	2.9126	0.04243	4.315	9.502	0.28991	0.28991
03JUN89	7	08450	1.120	5.357	0.04243	0.640	31.2500	0.14142	1.370	14.599	0.14142	0.14142
16JUN89	6	0860	0.510	11.765	0.04243	.	.	.	2.815	13.854	0.27577	0.27577
21JUN89	4	0902	1.695	150.442	1.80312	0.285	.	.	.	.	.	.
27JUN89	3	0869	2.875	0.348	0.00707	1.785	8.4034	0.10607	2.090	22.010	0.32527	0.32527
09JUL89	1	0890	1.610	3.727	0.04243	0.935	1.0695	0.00707	0.655	56.489	0.26163	0.26163
02AUG89	4	0911	3.235	5.255	0.12021	1.880	10.6383	0.14142	3.900	29.231	0.80610	0.80610
14AUG89	2	0935	2.550	0.000	0.00000	1.810	15.4696	0.19799	2.930	4.096	0.08485	0.08485
26AUG89	7	09500	2.695	8.534	0.16263	2.045	20.0489	0.28991	2.900	9.655	0.19799	0.19799
07SEP89	5	0964	1.855	12.399	0.16263	1.255	10.3586	0.09192	2.100	9.524	0.14142	0.14142
21SEP89	5	0984	2.570	8.560	0.15556	1.880	1.0638	0.01414	2.950	15.593	0.32527	0.32527
01OCT89	1	0995	1.910	5.236	0.07071	1.730	33.5260	0.41012	2.980	8.054	0.16971	0.16971
13OCT89	6	1012	6.520	0.000	0.00000	4.575	10.2732	0.33234	6.950	21.295	1.04652	1.04652
25OCT89	4	1031	1.975	5.570	0.07778	1.200	11.6667	0.09899	2.975	2.353	0.04950	0.04950
30NOV89	5	10810	1.970	1.015	0.01414	1.185	8.439	0.00707	1.905	1.575	0.02121	0.02121
13DEC89	4	1104	2.505	3.593	0.06364	1.710	14.0351	0.16971	2.900	0.000	0.00000	0.00000
24DEC89	1	1120	1.135	7.930	0.06364	1.040	13.4615	0.09899	0.835	34.731	0.20506	0.20506
05JAN90	6	1140	1.650	9.697	0.11314	1.055	12.3223	0.09192	6.060	0.660	0.02828	0.02828
17JAN90	4	1155	1.240	40.323	0.35355	0.865	28.9017	0.17678	2.975	5.714	0.12021	0.12021
AVERAGES			2.073	13.474	0.15745	1.356	11.2412	0.10851	2.383	18.3204	0.24090	0.24090

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

^b"," indicates missing value resulting from invalidated samples and/or data below ADL.

^c"," indicates insufficient data to perform the calculation.

TABLE B-5. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

CITY: CAMDEN, NJ (CANJ)											
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE			ACETALDEHYDE			ACETONE		
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)
22JAN89	1	0672	4.085	5.1408	0.14849	2.185	0.4577	0.00707	1.730	10.4046	0.12728
03FEB89	6	0685	2.280	7.0175	0.11314	1.275	19.6078	0.17678	0.440	.	.
15FEB89	4	0696	3.750	5.3333	0.14142	2.125	10.8235	0.16263	1.850	19.4595	0.25456
27FEB89	2	0710	2.310	8.6580	0.14142	1.010	7.9208	0.05657	1.410	2.8369	0.02828
11MAR89	7	07300	2.165	4.1570	0.06364	1.615	1.8576	0.02121	2.120	5.6604	0.08485
23MAR89	5	0742	0.450	.	.	0.495	22.2222	0.07778	1.025	2.9268	0.02121
04APR89	3	0760	1.385	25.2708	0.24749	0.815	6.1350	0.03536	0.920	0.0000	0.00000
16APR89	1	0777	2.270	8.8106	0.14142	1.260	3.1746	0.02828	2.955	17.9357	0.37477
28APR89	6	0793	1.605	20.5607	0.23335	0.765	19.6078	0.10607	3.525	15.0355	0.37477
10MAY89	4	0808	0.720	55.5556	0.28284	0.440	9.0909	0.02828	2.885	2.4263	0.04950
22MAY89	2	0822	2.505	1.1976	0.02121	2.150	12.0930	0.18385	4.110	1.9465	0.05657
03JUN89	7	0843	1.425	6.3158	0.06364	0.895	7.8212	0.04950	4.345	0.6904	0.02121
15JUN89	5	0852	1.655	9.0634	0.10607	0.940	4.2553	0.02828	1.300	3.0769	0.02828
27JUN89	3	08740	1.760	0.0000	0.00000	1.550	14.1935	0.15556	0.980	.	.
09JUL89	1	0888	1.980	.	.	1.430	.	.	1.720	.	.
21JUL89	6	0900	1.180	8.4746	0.07071	1.020	3.9216	0.02828	0.695	24.4604	0.12021
02AUG89	4	0916	1.615	9.2879	0.10607	2.390	24.2678	0.41012	2.700	3.7037	0.07071
14AUG89	2	0926	2.330	4.2918	0.07071	1.770	10.1695	0.12728	2.160	21.2963	0.32527
26AUG89	7	0948	1.815	0.5510	0.00707	1.300	0.0000	0.00000	3.685	1.8996	0.04950
07SEP89	5	09590	2.060	4.8544	0.07071	1.650	15.7576	0.18385	4.750	10.1053	0.33941
19SEP89	3	0971	1.725	0.5797	0.00707	0.970	20.6186	0.14142	1.430	2.7972	0.02828
01OCT89	1	0989	1.005	20.8955	0.14849	0.740	2.7027	0.01414	2.280	2.6316	0.04243
13OCT89	6	1005	5.465	15.5535	0.60104	4.410	10.4308	0.32527	6.540	0.3058	0.01414
25OCT89	4	1028	7.005	2.1413	0.10607	4.585	1.9629	0.06364	8.425	1.7804	0.10607
06NOV89	2	1042	2.790	0.7168	0.01414	1.810	5.5249	0.07071	2.590	10.0386	0.18385
18NOV89	7	1056	1.955	2.5575	0.03536	1.030	17.4757	0.12728	0.720	.	.
30NOV89	5	1076	1.880	4.2553	0.05657	0.945	11.6402	0.07778	2.135	27.6347	0.41719
12DEC89	3	1096	4.805	5.2029	0.17678	3.100	5.8065	0.12728	2.155	63.5731	0.96874
24DEC89	1	11080	2.625	4.1905	0.07778	1.255	31.0757	0.27577	2.310	22.5108	0.36770
05JAN90	6	1128	2.760	9.4203	0.18385	1.930	14.5078	0.19799	.	.	.
17JAN90	4	1144	5.075	2.5616	0.09192	2.515	4.3738	0.07778	5.730	2.4433	0.09899
29JAN90	2	1153	0.960	0.0000	0.00000	1.015	58.1281	0.41719	.	.	.
AVERAGES			2.419	8.4205	0.11762	1.606	12.1815	0.12203	2.654	10.6762	0.17514

^aIn Case 1, mean concentrations are calculated using detectable tube concentrations only.^b "." indicates missing value resulting from invalidated samples and/or data below ADL.^c "." indicates insufficient data to perform the calculation.

TABLE B-6. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

CITY: CAMDEN, NJ (CANJ)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE				ACETALDEHYDE				ACETONE	
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	
22JAN89	1	0672	4.085	5.1408	0.14849	2.185	0.4577	0.00707	1.730	10.4046	0.12728	
03FEB89	6	0685	2.280	7.0175	0.11314	1.275	19.6078	0.17678	0.310			
15FEB89	4	0696	3.750	5.3333	0.14142	2.125	10.8235	0.16263	1.850	19.4595	0.25456	
27FEB89	2	0710	2.310	8.6580	0.14142	1.010	7.9208	0.05657	1.410	2.8369	0.02828	
11MAR89	7	07300	2.165	4.1570	0.06364	1.615	1.8576	0.02121	2.120	5.6604	0.08485	
23MAR89	5	0742	0.315			0.495	22.2222	0.07778	1.025	2.9268	0.02121	
04APR89	3	0760	1.385	25.2708	0.24749	0.815	6.1350	0.03536	0.920	0.0000	0.00000	
16APR89	1	0777	2.270	8.8106	0.14142	1.260	3.1746	0.02828	2.955	17.9357	0.37477	
28APR89	6	0793	1.605	20.5607	0.23335	0.765	19.6078	0.10607	3.525	15.0355	0.37477	
10MAY89	4	0808	0.720	55.5556	0.28284	0.440	9.0909	0.02828	2.885	2.4263	0.04950	
22MAY89	2	0822	2.505	1.1976	0.02121	2.150	12.0930	0.18385	4.110	1.9465	0.05657	
03JUN89	7	0843	1.425	6.3158	0.06364	0.895	7.8212	0.04950	4.345	0.6904	0.02121	
15JUN89	5	0852	1.655	9.0634	0.10607	0.940	4.2553	0.02828	1.300	3.0769	0.02828	
27JUN89	3	08740	1.760	0.0000	0.00000	1.550	14.1935	0.15556	0.580			
09JUL89	1	0888	1.980			1.430			1.720			
21JUL89	6	0900	1.180	8.4746	0.07071	1.020	3.9216	0.02828	0.695	24.4604	0.12021	
02AUG89	4	0916	1.615	9.2879	0.10607	2.390	24.2678	0.41012	2.700	3.7037	0.07071	
14AUG89	2	0926	2.330	4.2918	0.07071	1.770	10.1695	0.12728	2.160	21.2963	0.32527	
26AUG89	7	0948	1.815	0.5510	0.00707	1.300	0.0000	0.00000	3.685	1.8996	0.04950	
07SEP89	5	09590	2.060	4.8544	0.07071	1.650	15.7576	0.18385	4.750	10.1053	0.33941	
19SEP89	3	0971	1.725	0.5797	0.00707	0.970	20.6186	0.14142	1.430	2.7972	0.02828	
01OCT89	1	0989	1.005	20.8955	0.14849	0.740	2.7027	0.01414	2.280	2.6316	0.04243	
13OCT89	6	1005	5.465	15.5535	0.60104	4.410	10.4308	0.32527	6.540	0.3058	0.01414	
25OCT89	4	1028	7.005	2.1413	0.10607	4.585	1.9629	0.06364	8.425	1.7804	0.10607	
06NOV89	2	1042	2.790	0.7168	0.01414	1.810	5.5249	0.07071	2.590	10.0386	0.18385	
18NOV89	7	1056	1.955	2.5575	0.03536	1.030	17.4757	0.12728	0.450			
30NOV89	5	1076	1.880	4.2553	0.05657	0.945	11.6402	0.07778	2.135	27.6347	0.41719	
12DEC89	3	1096	4.805	5.2029	0.17678	3.100	5.8065	0.12728	2.155	63.5731	0.96874	
24DEC89	1	11080	2.625	4.1905	0.07778	1.255	31.0757	0.27577	2.310	22.5108	0.36770	
05JAN90	6	1128	2.760	9.4203	0.18385	1.930	14.5078	0.19799				
17JAN90	4	1144	5.075	2.5616	0.09192	2.515	4.3738	0.07778	5.730	2.4433	0.09899	
29JAN90	2	1153	0.960	0.0000	0.00000	1.015	58.1281	0.41719				
AVERAGES			2.414	8.4205	0.11762	1.606	12.1815	0.12203	2.627	10.6762	0.17514	

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

^b,"" indicates missing value resulting from invalidated samples and/or data below ADL.

^c,"" indicates insufficient data to perform the calculation.

TABLE B-7. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

CITY: DALLAS, TX (DLTX)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE				ACETALDEHYDE				ACETONE	
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	STD ^c (ppbv)
16JAN89	2	0664	3.220	7.4534	0.16971	1.820	1.0989	0.01414	1.655	45.3172	0.53033	
28JAN89	7	0677	1.260	3.1746	0.02828	0.890	4.4944	0.02828	2.075	6.2651	0.09192	
09FEB89	5	0693	2.895	12.7807	0.26163	1.890	15.8730	0.21213	1.505	21.9269	0.23335	
21FEB89	3	0707	1.570	24.2038	0.26870	0.855	19.8830	0.12021	2.055	25.7908	0.37477	
05MAR89	1	0723	0.625	20.8000	0.09192	0.420	4.7619	0.01414	1.175	9.3617	0.07778	
17MAR89	6	0738	1.625	1.8462	0.02121	1.015	2.9557	0.02121	0.645	35.6589	0.16263	
29MAR89	4	0754	2.390	22.5941	0.38184	1.860	16.1290	0.21213	1.140			
10APR89	2	0770	1.460	20.5479	0.21213	0.895	21.2291	0.13435	2.595	5.0096	0.09192	
22APR89	7	0789	1.230	13.0081	0.11314	0.810	9.8765	0.05657	4.025	16.1491	0.45962	
04MAY89	5	0802	1.510	3.9735	0.04243	1.075	2.7907	0.02121	2.090	29.6651	0.43841	
16MAY89	3	0818	1.755	34.7578	0.43134	1.205	25.7261	0.21920	1.615	27.8638	0.31820	
28MAY89	1	0834	1.935	0.5168	0.00707	1.380	10.1449	0.09899	1.435	43.9024	0.44548	
09JUN89	6	08500	2.225	13.9326	0.21920	1.830	1.0929	0.01414	1.680	25.0000	0.29698	
21JUN89	4	08640	1.950	12.3077	0.16971	1.225	7.3469	0.06364	0.995	43.2161	0.30406	
15JUL89	7	0895	1.560	26.9231	0.29698	1.670	23.9521	0.28284	0.715	29.3706	0.14849	
27JUL89	5	0908	1.605	6.8536	0.07778	1.420	12.6761	0.12728	1.570	7.6433	0.08485	
08AUG89	3	0922	2.105	11.8765	0.17678	1.250	9.6000	0.08485	3.745	17.3565	0.45962	
20AUG89	1	0940	2.085	13.9089	0.20506	1.025	2.9268	0.02121	0.955	1.0471	0.00707	
01SEP89	6	0954	2.410	11.6183	0.19799	1.190	30.2521	0.25456	1.160	22.4138	0.18385	
13SEP89	4	09660	2.440	6.5574	0.11314	1.015	18.7192	0.13435	1.155	6.0606	0.04950	
25SEP89	2	0980	2.375	16.4211	0.27577	1.375	19.6364	0.19092	3.865	6.9858	0.19092	
07OCT89	7	1001										
19OCT89	5	1020										
31OCT89	3	1034	4.775	15.2880	0.51619	2.630	16.7300	0.31113	3.610	12.7424	0.32527	
12NOV89	1	1052	1.970	13.1980	0.18385	1.510	23.8411	0.25456	1.720	40.6977	0.49497	
24NOV89	6	1068	1.495	10.0334	0.10607	0.810	22.2222	0.12728	1.610	2.4845	0.02828	
06DEC89	4	1086	1.255	0.7968	0.00707	1.135	4.4053	0.03536				
18DEC89	2	1106	2.880	14.5833	0.29698	1.815	8.2645	0.10607	1.510	34.4371	0.36770	
30DEC89	7	11180	1.220	11.4754	0.09899	1.105	8.1448	0.06364	0.725	75.8621	0.38891	
11JAN90	5	11350	1.700	10.5882	0.12728	1.395	15.0538	0.14849	3.285	2.1309	0.04950	
23JAN90	3	11490	2.760	4.3478	0.08485	1.685	16.0237	0.19092	3.860	10.3627	0.28284	
AVERAGES			2.010	12.6333	0.17873	1.317	12.9604	0.12289	1.935	22.3971	0.25508	

^aIn Case 1, mean concentrations are calculated using detectable tube concentrations only.^b," indicates missing value resulting from invalidated samples and/or data below ADL.^c," indicates insufficient data to perform the calculation.

TABLE B-8. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

CITY: DALLAS, TX (DLTX)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE				ACETALDEHYDE				ACETONE	
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	STD ^c (ppbv)
16JAN89	2	0664	3.220	7.4534	0.16971	1.820	1.0989	0.01414	1.655	45.3172	0.53033	
28JAN89	7	0677	1.260	3.1746	0.02828	0.890	4.4944	0.02828	2.075	6.2651	0.09192	
09FEB89	5	0693	2.895	12.7807	0.26163	1.890	15.8730	0.21213	1.505	21.9269	0.23335	
21FEB89	3	0707	1.570	24.2038	0.26870	0.855	19.8830	0.12021	2.055	25.7908	0.37477	
05MAR89	1	0723	0.625	20.8000	0.09192	0.420	4.7619	0.01414	1.175	9.3617	0.07778	
17MAR89	6	0738	1.625	1.8462	0.02121	1.015	2.9557	0.02121	0.645	35.6589	0.16263	
29MAR89	4	0754	2.390	22.5941	0.38184	1.860	16.1290	0.21213	0.660			
10APR89	2	0770	1.460	20.5479	0.21213	0.895	21.2291	0.13435	2.595	5.0096	0.09192	
22APR89	7	0789	1.230	13.0081	0.11314	0.810	9.8765	0.05657	4.025	16.1491	0.45962	
04MAY89	5	0802	1.510	3.9735	0.04243	1.075	2.7907	0.02121	2.090	29.6651	0.43841	
16MAY89	3	0818	1.755	34.7578	0.43134	1.205	25.7261	0.21920	1.615	27.8638	0.31820	
28MAY89	1	0834	1.935	0.5168	0.00707	1.380	10.1449	0.09899	1.435	43.9024	0.44548	
09JUN89	6	08500	2.225	13.9326	0.21920	1.830	1.0929	0.01414	1.680	25.0000	0.29698	
21JUN89	4	08640	1.950	12.3077	0.16971	1.225	7.3469	0.06364	0.995	43.2161	0.30406	
15JUL89	7	0895	1.560	26.9231	0.29698	1.670	23.9521	0.28284	0.715	29.3706	0.14849	
27JUL89	5	0908	1.605	6.8536	0.07778	1.420	12.6761	0.12728	1.570	7.6433	0.08485	
08AUG89	3	0922	2.105	11.8765	0.17678	1.250	9.6000	0.08485	3.745	17.3565	0.45962	
20AUG89	1	0940	2.085	13.9089	0.20506	1.025	2.9268	0.02121	0.955	1.0471	0.00707	
01SEP89	6	0954	2.410	11.6183	0.19799	1.190	30.2521	0.25456	1.160	22.4138	0.18385	
13SEP89	4	09660	2.440	6.5574	0.11314	1.015	18.7192	0.13435	1.155	6.0606	0.04950	
25SEP89	2	0980	2.375	16.4211	0.27577	1.375	19.6364	0.19092	3.865	6.9858	0.19092	
07OCT89	7	1001										
19OCT89	5	1020										
31OCT89	3	1034	4.775	15.2880	0.51619	2.630	16.7300	0.31113	3.610	12.7424	0.32527	
12NOV89	1	1052	1.970	13.1980	0.18385	1.510	23.8411	0.25456	1.720	40.6977	0.49497	
24NOV89	6	1068	1.495	10.0334	0.10607	0.810	22.2222	0.12728	1.610	2.4845	0.02828	
06DEC89	4	1086	1.255	0.7968	0.00707	1.135	4.4053	0.03536				
18DEC89	2	1106	2.880	14.5833	0.29698	1.815	8.2645	0.10607	1.510	34.4371	0.36770	
30DEC89	7	1180	1.220	11.4754	0.09899	1.105	8.1448	0.06364	0.725	75.8621	0.38891	
11JAN90	5	11350	1.700	10.5882	0.12728	1.395	15.0538	0.14849	3.285	2.1309	0.04950	
23JAN90	3	11490	2.760	4.3478	0.08485	1.685	16.0237	0.19092	3.860	10.3627	0.28284	
AVERAGES			2.010	12.6333	0.17873	1.317	12.9604	0.12289	1.917	22.3971	0.25508	

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

^b,"" indicates missing value resulting from invalidated samples and/or data below ADL.

^c,"" indicates insufficient data to perform the calculation.

TABLE B-9. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

CITY: FT. LAUDERDALE, FL (FLFL)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE				ACETALDEHYDE				ACETONE	
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	
16JAN89	2	0667	3.470	4.0346	0.09899	2.070	8.8235	0.08485	0.740	2.7027	0.01414	
28JAN89	7	0676	2.280	2.6316	0.04243	1.360	10.0840	0.08485	0.530	33.9623	0.12728	
09FEB89	5	0690	2.330	6.8670	0.11314	1.190	18.9474	0.12728				
21FEB89	3	0704	1.910	12.5654	0.16971	0.950	29.7297	0.15556				
05MAR89	1	0721	1.305	17.6245	0.16263	0.740	16.6667	0.08485	0.560			
17MAR89	6	0732	1.040	1.9231	0.01414	0.720	8.6957	0.03536	0.370			
29MAR89	4	07500	1.045	2.8708	0.02121	0.575	0.0000	0.00000	1.465	22.5256	0.23335	
10APR89	2	0767	2.065	0.4843	0.00707	1.750	7.8603	0.19092	1.375	2.1818	0.02121	
29APR89	7	0790	3.545	0.2821	0.00707	3.435	10.9890	0.03536	2.515	31.4115	0.55861	
04MAY89	5	0801	0.670	14.9254	0.07071	0.455	18.2768	0.24749	1.585	10.7256	0.12021	
16MAY89	3	0815	2.300	16.5217	0.26870	1.915	13.4969	0.07778	0.755	33.1126	0.17678	
28MAY89	1	08310	1.015	26.6010	0.19092	0.815	6.2500	0.02828	0.730	35.6164	0.18385	
09JUN89	6	0847	1.275	0.7843	0.00707	0.640	1.1429	0.00707	0.555	34.2342	0.13435	
21JUN89	4	0862	1.500	1.3333	0.01414	0.875	8.9744	0.09899	0.590	10.1695	0.04243	
03JUL89	2	08790	2.590	15.4440	0.28284	1.560	0.5970	0.00707	0.380			
15JUL89	7	0892	2.435	11.0883	0.19092	1.675	12.0482	0.10607	0.705	7.0922	0.03536	
27JUL89	5	0905	1.835	12.5341	0.16263	1.245	18.0758	0.21920	1.195	17.5732	0.14849	
08AUG89	3	0920	3.870	13.9535	0.38184	1.715	81.4815	0.46669	0.470			
20AUG89	1	0934	1.025	34.1463	0.24749	0.810	36.8421	0.19799	0.795	11.3208	0.06364	
01SEP89	6	0952	1.880	1.0638	0.01414	0.760	15.8273	0.07778	0.460	4.3478	0.01414	
13SEP89	4	0963	1.020	5.8824	0.04243	0.695	8.7500	0.09899	0.675	4.4444	0.02121	
25SEP89	2	09780	2.805	8.1996	0.16263	1.600	17.7515	0.10607	0.860	34.8837	0.21213	
07OCT89	7	0996	1.480	21.6216	0.22627	0.845	15.7676	0.13435	1.110	12.6126	0.09899	
19OCT89	5	1013	2.990	18.7291	0.39598	1.205	5.7143	0.07778	2.360	39.8305	0.66468	
31OCT89	3	1030	3.895	1.2837	0.03536	1.925	42.8571	0.21213	0.510	39.3443	0.16971	
12NOV89	1	1045	1.105	8.1448	0.06364	0.590	6.4516	0.09899	0.460			
24NOV89	6	1063	1.090	23.8532	0.18385	0.700	14.5773	0.17678				
06DEC89	4	1083	4.530	7.5055	0.24042	2.170	40.2089	0.54447				
18DEC89	2	1098	3.855	10.6355	0.28991	1.715	3.7879	0.07071	3.645	31.0014	0.79903	
30DEC89	7	1112	2.650	1.5094	0.02828	1.915	6.4516	0.03536	1.400	14.2857	0.14142	
11JAN90	5	1133	5.180	6.1776	0.22627	2.640						
23JAN90	3	1147	1.790	2.2346	0.02828	0.775						
AVERAGES			2.243	9.7955	0.13722	1.313	16.2376	0.12964	1.015	20.6371	0.18957	

^aIn Case 1, mean concentrations are calculated using detectable tube concentrations only.^b,"" indicates missing value resulting from invalidated samples and/or data below ADL.^c,"" indicates insufficient data to perform the calculation.

TABLE B-10. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

CITY: FT. LAUDERDALE, FL (FLFL)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE			ACETALDEHYDE			ACETONE			
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	
16JAN89	2	0667	3.470	4.0346	0.09899	1.125						
28JAN89	7	0676	2.280	2.6316	0.04243	1.360	8.8235	0.08485	0.740	2.7027	0.01414	
09FEB89	5	0690	2.330	6.8670	0.11314	1.190	10.0840	0.08485	0.530	33.9623	0.12728	
21FEB89	3	0704	1.910	12.5654	0.16971	0.950	18.9474	0.12728				
05MAR89	1	0721	1.305	17.6245	0.16263	0.740	29.7297	0.15556				
17MAR89	6	0732	1.040	1.9231	0.01414	0.720	16.6667	0.08485				
29MAR89	4	07500	1.045	2.8708	0.02121	0.575	8.6957	0.03536	0.370			
10APR89	2	0767	2.065	0.4843	0.00707	1.750	0.0000	0.00000	0.275			
29APR89	7	0790	3.545	0.2821	0.00707	3.435	7.8603	0.19092	1.465	22.5256	0.23335	
04MAY89	5	0801	0.670	14.9254	0.07071	0.455	10.9890	0.03536	1.375	2.1818	0.02121	
16MAY89	3	0815	2.300	16.5217	0.26870	1.915	18.2768	0.24749	2.515	31.4115	0.55861	
28MAY89	1	08310	1.015	26.6010	0.19092	0.815	13.4969	0.07778	1.585	10.7256	0.12021	
09JUN89	6	0847	1.275	0.7843	0.00707	0.640	6.2500	0.02828	0.755	33.1126	0.17678	
21JUN89	4	0862	1.500	1.3333	0.01414	0.875	1.1429	0.00707	0.730	35.6164	0.18385	
03JUL89	2	08790	2.590	15.4440	0.28284	1.560	8.9744	0.09899	0.555	34.2342	0.13435	
15JUL89	7	0892	2.435	11.0883	0.19092	1.675	0.5970	0.00707	0.590	10.1695	0.04243	
27JUL89	5	0905	1.835	12.5341	0.16263	1.245	12.0482	0.10407	0.280			
08AUG89	3	0920	3.870	13.9535	0.38184	1.715	18.0758	0.21920	0.705	7.0922	0.03536	
20AUG89	1	0934	1.025	34.1463	0.24749	0.810	81.4815	0.19799	1.195	17.5732	0.14849	
01SEP89	6	0952	1.880	1.0638	0.01414	0.760	36.8421	0.19799	0.325			
13SEP89	4	0963	1.020	5.8824	0.04243	0.695	15.8273	0.07778	0.795	11.3208	0.06364	
25SEP89	2	09780	2.805	8.1996	0.16263	1.600	8.7500	0.09899	0.460	4.3478	0.01414	
07OCT89	7	0996	1.480	21.6216	0.22627	0.845	17.7515	0.10407	0.675	4.4444	0.02121	
19OCT89	5	1013	2.990	18.7291	0.39598	1.205	15.7676	0.13435	0.860	34.8837	0.21213	
31OCT89	3	1030	3.895	1.2837	0.03536	1.925	5.7143	0.07778	1.110	12.6126	0.09899	
12NOV89	1	1045	1.105	8.1448	0.06364	0.385			2.360	39.8305	0.66468	
24NOV89	6	1063	1.090	23.8532	0.18385	0.700	42.8571	0.21213	0.345			
06DEC89	4	1083	4.530	7.5055	0.24042	2.170	6.4516	0.09899	0.610	39.3443	0.16971	
18DEC89	2	1098	3.855	10.6355	0.28991	1.715	14.5773	0.17678	0.320			
30DEC89	7	1112	2.650	1.5094	0.02828	1.915	40.2089	0.54447				
11JAN90	5	1133	5.180	6.1776	0.22627	2.640	3.7879	0.07071	3.645	31.0014	0.79903	
23JAN90	3	1147	1.790	2.2346	0.02828	0.775	6.4516	0.03536	1.400	14.2857	0.14142	
AVERAGES			2.243	9.7955	0.13722	1.278	16.2376	0.12964	0.984	20.6371	0.18957	

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

^b,"" indicates missing value resulting from invalidated samples and/or data below ADL.

^c,"" indicates insufficient data to perform the calculation.

TABLE B-11. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

CITY: HOUSTON, TX (H1TX)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE			ACETALDEHYDE			ACETONE			
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	
16JAN89	2	0665	2.535	0.3945	0.00707	1.575	1.9048	0.02121	1.700	24.7059	0.29698	
28JAN89	7	0675	1.765	6.2323	0.07778	1.610	8.6957	0.09899	0.720	38.8889	0.19799	
09FEB89	5	0689	3.120	1.2821	0.02828	1.680	2.3810	0.02828	1.060	39.6226	0.29698	
22FEB89	4	0705	1.090	33.0275	0.25456	0.500	0.0000	0.00000	1.200	10.0000	0.08485	
05MAR89	1	0720	0.465	36.5591	0.12021	0.375	2.6667	0.00707	0.950	10.5263	0.07071	
17MAR89	6	0734	1.610	3.7267	0.04243	1.755	5.1282	0.06364	-	-	-	
29MAR89	4	0753	1.930	19.6891	0.26870	1.425	27.3684	0.27577	0.900	4.4444	0.02828	
10APR89	2	07690	1.310	15.2672	0.14142	0.780	28.2051	0.15556	1.695	27.7286	0.33234	
22APR89	7	0784	1.565	4.4728	0.04950	2.745	1.8215	0.03536	4.140	6.2802	0.18385	
04MAY89	5	0800	1.470	2.7211	0.02828	1.580	8.8608	0.09899	0.820	26.8293	0.15556	
16MAY89	3	0819	1.710	16.3743	0.19799	1.525	5.9016	0.06364	0.555	41.4414	0.16263	
28MAY89	1	08330	2.195	8.6560	0.13435	2.685	0.3724	0.00707	1.640	19.5122	0.22627	
09JUN89	6	0848	1.800	1.1111	0.01414	1.600	21.2500	0.24042	1.470	10.8844	0.11314	
21JUN89	4	0861	1.590	1.2579	0.01414	1.265	7.1146	0.06364	0.540	-	-	
03JUL89	2	0881	2.985	5.0251	0.10607	2.380	9.2437	0.15556	0.835	27.5449	0.16263	
15JUL89	7	08930	1.520	2.6316	0.02828	1.360	11.7647	0.11314	0.400	-	-	
27JUL89	5	0906	5.805	14.2980	0.58690	4.105	23.6297	0.68589	1.675	44.7761	0.53033	
08AUG89	3	0919	3.365	2.0802	0.04950	1.125	2.6667	0.02121	2.270	11.4537	0.18385	
20AUG89	1	0937	1.880	17.0213	0.22627	1.875	11.2000	0.14849	0.960	0.0000	0.00000	
27SEP89	4	0982	3.695	4.6008	0.12021	1.490	12.0805	0.12728	3.935	4.8285	0.13435	
01OCT89	1	0991	1.675	1.7910	0.02121	1.265	0.7905	0.00707	3.710	35.0404	0.91924	
07OCT89	7	0997	2.500	7.2000	0.12728	1.880	27.6596	0.36770	1.660	2.4096	0.02828	
13OCT89	6	1007	3.415	0.8785	0.02121	3.050	6.5574	0.14142	2.465	3.6511	0.06364	
19OCT89	5	10190	2.385	1.2579	0.02121	1.250	3.2000	0.02828	2.385	12.9979	0.21920	
19OCT89	5	1027	1.520	6.5789	0.07071	1.705	14.6628	0.17678	1.895	49.0765	0.65761	
31OCT89	3	1033	3.155	1.5848	0.03536	1.410	2.8369	0.02828	1.300	20.0000	0.18385	
06NOV89	2	1039	1.530	13.0719	0.14142	1.215	13.9918	0.12021	-	-	-	
12NOV89	1	1053	0.995	13.0653	0.09192	1.300	23.0769	0.21213	2.290	8.7336	0.14142	
18NOV89	7	1058	3.675	15.5102	0.40305	2.150	3.7209	0.05657	2.210	6.3348	0.09899	
24NOV89	6	1066	3.980	5.0251	0.14142	2.890	0.6920	0.01414	3.915	8.4291	0.23335	
30NOV89	5	1074	2.505	22.7545	0.40305	1.165	4.2918	0.03536	0.970	8.2474	0.05657	
06DEC89	4	1082	2.040	8.8235	0.12728	1.885	16.4456	0.21920	2.555	7.4364	0.13435	
12DEC89	3	1094	2.445	0.4090	0.00707	1.455	15.8076	0.16263	0.590	-	-	
18DEC89	2	1100	1.860	12.9032	0.16971	1.405	23.4875	0.23335	0.525	55.2381	0.20506	
03JAN90	4	1119	1.975	7.5949	0.10607	1.435	7.6655	0.07778	-	-	-	
11JAN90	5	1132	2.530	12.6482	0.22627	1.695	1.7699	0.02121	-	-	-	
17JAN90	4	1137	1.455	10.3093	0.10607	2.600	15.3846	0.28284	0.750	2.6667	0.01414	
23JAN90	3	1152	5.070	6.7061	0.24042	7.565	3.8334	0.20506	3.070	26.0586	0.56569	
AVERAGES			2.319	9.0669	0.13044	1.862	9.9508	0.12635	1.699	19.2190	0.21555	

^a In Case 1, mean concentrations are calculated using detectable tube concentrations only.^b "b" indicates missing value resulting from invalidated samples and/or data below ADL.^c "c" indicates insufficient data to perform the calculation.

TABLE B-12. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

CITY: HOUSTON, TX (H1TX)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE				ACETALDEHYDE				ACETONE	
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	STD ^c (ppbv)
16JAN89	2	0665	2.535	0.3945	0.00707	1.575	1.9048	0.02121	1.700	24.7059	0.29698	0.29698
28JAN89	7	0675	1.765	6.2323	0.07778	1.610	8.6957	0.09899	0.720	38.8889	0.19799	0.19799
09FEB89	5	0689	3.120	1.2821	0.02828	1.680	2.3810	0.02828	1.060	39.6226	0.29698	0.29698
22FEB89	4	0705	1.090	33.0275	0.25456	0.500	0.0000	0.00000	1.200	10.0000	0.08485	0.08485
05MAR89	1	0720	0.465	36.5591	0.12021	0.375	2.6667	0.00707	0.950	10.5263	0.07071	0.07071
17MAR89	6	0734	1.610	3.7267	0.04243	1.755	5.1282	0.06364	.	.	.	.
29MAR89	4	0753	1.930	19.6891	0.26870	1.425	27.3684	0.27577	0.900	4.4444	0.02828	0.02828
10APR89	2	07690	1.310	15.2672	0.14142	0.780	28.2051	0.15556	1.695	27.7286	0.33234	0.33234
22APR89	7	0784	1.565	4.4728	0.04950	2.745	1.8215	0.03536	4.140	6.2802	0.18385	0.18385
04MAY89	5	0800	1.470	2.7211	0.02828	1.580	8.8608	0.09899	0.820	26.8293	0.15556	0.15556
16MAY89	3	0819	1.710	16.3743	0.19799	1.525	5.9016	0.06364	0.555	41.4414	0.16263	0.16263
28MAY89	1	08330	2.195	8.6560	0.13435	2.685	0.3724	0.00707	1.640	19.5122	0.22627	0.22627
09JUN89	6	0848	1.800	1.1111	0.01414	1.600	21.2500	0.24042	1.470	10.8844	0.11314	0.11314
21JUN89	4	0861	1.590	1.2579	0.01414	1.265	7.1146	0.06364	0.360	.	.	.
03JUL89	2	0881	2.985	5.0251	0.10607	2.380	9.2437	0.15556	0.835	27.5449	0.16263	0.16263
15JUL89	7	08930	1.520	2.6316	0.02828	1.360	11.7647	0.11314	0.290	.	.	.
27JUL89	5	0906	5.805	14.2980	0.58690	4.105	23.6297	0.68589	1.675	44.7761	0.53033	0.53033
08AUG89	3	0919	3.365	2.0802	0.04950	1.125	2.6667	0.02121	2.270	11.4537	0.18385	0.18385
20AUG89	1	0937	1.880	17.0213	0.22627	1.875	11.2000	0.14849	0.960	0.0000	0.00000	0.00000
27SEP89	4	0982	3.695	4.6008	0.12021	1.490	12.0805	0.12728	3.935	4.8285	0.13435	0.13435
01OCT89	1	0991	1.675	1.7910	0.02121	1.265	0.7905	0.00707	3.710	35.0404	0.91924	0.91924
07OCT89	7	0997	2.500	7.2000	0.12728	1.880	27.6596	0.36770	1.660	2.4096	0.02828	0.02828
13OCT89	6	1007	3.415	0.8785	0.02121	3.050	6.5574	0.14142	2.465	3.6511	0.06364	0.06364
19OCT89	5	10190	2.385	1.2579	0.02121	1.250	3.2000	0.02828	2.385	12.9979	0.21920	0.21920
19OCT89	5	1027	1.520	6.5789	0.07071	1.705	14.6628	0.17678	1.895	49.0765	0.65761	0.65761
31OCT89	3	1033	3.155	1.5848	0.03536	1.410	2.8369	0.02828	1.300	20.0000	0.18385	0.18385
06NOV89	2	1039	1.530	13.0719	0.14142	1.215	13.9918	0.12021	.	.	.	.
12NOV89	1	1053	0.995	13.0653	0.09192	1.300	23.0769	0.21213	2.290	8.7336	0.14142	0.14142
18NOV89	7	1058	3.675	15.5102	0.40305	2.150	3.7209	0.05657	2.210	6.3348	0.09899	0.09899
24NOV89	6	1066	3.980	5.0251	0.14142	2.890	0.6920	0.01414	3.915	8.4291	0.23335	0.23335
30NOV89	5	1074	2.505	22.7545	0.40305	1.165	4.2918	0.03536	0.970	8.2474	0.05657	0.05657
06DEC89	4	1082	2.040	8.8235	0.12728	1.885	16.4456	0.21920	2.555	7.4364	0.13435	0.13435
12DEC89	3	1094	2.445	0.4090	0.00707	1.455	15.8076	0.16263	0.385	.	.	.
18DEC89	2	1100	1.860	12.9032	0.16971	1.405	23.4875	0.23335	0.525	55.2381	0.20506	0.20506
03JAN90	4	1119	1.975	7.5949	0.10607	1.435	7.6655	0.07778	.	.	.	.
11JAN90	5	1132	2.530	12.6482	0.22627	1.695	1.7699	0.02121	.	.	.	.
17JAN90	4	1137	1.455	10.3093	0.10607	2.600	15.3846	0.28284	0.750	2.6667	0.01414	0.01414
23JAN90	3	1152	5.070	6.7061	0.24042	7.565	3.8334	0.20506	3.070	26.0586	0.56569	0.56569
AVERAGES			2.319	9.0669	0.13044	1.862	9.9508	0.12635	1.684	19.2190	0.21555	0.21555

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

^b "." indicates missing value resulting from invalidated samples and/or data below ADL.

^c "." indicates insufficient data to perform the calculation.

TABLE B-13. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

SAMPLE DATE	DAY OF WEEK	ID NUMBER	CITY: MIAMI, FL (MIFL)											
			FORMALDEHYDE			ACETALDEHYDE			ACETONE					
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)
16JAN89	2	0663	3.155	0.3170	0.00707	1.410	15.6028	0.15556	1.310	24.4275	0.22627	1.310	24.4275	0.22627
28JAN89	7	0679	3.135	6.0606	0.13435	1.950	23.5897	0.32527	1.310	24.4275	0.22627	1.310	24.4275	0.22627
09FEB89	5	06940	2.470	0.8097	0.01414	1.670	2.3952	0.02828	1.310	24.4275	0.22627	1.310	24.4275	0.22627
21FEB89	3	0706	1.105	9.9548	0.07778	0.620	9.6774	0.04243	1.310	24.4275	0.22627	1.310	24.4275	0.22627
05MAR89	1	0722	1.400	15.7143	0.15556	0.585	11.9658	0.04950	1.310	24.4275	0.22627	1.310	24.4275	0.22627
18MAR89	7	0749	0.835	13.1737	0.07778	0.520	3.8462	0.01414	1.310	24.4275	0.22627	1.310	24.4275	0.22627
29MAR89	4	0756	1.225	15.5102	0.13435	0.670	2.9851	0.01414	1.310	24.4275	0.22627	1.310	24.4275	0.22627
10APR89	2	0774	1.695	15.9292	0.19092	1.250	0.0000	0.00000	1.310	24.4275	0.22627	1.310	24.4275	0.22627
22APR89	7	07880	0.710	11.2676	0.05657	0.695	18.7050	0.09192	1.310	24.4275	0.22627	1.310	24.4275	0.22627
04MAY89	5	0805	0.575	15.6522	0.06364	2.545	1.9646	0.03536	1.310	24.4275	0.22627	1.310	24.4275	0.22627
16MAY89	3	0820	2.965	13.1535	0.27577	0.820	24.3902	0.14142	1.310	24.4275	0.22627	1.310	24.4275	0.22627
28MAY89	1	0835	0.945	3.1746	0.02121	0.905	5.5249	0.03536	1.310	24.4275	0.22627	1.310	24.4275	0.22627
09JUN89	6	0851	1.455	8.9347	0.09192	0.860	16.2791	0.09899	1.310	24.4275	0.22627	1.310	24.4275	0.22627
21JUN89	4	0880	1.705	1.7595	0.02121	1.100	3.6364	0.02828	1.310	24.4275	0.22627	1.310	24.4275	0.22627
03JUL89	2	0876	2.135	0.4684	0.00707	1.325	9.8113	0.09192	1.310	24.4275	0.22627	1.310	24.4275	0.22627
15JUL89	7	0896	1.655	5.4381	0.06364	1.255	16.7331	0.14849	1.310	24.4275	0.22627	1.310	24.4275	0.22627
27JUL89	5	09100	1.940	10.3093	0.14142	1.795	0.5571	0.00707	1.310	24.4275	0.22627	1.310	24.4275	0.22627
08AUG89	3	0925	2.180	0.9174	0.01414	0.500	12.5000	0.09899	1.310	24.4275	0.22627	1.310	24.4275	0.22627
20AUG89	1	0936	1.235	26.7206	0.23335	1.120	9.5238	0.04243	1.310	24.4275	0.22627	1.310	24.4275	0.22627
01SEP89	6	0953	1.865	10.1877	0.13435	0.630	74.8718	0.51619	1.310	24.4275	0.22627	1.310	24.4275	0.22627
13SEP89	4	0969	0.965	19.6891	0.13435	0.975	17.4757	0.06364	1.310	24.4275	0.22627	1.310	24.4275	0.22627
25SEP89	2	0983	1.135	34.3612	0.27577	0.515	9.5238	0.08485	1.310	24.4275	0.22627	1.310	24.4275	0.22627
07OCT89	7	1010	1.045	0.9569	0.00707	1.260	1.5504	0.02121	1.310	24.4275	0.22627	1.310	24.4275	0.22627
19OCT89	5	10160	1.935	6.7183	0.09192	1.935	0.0000	0.00000	1.310	24.4275	0.22627	1.310	24.4275	0.22627
31OCT89	3	10360	2.755	4.7187	0.09192	0.530	47.7876	0.19092	1.310	24.4275	0.22627	1.310	24.4275	0.22627
12NOV89	1	1051	0.680	3.5928	0.02121	0.565	18.7919	0.19799	1.310	24.4275	0.22627	1.310	24.4275	0.22627
24NOV89	6	1069	0.835	4.1791	0.09899	1.490	1.4493	0.01414	1.310	24.4275	0.22627	1.310	24.4275	0.22627
06DEC89	4	1088	3.350	21.0526	0.36770	1.380	1.9417	0.01414	1.310	24.4275	0.22627	1.310	24.4275	0.22627
18DEC89	2	1105	2.470	16.2465	0.20506	1.030	14.5985	0.28284	1.310	24.4275	0.22627	1.310	24.4275	0.22627
30DEC89	7	1114	1.785	8.5169	0.20506	2.740	15.4799	0.17678	1.310	24.4275	0.22627	1.310	24.4275	0.22627
11JAN90	5	1136	3.405	0.6006	0.00707	1.615	13.5572	0.10387	1.310	24.4275	0.22627	1.310	24.4275	0.22627
23JAN90	3	1150	1.665	9.8737	0.11040	1.170	17.2459	0.15886	1.310	24.4275	0.22627	1.310	24.4275	0.22627
AVERAGES			1.763	9.8737	0.11040	1.170	13.5572	0.10387	1.332	17.2459	0.15886	1.332	17.2459	0.15886

^aIn Case 1, mean concentrations are calculated using detectable tube concentrations only.

^bu." indicates missing value resulting from invalidated samples and/or data below ADL.

^cu." indicates insufficient data to perform the calculation.

TABLE B-14. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

SAMPLE DATE	DAY OF WEEK	ID NUMBER	CITY: MIAMI, FL (MIFL)											
			FORMALDEHYDE			ACETALDEHYDE			ACETONE					
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)
16JAN89	2	0663	3.155	0.3170	0.00707	1.410	15.6028	0.15556	1.310	24.4275	0.22627	1.310	24.4275	0.22627
28JAN89	7	0679	3.135	6.0606	0.13435	1.950	23.5897	0.32527	1.310	24.4275	0.22627	1.310	24.4275	0.22627
09FEB89	5	06940	2.470	0.8097	0.01414	1.670	2.3952	0.02828	1.310	24.4275	0.22627	1.310	24.4275	0.22627
21FEB89	3	0706	1.105	9.9548	0.07778	0.620	9.6774	0.04243	1.310	24.4275	0.22627	1.310	24.4275	0.22627
05MAR89	1	0722	1.400	15.7143	0.15556	0.585	11.9658	0.04950	1.310	24.4275	0.22627	1.310	24.4275	0.22627
18MAR89	7	0749	0.835	13.1737	0.07778	0.520	3.8462	0.01414	1.310	24.4275	0.22627	1.310	24.4275	0.22627
29MAR89	4	0756	1.225	15.5102	0.13435	0.670	2.9851	0.01414	1.310	24.4275	0.22627	1.310	24.4275	0.22627
10APR89	2	0774	1.695	15.9292	0.19092	1.250	0.0000	0.00000	1.105	9.9548	0.07778	1.105	9.9548	0.07778
22APR89	7	07880	0.710	11.2676	0.05657	0.695	18.7050	0.09192	1.955	2.5575	0.03536	1.955	2.5575	0.03536
04MAY89	5	0805	0.575	15.6522	0.06364	2.545	1.9646	0.03536	2.485	12.4748	0.21920	2.485	12.4748	0.21920
16MAY89	3	0820	2.965	13.1535	0.27577	0.820	24.3902	0.14142	1.020	47.0588	0.33941	1.020	47.0588	0.33941
28MAY89	1	0835	0.945	3.1746	0.02121	0.905	5.5249	0.03536	1.040	5.7692	0.04243	1.040	5.7692	0.04243
09JUN89	6	0851	1.455	8.9347	0.09192	0.905	5.5249	0.03536	0.575	8.6957	0.03536	0.575	8.6957	0.03536
21JUN89	4	0880	1.705	1.7595	0.02121	0.860	16.2791	0.09899	0.275	12.4748	0.21920	0.275	12.4748	0.21920
03JUL89	2	0876	2.135	4.6884	0.00707	1.100	3.6364	0.02828	0.355	16.7331	0.14849	0.355	16.7331	0.14849
15JUL89	7	0896	1.655	5.4381	0.06364	1.325	9.8113	0.09192	0.420	5.7692	0.04243	0.420	5.7692	0.04243
27JUL89	5	09100	1.940	10.3093	0.14142	1.255	16.7331	0.14849	0.275	12.4748	0.21920	0.275	12.4748	0.21920
08AUG89	3	0925	2.180	0.9174	0.01414	1.795	0.5571	0.00707	0.275	12.4748	0.21920	0.275	12.4748	0.21920
20AUG89	1	0936	1.235	26.7206	0.23335	0.340	12.5000	0.09899	0.275	12.4748	0.21920	0.275	12.4748	0.21920
01SEP89	6	0953	1.865	10.1877	0.13435	1.120	9.5238	0.04243	1.370	18.9781	0.18385	1.370	18.9781	0.18385
13SEP89	4	0969	0.965	19.6891	0.13435	0.630	74.8718	0.51619	0.545	5.5046	0.02121	0.545	5.5046	0.02121
25SEP89	2	0983	1.135	34.3612	0.27577	0.975	17.4757	0.06364	0.445	8.2949	0.06364	0.445	8.2949	0.06364
07OCT89	7	1010	1.045	0.9569	0.00707	0.515	9.5238	0.08485	1.085	13.0952	0.15556	1.085	13.0952	0.15556
19OCT89	5	10160	1.935	6.7183	0.09192	1.260	1.5504	0.02121	1.680	69.2810	0.37477	1.680	69.2810	0.37477
31OCT89	3	10360	2.755	4.7187	0.09192	1.935	0.355	0.19092	0.765	19.3548	0.16971	0.765	19.3548	0.16971
12NOV89	1	1051	0.430	3.5928	0.02121	0.565	47.7876	0.19092	1.240	19.3548	0.16971	1.240	19.3548	0.16971
24NOV89	6	1069	0.835	4.1791	0.09899	1.490	18.7919	0.19799	0.275	12.4748	0.21920	0.275	12.4748	0.21920
06DEC89	4	1088	3.350	21.0526	0.36770	1.380	1.4493	0.01414	0.275	12.4748	0.21920	0.275	12.4748	0.21920
18DEC89	2	1105	2.470	16.2465	0.20506	1.030	1.9417	0.01414	0.275	12.4748	0.21920	0.275	12.4748	0.21920
30DEC89	7	1114	1.785	8.5169	0.20506	2.740	14.5985	0.28284	5.125	11.5122	0.41719	5.125	11.5122	0.41719
11JAN90	5	1136	3.405	0.6006	0.00707	1.615	15.4799	0.17678	1.735	1.7291	0.02121	1.735	1.7291	0.02121
23JAN90	3	1150	1.665	0.6006	0.00707	1.615	15.4799	0.17678	1.735	1.7291	0.02121	1.735	1.7291	0.02121
AVERAGES			1.755	9.8737	0.11040	1.159	13.5572	0.10387	1.291	17.2459	0.15886	1.291	17.2459	0.15886

^a In Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

^b "u" indicates missing value resulting from invalidated samples and/or data below ADL.

^c "u" indicates insufficient data to perform the calculation.

TABLE B-15. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

CITY: PENSACOLA, FL (PEFL)													
				FORMALDEHYDE				ACETALDEHYDE				ACETONE	
SAMPLE DATE	DAY OF WEEK	ID NUMBER	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF
22APR89	7	0786	1.295	16.2162	0.14849	1.050	9.5238	0.07071	4.130	0.9685	0.02828		
11DEC89	2	1087	1.530	57.5163	0.62225	0.930	8.6022	0.05657					
18DEC89	2	1101	1.315	23.5741	0.21920	0.910	21.9780	0.14142	1.000	86.0000	0.60811		
04JAN90	5	1122	1.635	5.5046	0.06364	1.495	6.0201	0.06364	1.570	8.9172	0.09899		
11JAN90	5	1131	2.655	7.1563	0.13435	1.610	21.1180	0.24042	1.790	34.6369	0.43841		
17JAN90	4	11420	1.350			1.205	27.3859	0.23335	1.135	6.1674	0.04950		
29JAN90	2	1154	1.940	6.1856	0.08485	0.965	9.3264	0.06364	1.510	29.1391	0.31113		
AVERAGES			1.674	19.3589	0.21213	1.166	14.8506	0.12425	1.856	27.6382	0.25574		

^aIn Case 1, mean concentrations are calculated using detectable tube concentrations only.^b," indicates missing value resulting from invalidated samples and/or data below AOL.^c," indicates insufficient data to perform the calculation.

TABLE B-16. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

CITY: PENSACOLA, FL (PEFL)													
				FORMALDEHYDE				ACETALDEHYDE				ACETONE	
SAMPLE DATE	DAY OF WEEK	ID NUMBER	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF
22APR89	7	0786	1.295	16.2162	0.14849	1.050	9.5238	0.07071	4.130	0.9685	0.02828		
11DEC89	2	1087	1.530	57.5163	0.62225	0.930	8.6022	0.05657					
18DEC89	2	1101	1.315	23.5741	0.21920	0.910	21.9780	0.14142	1.000	86.0000	0.60811		
04JAN90	5	1122	1.635	5.5046	0.06364	1.495	6.0201	0.06364	1.570	8.9172	0.09899		
11JAN90	5	1131	2.655	7.1563	0.13435	1.610	21.1180	0.24042	1.790	34.6369	0.43841		
17JAN90	4	11420	0.765			1.205	27.3859	0.23335	1.135	6.1674	0.04950		
29JAN90	2	1154	1.940	6.1856	0.08485	0.965	9.3264	0.06364	1.510	29.1391	0.31113		
AVERAGES				19.3589	0.21213	1.166	14.8506	0.12425	1.856	27.6382	0.25574		

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

^b "-" indicates missing value resulting from invalidated samples and/or data below ADL.

^c "-" indicates insufficient data to perform the calculation.

TABLE 8-17. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

CITY: ST. LOUIS, MO (S2MO)													
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE			ACETALDEHYDE			ACETONE				
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)		
22JAN89	1	0669	1.770	6.7797	0.08485	0.935	1.0695	0.00707	1.860	4.3011	0.05657		
03FEB89	6	0681	2.005	6.4838	0.09192	1.095	0.9132	0.00707	1.890	2.1164	0.02828		
15FEB89	4	0697	2.990	0.0000	0.00000	1.620	6.1728	0.07071	1.865	13.4048	0.17678		
27FEB89	2	07160	2.260	6.1947	0.09899	0.820	2.4390	0.01414	1.275	3.9216	0.03536		
11MAR89	7	0739	0.670	.	.	.	.	.	.	.	.		
25MAR89	7	0744	1.840	.	.	1.080	.	.	1.920	.	.		
04APR89	3	0763	1.960	.	.	0.880	.	.	2.120	.	.		
16APR89	1	0775	1.110	12.6126	0.09899	0.830	7.2289	0.04243	3.840	3.6458	0.09899		
28APR89	6	0791	2.520	1.5873	0.02828	1.805	1.6620	0.02121	3.770	8.4881	0.22627		
10MAY89	4	0809	1.790	21.2291	0.26870	1.050	0.0000	0.00000	3.085	11.3452	0.24749		
22MAY89	2	0821	1.595	1.8809	0.02121	1.205	14.1079	0.12021	2.285	10.9409	0.17678		
03JUN89	7	0841	1.355	0.7380	0.00707	1.180	0.0000	0.00000	1.980	3.0303	0.04243		
15JUN89	5	0855	1.270	7.8740	0.07071	0.630	.	.	2.255	14.6341	0.23335		
27JUN89	3	0868	2.005	11.4713	0.16263	1.210	8.2645	0.07071	1.490	13.4228	0.14142		
09JUL89	1	0882	3.960	0.5051	0.01414	1.480	12.1622	0.12728	1.230	19.5122	0.16971		
21JUL89	6	0898	2.765	11.9349	0.23335	1.985	16.6247	0.23335	1.360	4.4118	0.04243		
02AUG89	4	0914	2.575	10.4854	0.19092	2.240	5.3571	0.08485	2.870	2.0906	0.04243		
14AUG89	2	09320	3.870	2.5840	0.07071	1.785	1.6807	0.02121	4.655	6.2299	0.20506		
26AUG89	7	0943	2.045	4.4010	0.06364	1.860	8.6022	0.11314	0.580	.	.		
07SEP89	5	0957	3.335	0.2999	0.00707	2.000	43.0000	0.60811	1.285	11.6732	0.10607		
19SEP89	3	0976	1.685	6.5282	0.07778	1.190	21.8487	0.18385	4.085	3.1824	0.09192		
01OCT89	1	0988	2.930	6.1433	0.12728	1.340	1.4925	0.01414	3.110	14.1479	0.31113		
13OCT89	6	1003	5.010	5.1896	0.18385	3.345	2.0927	0.04950	8.765	2.1677	0.13435		
25OCT89	4	1022	2.425	35.0515	0.60104	1.610	7.4534	0.08485	6.810	10.8664	0.52326		
08NOV89	4	10440	2.440	17.2131	0.29698	0.720	.	.	2.010	12.9353	0.18385		
18NOV89	7	1057	1.490	17.4497	0.18385	0.745	38.9262	0.20506	1.255	18.3267	0.16263		
30NOV89	5	1075	5.365	2.0503	0.07778	2.510	8.7649	0.15556	3.855	9.0791	0.24749		
12DEC89	3	1095	2.600	16.1538	0.29698	0.915	14.2077	0.09192	2.085	10.0719	0.14849		
24DEC89	1	1102	2.085	11.9904	0.17678	1.255	15.1394	0.13435	1.105	15.3846	0.12021		
05JAN90	6	1121	4.540	5.7269	0.18385	3.250	16.0000	0.36770	4.005	11.7353	0.33234		
17JAN90	4	1139	2.160	6.4815	0.09899	2.115	14.6572	0.21920	2.490	8.8353	0.15556		
AVERAGES			2.465	8.4657	0.13637	1.489	10.3795	0.11722	2.706	9.2556	0.16447		

^a In Case 1, mean concentrations are calculated using detectable tube concentrations only.^b "b" indicates missing value resulting from invalidated samples and/or data below ADL.^c "c" indicates insufficient data to perform the calculation.

TABLE B-18. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

CITY: ST. LOUIS, MO (S2MO)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE			ACETALDEHYDE			ACETONE			
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	
22JAN89	1	0669	1.770	6.7797	0.08485	0.935	1.0695	0.00707	1.860	4.3011	0.05657	
03FEB89	6	0681	2.005	6.4838	0.09192	1.095	0.9132	0.00707	1.890	2.1164	0.02828	
15FEB89	4	0697	2.990	0.0000	0.00000	1.620	6.1728	0.07071	1.865	13.4048	0.17678	
27FEB89	2	07160	2.260	6.1947	0.09899	0.820	2.4390	0.01414	1.275	3.9216	0.03536	
11MAR89	7	0739	0.670	.	.	.	.	.	.	.	.	
25MAR89	7	0744	1.010	.	.	0.630	.	.	1.050	.	.	
04APR89	3	0763	1.070	.	.	0.530	.	.	1.150	.	.	
16APR89	1	0775	1.110	12.6126	0.09899	0.830	7.2289	0.04243	3.840	3.6458	0.09899	
28APR89	6	0791	2.520	1.5873	0.02828	1.805	1.6620	0.02121	3.770	8.4881	0.22627	
10MAY89	4	0809	1.790	21.2291	0.26870	1.050	0.0000	0.00000	3.085	11.3452	0.24749	
22MAY89	2	0821	1.595	1.8809	0.02121	1.205	14.1079	0.12021	2.285	10.9409	0.17678	
03JUN89	7	0841	1.355	0.7380	0.00707	1.180	0.0000	0.00000	1.980	3.0303	0.04243	
15JUN89	5	0855	1.270	7.8740	0.07071	0.405	.	.	2.255	14.6341	0.23335	
27JUN89	3	0868	2.005	11.4713	0.16263	1.210	8.2645	0.07071	1.490	13.4228	0.14142	
09JUL89	1	0882	3.960	0.5051	0.01414	1.480	12.1622	0.12728	1.230	19.5122	0.16971	
21JUL89	6	0898	2.765	11.9349	0.23335	1.985	16.6247	0.23335	1.360	4.4118	0.04243	
02AUG89	4	0914	2.575	10.4854	0.19092	2.240	5.3571	0.08485	2.870	2.0906	0.04243	
14AUG89	2	09320	3.870	2.5840	0.07071	1.785	1.6807	0.02121	4.655	6.2299	0.20506	
26AUG89	7	0943	2.045	4.4010	0.06364	1.860	8.6022	0.11314	0.380	.	.	
07SEP89	5	0957	3.335	0.2999	0.00707	2.000	43.0000	0.60811	1.285	11.6732	0.10607	
19SEP89	3	0976	1.685	6.5282	0.07778	1.190	21.8487	0.18385	4.085	3.1824	0.09192	
01OCT89	1	0988	2.930	6.1433	0.12728	1.340	1.4925	0.01414	3.110	14.1479	0.31113	
13OCT89	6	1003	5.010	5.1896	0.18385	3.345	2.0927	0.04950	8.765	2.1677	0.13435	
25OCT89	4	1022	2.425	35.0515	0.60104	1.610	7.4534	0.08485	6.810	10.8664	0.52326	
08NOV89	4	10440	2.440	17.2131	0.29698	0.450	.	.	2.010	12.9353	0.18385	
18NOV89	7	1057	1.490	17.4497	0.18385	0.745	38.9262	0.20506	1.255	18.3267	0.16263	
30NOV89	5	1075	5.365	2.0503	0.07778	2.510	8.7649	0.15556	3.855	9.0791	0.24749	
12DEC89	3	1095	2.600	16.1538	0.29698	0.915	14.2077	0.09192	2.085	10.0719	0.14849	
24DEC89	1	1102	2.085	11.9904	0.17678	1.255	15.1394	0.13435	1.105	15.3846	0.12021	
05JAN90	6	1121	4.540	5.7269	0.18385	3.250	16.0000	0.36770	4.005	11.7353	0.33234	
17JAN90	4	1139	2.160	6.4815	0.09899	2.115	14.6572	0.21920	2.490	8.8353	0.15556	
AVERAGES			2.410	8.4657	0.13637	1.446	10.3795	0.11722	2.638	9.2556	0.16447	

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

^b "." indicates missing value resulting from invalidated samples and/or data below ADL.

^c "." indicates insufficient data to perform the calculation.

TABLE B-19. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

CITY: SAUGET, IL (SAIL)												
FORMALDEHYDE					ACETALDEHYDE				ACETONE			
SAMPLE DATE	DAY OF WEEK	ID NUMBER	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	
22JAN89	1	0668	0.505	41.5842	0.14849	0.400	0.0000	0.00000	0.595	21.8487	0.09192	
02FEB89	5	0680	0.720	36.1111	0.18385	0.565	12.3894	0.04950	0.605	8.2645	0.03536	
16FEB89	5	0703	0.870	39.0805	0.24042	0.370			0.730	2.7397	0.01414	
27FEB89	2	0718	0.935	1.0695	0.00707	0.450	8.8889	0.02828	0.770	0.0000	0.00000	
11MAR89	7	07260	2.850	7.0175	0.14142	1.500	40.0000	0.42426	1.940			
21MAR89	3	0745	1.735	10.9510	0.13435	0.960	0.0000	0.00000	1.690	57.9882	0.69296	
04APR89	3	0762	0.730	13.6986	0.07071	0.555	5.4054	0.02121	1.970	28.4264	0.39598	
28APR89	6	0799	0.975	17.4359	0.12021	0.435	6.8966	0.02121	2.620	12.9771	0.24042	
10MAY89	4	0807	1.445	6.2284	0.06364	1.035	18.3575	0.13435	2.760	5.7971	0.11314	
22MAY89	2	0829	0.845	13.0178	0.07778	0.740	32.4324	0.16971	1.370	16.0584	0.15556	
03JUN89	7	0842	1.030	9.7087	0.07071	0.805	3.7267	0.02121	1.160	36.2069	0.29698	
15JUN89	5	0856	1.225	10.6122	0.09192	0.515	13.5922	0.04950	1.605	0.6231	0.00707	
27JUN89	3	0866	1.190	26.8908	0.22627							
09JUL89	1	0889	2.985	23.7856	0.50205	0.600	60.0000	0.25456				
21JUL89	6	0904	0.985	5.0761	0.03536	0.600			0.850	35.2941	0.21213	
02AUG89	4	0918	1.375	18.1818	0.17678	1.225	23.6735	0.20506	0.810	32.0988	0.18385	
16AUG89	4	0930	1.765	3.9660	0.04950	0.930	12.9032	0.08485	2.350	17.0213	0.28284	
26AUG89	7	09450	1.695	4.1298	0.04950	1.155	19.9134	0.16263				
07SEP89	5	0955	1.740	25.2874	0.31113	0.670	20.8955	0.09899	0.515	5.8252	0.02121	
19SEP89	3	0972	1.325	2.2642	0.02121	0.905	16.5746	0.10607	2.805	25.3119	0.50205	
03OCT89	3	0998	1.945	13.8817	0.19092	1.140	15.7895	0.12728	2.355	16.5605	0.27577	
13OCT89	6	1006	1.970	9.1371	0.12728	2.135	19.2037	0.28991	6.920	8.0925	0.39598	
25OCT89	4	1026	0.615	47.1545	0.20506	0.480			3.740	8.0214	0.21213	
07NOV89	3	1047	1.505	0.6645	0.00707	1.150	22.6087	0.18385	1.380	23.1884	0.22627	
18NOV89	7	10600	0.790	2.5316	0.01414	0.610	55.7377	0.24042	1.335	38.2022	0.36062	
30NOV89	5	1072	3.575	1.3986	0.03536	2.515	3.5785	0.06364	3.690	8.1301	0.21213	
12DEC89	3	1093	1.345	11.1524	0.10607	1.510	0.0000	0.00000	2.010	0.9950	0.01414	
24DEC89	1	1113	1.050	41.9048	0.31113	0.710	25.3521	0.12728	0.710			
05JAN90	6	1129	2.490	4.0161	0.07071	1.805	8.3102	0.10607	2.035	18.1818	0.26163	
17JAN90	4	1143	1.290	48.0620	0.43841	0.710	53.5211	0.26870	1.935	53.2300	0.72832	
AVERAGES			1.450	16.5333	0.14095	0.937	19.2212	0.12456	1.898	19.2433	0.23731	

^aIn Case 1, mean concentrations are calculated using detectable tube concentrations only.

^b"." indicates missing value resulting from invalidated samples and/or data below ADL.

^c"." indicates insufficient data to perform the calculation.

TABLE B-20. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

CITY: SAUGET, IL (SAIL)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE				ACETALDEHYDE				ACETONE	
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	
22JAN89	1	0668	0.505	41.5842	0.14849	0.400	0.0000	0.00000	0.595	21.8487	0.09192	
02FEB89	5	0680	0.720	36.1111	0.18385	0.565	12.3894	0.04950	0.605	8.2645	0.03536	
16FEB89	5	0703	0.870	39.0805	0.24042	0.275			0.730	2.7397	0.01414	
27FEB89	2	0718	0.935	1.0695	0.00707	0.450	8.8889	0.02828	0.770	0.0000	0.00000	
11MAR89	7	07260	2.850	7.0175	0.14142	1.500	40.0000	0.42426	1.060			
21MAR89	3	0745	1.735	10.9510	0.13435	0.960	0.0000	0.00000	1.690	57.9882	0.69296	
04APR89	3	0762	0.730	13.6986	0.07071	0.555	5.4054	0.02121	1.970	28.4264	0.39598	
28APR89	6	0799	0.975	17.4359	0.12021	0.435	6.8966	0.02121	2.620	12.9771	0.24042	
10MAY89	4	0807	1.445	6.2284	0.06364	1.035	18.3575	0.13435	2.760	5.7971	0.11314	
22MAY89	2	0829	0.845	13.0178	0.07778	0.740	32.4324	0.16971	1.370	16.0584	0.15556	
03JUN89	7	0842	1.030	9.7087	0.07071	0.805	3.7267	0.02121	1.160	36.2069	0.29698	
15JUN89	5	0856	1.225	10.6122	0.09192	0.515	13.5922	0.04950	1.605	0.6231	0.00707	
27JUN89	3	0866	1.190	26.8908	0.22627							
09JUL89	1	0889	2.985	23.7856	0.50205	0.600	60.0000	0.25456				
21JUL89	6	0904	0.985	5.0761	0.03536	0.390			0.850	35.2941	0.21213	
02AUG89	4	0918	1.375	18.1818	0.17678	1.225	23.6735	0.20506	0.810	32.0988	0.18385	
16AUG89	4	0930	1.765	3.9660	0.04950	0.930	12.9032	0.08485	2.350	17.0213	0.28284	
26AUG89	7	09450	1.695	4.1298	0.04950	1.155	19.9134	0.16263				
07SEP89	5	0955	1.740	25.2874	0.31113	0.670	20.8955	0.09899	0.515	5.8252	0.02121	
19SEP89	3	0972	1.325	2.2642	0.02121	0.905	16.5746	0.10607	2.805	25.3119	0.50205	
03OCT89	3	0998	1.945	13.8817	0.19092	1.140	15.7895	0.12728	2.355	16.5605	0.27577	
1 OCT89	6	1006	1.970	9.1371	0.12728	2.135	19.2037	0.28991	6.920	8.0925	0.39598	
1 OCT89	4	1026	0.615	47.1545	0.20506	0.330			3.740	8.0214	0.21213	
1 NOV89	3	1047	1.505	0.6645	0.00707	1.150	22.6087	0.18385	1.380	23.1884	0.22627	
1 NOV89	7	10600	0.790	2.5316	0.01414	0.610	55.7377	0.24042	1.335	38.2022	0.36062	
3 NOV89	5	1072	3.575	1.3986	0.03536	2.515	3.5785	0.06364	3.690	8.1301	0.21213	
1 DEC89	3	1093	1.345	11.1524	0.10607	1.510	0.0000	0.00000	2.010	0.9950	0.01414	
2 DEC89	1	1113	1.050	41.9048	0.31113	0.710	25.3521	0.12728	0.445			
0 JAN90	6	1129	2.490	4.0161	0.07071	1.805	8.3102	0.10607	2.035	18.1818	0.26163	
1 JAN90	4	1143	1.290	48.0620	0.43841	0.710	53.5211	0.26870	1.935	53.2300	0.72832	
AVERAGES			1.450	16.5333	0.14095	0.922	19.2212	0.12456	1.856	19.2433	0.23731	

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

^b," indicates missing value resulting from invalidated samples and/or data below ADL.

^c," indicates insufficient data to perform the calculation.

TABLE B-21. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

CITY: WASHINGTON, DC (WDC)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE				ACETALDEHYDE				ACETONE	
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	
22JAN89	1	0674	5.285	3.595	0.1344	2.115	0.473	0.0071	1.690	15.3846	0.18385	
03FEB89	6	0687	1.985	9.572	0.1344	1.065	2.817	0.0212	1.120	21.4286	0.16971	
15FEB89	4	0699	4.475	5.140	0.1626	2.045	21.027	0.3041	0.830			
27FEB89	2	0712	2.505	6.786	0.1202	0.890	17.978	0.1131	1.355	0.7380	0.00707	
11MAR89	7	0728	1.495	4.682	0.0495	0.640	0.000	0.0000	0.530	22.6415	0.08485	
23MAR89	5	07460	1.725	13.333	0.1626	0.695	24.460	0.1202	1.355	5.1661	0.04950	
04APR89	3	0758	1.890	13.757	0.1838	0.990	22.222	0.1556	0.915	33.8798	0.21920	
16APR89	1	0776	1.640	13.415	0.1556	0.775	50.323	0.2758	2.915	3.7736	0.07778	
28APR89	6	0792	1.910	12.565	0.1697	1.005	6.965	0.0495	3.055	14.7300	0.31820	
22MAY89	2	0824	3.725	1.342	0.0354	1.950	6.154	0.0849	3.430	9.3294	0.22627	
03JUN89	7	08380	2.675	3.364	0.0636	1.655	7.855	0.0919	2.500	7.2000	0.12728	
19JUN89	2	0857	5.810	11.015	0.4525	2.720	30.147	0.5798	1.265	57.7075	0.51619	
27JUN89	3	0867	3.570	8.403	0.2121	1.845	9.214	0.1202	1.255	37.4502	0.33234	
09JUL89	1	0884	4.770	13.417	0.4525	1.750	0.000	0.0000	1.330	19.5489	0.18385	
21JUL89	6	0899	5.930	11.804	0.4950	2.285	9.190	0.1485	1.135	22.0264	0.17678	
02AUG89	4	0913	3.580	8.380	0.2121	1.715	30.904	0.3748	2.985	11.7253	0.24749	
14AUG89	2	0928	5.620	19.929	0.7920	2.570	17.899	0.3253	1.655	24.7734	0.28991	
20AUG89	1	0933	3.835	7.562	0.2051	1.260	46.032	0.4101	2.595	5.7803	0.10607	
26AUG89	7	0947	4.170	1.439	0.0424	2.440	22.131	0.3818	2.790	31.5412	0.62225	
07SEP89	5	09620	4.670	5.567	0.1838	1.685	13.650	0.1626	4.030	15.8809	0.45255	
19SEP89	3	0973	1.830	2.186	0.0283	0.950	2.105	0.0141	1.645	3.0395	0.03536	
01OCT89	1	0990	2.650	15.094	0.2828	1.615	10.526	0.1202	1.895	58.5752	0.78489	
13OCT89	6	1004	6.330	10.742	0.4808	3.900	10.256	0.2828	5.595	37.7122	1.49200	
25OCT89	4	1024	7.320	4.372	0.2263	4.160	12.019	0.3536	5.625	2.6667	0.10607	
06NOV89	2	1038	5.665	4.413	0.1768	2.395	3.758	0.0636	2.780	12.9496	0.25456	
18NOV89	7	1054	3.555	7.032	0.1768	1.460	2.740	0.0283	1.225	20.4082	0.17678	
30NOV89	5	10710	3.280	2.439	0.0566	1.765	14.164	0.1768	1.900	13.6842	0.18385	
12DEC89	3	1091	3.620	1.105	0.0283	2.715	6.262	0.1202	2.595	3.4682	0.06364	
AVERAGES			3.768	7.9448	0.2099	1.823	14.331	0.1745	2.214	19.0078	0.27734	

^aIn Case 1, mean concentrations are calculated using detectable tube concentrations only.^b"." indicates missing value resulting from invalidated samples and/or data below ADL.^c"." indicates insufficient data to perform the calculation.

TABLE B-22. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

SAMPLE DATE	DAY OF WEEK	ID NUMBER	CITY: WASHINGTON, DC (WDC)						ACETONE					
			FORMALDEHYDE			ACETALDEHYDE			ACETONE					
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)
22JAN89	1	0674	5.285	3.595	0.1344	2.115	0.473	0.0071	1.690	15.3846	0.0071	1.690	15.3846	0.18385
03FEB89	6	0687	1.985	9.572	0.1344	1.065	2.817	0.0212	1.120	21.4286	0.0212	1.120	21.4286	0.16971
15FEB89	4	0699	4.475	5.140	0.1626	2.045	21.027	0.3041	0.505		0.3041	0.505		
27FEB89	2	0712	2.505	6.786	0.1202	0.890	17.978	0.131	1.355	0.7380	0.131	1.355	0.7380	0.00707
11MAR89	7	0728	1.495	4.682	0.0495	0.640	0.000	0.0000	0.530	22.6415	0.0000	0.530	22.6415	0.08485
23MAR89	5	07460	1.725	13.333	0.1626	0.695	24.460	0.1202	1.355	5.1661	0.1202	1.355	5.1661	0.04950
04APR89	3	0758	1.890	13.757	0.1838	0.990	22.222	0.1556	0.915	33.8798	0.1556	0.915	33.8798	0.21920
16APR89	1	0776	1.640	13.415	0.1556	0.775	50.323	0.2758	2.915	3.7736	0.2758	2.915	3.7736	0.07778
28APR89	6	0792	1.910	12.565	0.1697	1.005	6.965	0.0495	3.055	14.7300	0.0495	3.055	14.7300	0.31820
22MAY89	2	0824	3.725	1.342	0.0354	1.950	6.154	0.0849	3.430	9.3294	0.0849	3.430	9.3294	0.22627
03JUN89	7	08380	2.675	3.364	0.0636	1.655	7.855	0.0919	2.500	7.2000	0.0919	2.500	7.2000	0.12728
19JUN89	2	0857	5.810	11.015	0.4525	2.720	30.147	0.5798	1.265	57.7075	0.5798	1.265	57.7075	0.51619
27JUN89	3	0867	3.570	8.403	0.2121	1.845	9.214	0.1202	1.255	37.4502	0.1202	1.255	37.4502	0.33234
09JUL89	1	0884	4.770	13.417	0.4525	1.750	0.000	0.0000	1.330	19.5489	0.0000	1.330	19.5489	0.18385
21JUL89	6	0899	5.930	11.804	0.4950	2.285	9.190	0.1485	1.135	22.0264	0.1485	1.135	22.0264	0.17678
02AUG89	4	0913	3.580	8.380	0.2121	1.715	30.904	0.3748	2.985	11.7253	0.3748	2.985	11.7253	0.24749
14AUG89	2	0928	5.620	19.929	0.7920	2.570	17.899	0.3253	1.655	24.7734	0.3253	1.655	24.7734	0.28991
20AUG89	1	0933	3.835	7.562	0.2051	1.260	46.032	0.4101	2.595	5.7803	0.4101	2.595	5.7803	0.10607
26AUG89	7	0947	4.170	1.439	0.0424	2.440	22.131	0.3818	2.790	31.5412	0.3818	2.790	31.5412	0.62225
07SEP89	5	09620	4.670	5.567	0.1838	1.685	13.650	0.1626	4.030	15.8809	0.1626	4.030	15.8809	0.45255
19SEP89	3	0973	1.830	2.186	0.0283	0.950	2.105	0.0141	1.645	3.0395	0.0141	1.645	3.0395	0.03536
01OCT89	1	0990	2.650	15.094	0.2828	1.615	10.526	0.1202	1.895	58.5752	0.1202	1.895	58.5752	0.78489
13OCT89	6	1004	6.330	10.742	0.4808	3.900	10.256	0.2828	5.595	37.7122	0.2828	5.595	37.7122	1.49200
25OCT89	4	1024	7.320	4.372	0.2263	4.160	12.019	0.3536	5.625	2.6667	0.3536	5.625	2.6667	0.10607
06NOV89	2	1038	5.665	4.413	0.1768	2.395	3.758	0.0636	2.780	12.9496	0.0636	2.780	12.9496	0.25456
18NOV89	7	1054	3.555	7.032	0.1768	1.460	2.740	0.0283	1.225	20.4082	0.0283	1.225	20.4082	0.17678
30NOV89	5	10710	3.280	2.439	0.0566	1.765	14.164	0.1768	1.900	13.6842	0.1768	1.900	13.6842	0.18385
12DEC89	3	1091	3.620	1.105	0.0283	2.715	6.262	0.1202	2.595	3.4682	0.1202	2.595	3.4682	0.06364
AVERAGES			3.768	7.945	0.2099	1.823	14.331	0.1745	2.203	19.0078	0.1745	2.203	19.0078	0.27734

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

^b,"" indicates missing value resulting from invalidated samples and/or data below ADL.

^c,"" indicates insufficient data to perform the calculation.

TABLE B-23. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

CITY: WICHITA, KS (WKS)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE			ACETALDEHYDE			ACETONE			
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	
22JAN89	1	0671	1.150	5.217	0.04243	0.695	15.8273	0.07778	1.735	2.8818	0.03536	
03FEB89	6	0683	0.820			0.480			0.485	39.1753	0.13435	
15FEB89	4	0701	0.735	6.803	0.03536	0.410			0.905	23.2044	0.14849	
27FEB89	2	0709	2.550	6.275	0.11314	1.065	6.5728	0.04950	1.255	8.7649	0.07778	
11MAR89	7	0724	1.210	9.917	0.08485	1.045	41.1483	0.30406	2.120			
23MAR89	5	0740	0.750	13.333	0.07071	0.450	8.8889	0.02828	1.535	0.6515	0.00707	
04APR89	3	0761	0.825	25.455	0.14849	0.445	2.2472	0.00707	4.055	1.2330	0.03536	
16APR89	1	07720	1.125	9.778	0.07778	0.885	14.6893	0.09192	1.350	7.4074	0.07071	
28APR89	6	0798	1.595	15.674	0.17678	1.530	14.3791	0.15556	1.955	6.604	0.04243	
10MAY89	4	0813	0.790	20.253	0.11314	0.805	8.6957	0.04950	1.060			
03JUN89	7	0839	1.155	0.866	0.00707	1.105	22.6244	0.17678	1.370			
15JUN89	5	0854	1.210	24.793	0.21213	0.850	30.5882	0.18385	1.460	9.5890	0.09899	
27JUN89	3	08720	0.520	15.385	0.05657	0.680	0.0000	0.00000	0.575	40.0000	0.16263	
09JUL89	1	0887	0.960	43.750	0.29698	0.685	42.3358	0.20506	4.030	5.4591	0.15556	
21JUL89	6	0901	1.635	36.086	0.41719	1.245	12.0482	0.10607	2.155	34.8028	0.53033	
02AUG89	4	0917	2.225	14.831	0.23335	0.535	28.0374	0.10607	1.880	9.5745	0.12728	
14AUG89	2	0927	1.120	14.286	0.11314				3.485	2.5825	0.06364	
26AUG89	7	0942	2.430	28.807	0.49497				5.220	4.9808	0.18385	
07SEP89	5	0956	1.375	12.364	0.12021	1.350	32.5926	0.31113	6.200	23.8710	1.04652	
19SEP89	3	0970	1.085	13.825	0.10607	0.690	43.4783	0.21213	2.400	11.6667	0.19799	
01OCT89	1	09930	1.365	25.641	0.24749	1.110	21.6216	0.16971	1.985	7.5567	0.10607	
13OCT89	6	1011	1.395	0.717	0.00707	0.815	6.1350	0.03536	2.125	5.1765	0.07778	
25OCT89	4	1023	1.160	5.172	0.04243	1.020	15.6863	0.11314	4.530	0.8830	0.02828	
06NOV89	2	1040	1.675	22.090	0.26163	1.130	8.8496	0.07071	1.105	24.4344	0.19092	
18NOV89	7	1062	1.015	10.837	0.07778	0.760	13.1579	0.07071	0.500			
30NOV89	5	1077	5.015	6.580	0.23335	3.050	7.2131	0.15556	2.135	2.3419	0.03536	
12DEC89	3	1092	2.085	11.031	0.16263	1.250	6.4000	0.05657	2.880	16.6667	0.33941	
30DEC89	7	11110	1.075	8.372	0.06364	0.640	65.6250	0.29698				
05JAN90	6	1127	2.730	10.989	0.21213	1.895	33.2454	0.44548				
17JAN90	4	1145	1.360	10.294	0.09899	0.950	2.1053	0.01414				
AVERAGES			1.471	14.808	0.14922	0.985	19.3920	0.13435	2.266	12.1241	0.16944	

^aIn Case 1, mean concentrations are calculated using detectable tube concentrations only.^b,"" indicates missing value resulting from invalidated samples and/or data below ADL.^c,"" indicates insufficient data to perform the calculation.

TABLE B-24. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

SAMPLE DATE	DAY OF WEEK	ID NUMBER	CITY: WICHITA, KS (WIKS)					ACETALDEHYDE					ACETONE				
			FORMALDEHYDE														
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)
22JAN89	1	0671	1.150	5.217	0.04243	0.695	15.8273	0.07778	1.735	2.8818	0.03536	1.735	2.8818	0.03536	1.735	2.8818	0.03536
03FEB89	6	0683	0.500			0.330			0.485	39.1753	0.13435	0.485	39.1753	0.13435	0.485	39.1753	0.13435
15FEB89	4	0701	0.735	6.803	0.03536	0.295			0.905	23.2044	0.14849	0.905	23.2044	0.14849	0.905	23.2044	0.14849
27FEB89	2	0709	2.550	6.275	0.11314	1.065	6.5728	0.04950	1.255	8.7649	0.07778	1.255	8.7649	0.07778	1.255	8.7649	0.07778
11MAR89	7	0724	1.210	9.917	0.08485	1.045	41.1483	0.30406	1.150			1.150			1.150		
23MAR89	5	0740	0.750	13.333	0.07071	0.450	8.8869	0.02828	2.125	15.5294	0.23335	2.125	15.5294	0.23335	2.125	15.5294	0.23335
04APR89	3	0761	0.825	25.455	0.14849	0.445	2.2472	0.00707	1.535	0.6515	0.00707	1.535	0.6515	0.00707	1.535	0.6515	0.00707
16APR89	1	07720	1.125	9.778	0.07778	0.885	14.6893	0.09192	4.055	1.2330	0.03536	4.055	1.2330	0.03536	4.055	1.2330	0.03536
28APR89	6	0798	1.595	15.674	0.17678	1.530	14.3791	0.15556	2.915	10.6346	0.21920	2.915	10.6346	0.21920	2.915	10.6346	0.21920
10MAY89	4	0813	0.790	20.253	0.11314	0.805	8.6957	0.04950	3.435	4.9491	0.12021	3.435	4.9491	0.12021	3.435	4.9491	0.12021
03JUN89	7	0839	1.155	0.866	0.00707	1.105	22.6244	0.17678	1.350	7.4074	0.07071	1.350	7.4074	0.07071	1.350	7.4074	0.07071
15JUN89	5	0854	1.210	24.793	0.21213	0.850	30.5882	0.18385	1.955	7.6726	0.10607	1.955	7.6726	0.10607	1.955	7.6726	0.10607
27JUN89	3	08720	0.520	15.385	0.05657	0.680	0.0000	0.00000	1.060	5.6604	0.04243	1.060	5.6604	0.04243	1.060	5.6604	0.04243
09JUL89	1	0887	0.960	43.750	0.29698	0.685	42.3358	0.20506	0.275			0.275			0.275		
21JUL89	6	0901	1.635	36.086	0.41719	1.245	12.0482	0.10607	1.460	9.5890	0.09899	1.460	9.5890	0.09899	1.460	9.5890	0.09899
02AUG89	4	0917	2.225	14.831	0.23335	0.535	28.0374	0.10607	0.575	40.0000	0.16263	0.575	40.0000	0.16263	0.575	40.0000	0.16263
14AUG89	2	0927	1.120	14.286	0.11314				4.030	5.4591	0.15556	4.030	5.4591	0.15556	4.030	5.4591	0.15556
26AUG89	7	0942	2.430	28.807	0.49497				2.155	34.8028	0.53033	2.155	34.8028	0.53033	2.155	34.8028	0.53033
07SEP89	5	0956	1.375	12.364	0.12021	1.350	32.5926	0.31113	1.890	9.5745	0.12728	1.890	9.5745	0.12728	1.890	9.5745	0.12728
19SEP89	3	0970	1.085	13.825	0.10607	0.690	43.4783	0.21213	3.485	2.5825	0.06364	3.485	2.5825	0.06364	3.485	2.5825	0.06364
01OCT89	1	09930	1.365	25.641	0.24749	1.110	21.6216	0.16971	5.220	4.9808	0.18385	5.220	4.9808	0.18385	5.220	4.9808	0.18385
13OCT89	6	1011	1.395	0.717	0.00707	0.815	6.1350	0.03536	6.200	23.8710	1.04652	6.200	23.8710	1.04652	6.200	23.8710	1.04652
25OCT89	4	1023	1.160	5.172	0.04243	1.020	15.6863	0.11314	2.400	11.6667	0.19799	2.400	11.6667	0.19799	2.400	11.6667	0.19799
06NOV89	2	1040	1.675	22.090	0.26163	1.130	8.8496	0.07071	1.985	7.5567	0.10607	1.985	7.5567	0.10607	1.985	7.5567	0.10607
18NOV89	7	1062	1.015	10.837	0.07778	0.760	13.1579	0.07071	2.125	5.1765	0.07778	2.125	5.1765	0.07778	2.125	5.1765	0.07778
30NOV89	5	1077	5.015	6.580	0.23335	3.050	7.2131	0.15556	4.530	0.8830	0.02828	4.530	0.8830	0.02828	4.530	0.8830	0.02828
12DEC89	3	1092	2.085	11.031	0.16263	1.250	6.4000	0.05657	1.105	24.4344	0.19092	1.105	24.4344	0.19092	1.105	24.4344	0.19092
30DEC89	7	11110	1.075	8.372	0.06364	0.640	65.6250	0.29698	0.340			0.340			0.340		
05JAN90	6	1127	2.730	10.989	0.21213	1.895	33.2454	0.44548	2.135	2.3419	0.03536	2.135	2.3419	0.03536	2.135	2.3419	0.03536
17JAN90	4	1145	1.360	10.294	0.09899	0.950	2.1053	0.01414	2.880	16.6667	0.3394	2.880	16.6667	0.3394	2.880	16.6667	0.3394
AVERAGES			1.461	14.8076	0.14922	0.975	19.3920	0.13435	2.225	12.1241	0.16944	2.225	12.1241	0.16944	2.225	12.1241	0.16944

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

^b"." indicates missing value resulting from invalidated samples and/or data below ADL.

^c"." indicates insufficient data to perform the calculation.

TABLE B-25. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

CITY: WASHINGTON, DC (W2DC)												
SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE				ACETALDEHYDE				ACETONE	
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	
22JAN89	1	0684	4.040	8.9109	0.25456	1.480	9.4595	0.09899	1.935	0.5168	0.00707	
03FEB89	6	0686	2.725	0.3670	0.00707	1.220	4.9180	0.04243	1.005	10.9453	0.07778	
15FEB89	4	0700	4.855	8.4449	0.28991	2.080	8.6538	0.12728	1.095	92.2374	0.71418	
27FEB89	2	0713	2.325	74.4086	1.22329	0.805	60.8696	0.34648	1.285	5.4475	0.04950	
11MAR89	7	0729	1.520	22.3684	0.24042	0.725	48.2759	0.24749				
23MAR89	5	0748	2.305	9.9783	0.16263	1.125	29.3333	0.23335	1.355	34.6863	0.33234	
04APR89	3	0760	1.360	10.2941	0.09899	0.665	16.5414	0.07778	1.915	50.6527	0.68589	
16APR89	1	0778	2.590	1.5444	0.02828	1.335	21.7228	0.20506	3.325	5.7143	0.13435	
28APR89	6	0795	2.170	11.9816	0.18385	1.300	1.5385	0.01414	3.335	15.2924	0.36062	
10MAY89	4	0803	1.925	16.1039	0.21920	1.160	3.4483	0.02828	2.505	14.7705	0.26163	
10MAY89	4	0804	1.300	4.6154	0.04243	0.750	10.6667	0.05657	2.550	27.4510	0.49497	
22MAY89	2	0825	4.080	6.3725	0.18385	2.210	12.6697	0.19799	4.250	12.7059	0.38184	
03JUN89	7	0836	2.250	11.5556	0.18385	1.695	7.6696	0.09192	3.500	51.4286	1.27279	
15JUN89	5	08590	2.430	27.9835	0.48083	1.255	8.7649	0.07778	0.710	61.9718	0.31113	
27JUN89	3	0875	3.065	11.4192	0.24749	1.270	11.0236	0.09899				
09JUL89	1	0883	4.115	8.0194	0.23335	1.670	33.5329	0.39598	1.370	2.9197	0.02828	
21JUL89	6	0897	3.660			1.570			1.620			
26AUG89	7	0946	2.260	31.8584	0.50912	0.860	58.1395	0.35355	3.235	2.7821	0.06364	
07SEP89	5	0960	2.550	4.7059	0.08485	1.285	45.9144	0.41719	3.050	1.9672	0.04243	
19SEP89	3	09750	2.095	1.4320	0.02121	1.090	20.1835	0.15556	1.785	3.9216	0.04950	
01OCT89	1	0987	2.580	3.1008	0.05657	2.100	43.8095	0.65054	1.610	70.8075	0.80610	
13OCT89	6	1002	5.540	10.8303	0.42426	3.445	2.6125	0.06364	6.625	9.8113	0.45962	
25OCT89	4	1025	8.905	6.4009	0.40305	5.790	8.6356	0.35355	7.030	4.8364	0.24042	
06NOV89	2	1037	1.850	17.2973	0.22627	1.035	0.9662	0.00707	2.945	17.9966	0.37477	
18NOV89	7	1055	2.155	8.8167	0.13435	1.040	0.0000	0.00000	1.920	2.0833	0.02828	
30NOV89	5	1073	3.285	12.4810	0.28991	1.290	35.6589	0.32527	1.640	19.5122	0.22627	
12DEC89	3	10900	4.215	25.8600	0.77075	2.700	22.2222	0.42426	1.255	16.7331	0.14849	
24DEC89	1	1103	2.455	10.1833	0.17678	1.165	7.7253	0.06364	1.020	3.9216	0.02828	
05JAN90	6	1123	3.875	33.2903	0.91217	1.595	25.7053	0.28991	2.745	0.3643	0.00707	
17JAN90	4	1138	5.955	1.8472	0.07778	3.375	0.2963	0.00707	4.660	8.1545	0.26870	
AVERAGES			3.148	13.8783	0.28162	1.636	19.3434	0.18799	2.546	20.3567	0.29096	

^aIn Case 1, mean concentrations are calculated using detectable tube concentrations only.^b." indicates missing value resulting from invalidated samples and/or data below ADL.^c." indicates insufficient data to perform the calculation.

TABLE B-26. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

CITY: WASHINGTON, DC (WZDC)													
FORMALDEHYDE						ACETALDEHYDE						ACETONE	
SAMPLE DATE	DAY OF WEEK	ID NUMBER	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)		
22JAN89	1	0684	4.040	8.9109	0.25456	1.480	9.4595	0.09899	1.935	0.5168	0.00707		
03FEB89	6	0686	2.725	0.3670	0.00707	1.220	4.9180	0.04243	1.005	10.9453	0.07778		
15FEB89	4	0700	4.855	8.4449	0.28991	2.080	8.6538	0.12728	1.095	92.2374	0.71418		
27FEB89	2	0713	2.325	74.4086	1.22329	0.805	60.8696	0.34648	1.285	5.4475	0.04950		
11MAR89	7	0729	1.520	22.3684	0.24042	0.725	48.2759	0.24749					
23MAR89	5	0748	2.305	9.9783	0.16263	1.125	29.3333	0.23335	1.355	34.6863	0.33234		
04APR89	3	07640	1.360	10.2941	0.09899	0.665	16.5414	0.07778	1.915	50.6527	0.68589		
16APR89	1	0778	2.590	1.5444	0.02828	1.335	21.7228	0.20506	3.325	5.7143	0.13435		
28APR89	6	0795	2.170	11.9816	0.18385	1.300	1.5385	0.01414	3.335	15.2924	0.36062		
10MAY89	4	0803	1.925	16.1039	0.21920	1.160	3.4483	0.02828	2.505	14.7705	0.26163		
10MAY89	4	0804	1.300	4.6154	0.04243	0.750	10.6667	0.05657	2.550	27.4510	0.49497		
22MAY89	2	0825	4.080	6.3725	0.18385	2.210	12.6697	0.19799	4.250	12.7059	0.38184		
03JUN89	7	0836	2.250	11.5556	0.18385	1.695	7.6696	0.09192	3.500	51.4286	1.27279		
15JUN89	5	08590	2.430	27.9835	0.48083	1.255	8.7649	0.07778	0.710	61.9718	0.31113		
27JUN89	3	0875	3.065	11.4192	0.24749	1.270	11.0236	0.09899					
09JUL89	1	0883	4.115	8.0194	0.23335	1.670	33.5329	0.39598	1.370	2.9197	0.02828		
21JUL89	6	0897	1.920			0.875			0.900				
26AUG89	7	0946	2.260	31.8584	0.50912	0.860	58.1395	0.35355	3.235	2.7821	0.06364		
07SEP89	5	0960	2.550	4.7059	0.08485	1.285	45.9144	0.41719	3.050	1.9672	0.04243		
19SEP89	3	09750	2.095	1.4320	0.02121	1.090	20.1835	0.15556	1.785	3.9216	0.04950		
01OCT89	1	0987	2.580	3.1008	0.05657	2.100	43.8095	0.65054	1.610	70.8075	0.80610		
13OCT89	6	1002	5.540	10.8303	0.42426	3.445	2.6125	0.06364	6.625	9.8113	0.45962		
25OCT89	4	1025	8.905	6.4009	0.40305	5.790	8.6356	0.35355	7.030	4.8364	0.24042		
06NOV89	2	1037	1.850	17.2973	0.22627	1.035	0.9662	0.00707	2.945	17.9966	0.37477		
18NOV89	7	1055	2.155	8.8167	0.13435	1.040	0.0000	0.00000	1.920	2.0833	0.02828		
30NOV89	5	1073	3.285	12.4810	0.28991	1.290	35.6589	0.32527	1.640	19.5122	0.22627		
12DEC89	3	10900	4.215	25.8600	0.77075	2.700	22.2222	0.42426	1.255	16.7331	0.14849		
24DEC89	1	1103	2.455	10.1833	0.17678	1.165	7.7253	0.06364	1.020	3.9216	0.02828		
05JAN90	6	1123	3.875	33.2903	0.91217	1.595	25.7053	0.28991	2.745	0.3643	0.00707		
17JAN90	4	1138	5.955	1.8472	0.07778	3.375	0.2963	0.00707	4.660	8.1545	0.26870		
AVERAGES			1.403	16.4219	0.15274	1.024	17.3125	0.13047	2.305	14.9412	0.20102		

^aIn Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

^b," indicates missing value resulting from invalidated samples and/or data below ADL.

^c," indicates insufficient data to perform the calculation.

TABLE B-27. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 1^a

SAMPLE DATE	DAY OF WEEK	ID NUMBER	CITY: WICHITA, KS (WZKS)						ACETALDENYDE						ACETONE					
			FORMALDEHYDE			ACETALDENYDE			ACETONE			ACETONE			ACETONE			ACETONE		
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)
22JAN89	1	0670	0.885	30.5085	0.19092	0.840	19.0476	0.11314	1.825	11.5068	0.14849	1.825	11.5068	0.14849	1.825	11.5068	0.14849	1.825	11.5068	0.14849
03FEB89	6	0682	0.610	.	.	0.525	13.3333	0.04950	0.785	8.9172	0.04950	0.785	8.9172	0.04950	0.785	8.9172	0.04950	0.785	8.9172	0.04950
15FEB89	4	0702	1.455	33.6770	0.34648	0.700	14.2857	0.07071	1.320	37.8788	0.35355	1.320	37.8788	0.35355	1.320	37.8788	0.35355	1.320	37.8788	0.35355
27FEB89	2	0711	1.755	2.8490	0.03536	0.770	2.5974	0.01414	1.260	7.9365	0.07071	1.260	7.9365	0.07071	1.260	7.9365	0.07071	1.260	7.9365	0.07071
11MAR89	7	0725	1.835	38.6921	0.50205	1.845	16.8022	0.21920	3.220	8.0745	0.18385	3.220	8.0745	0.18385	3.220	8.0745	0.18385	3.220	8.0745	0.18385
23MAR89	5	0741	0.700	45.7143	0.22627	0.450	.	.	1.790	4.4693	0.05657	1.790	4.4693	0.05657	1.790	4.4693	0.05657	1.790	4.4693	0.05657
04APR89	3	0759	0.970	16.4948	0.11314	0.565	15.9292	0.06364	1.530	7.8431	0.08485	1.530	7.8431	0.08485	1.530	7.8431	0.08485	1.530	7.8431	0.08485
16APR89	1	0773	0.995	1.0050	0.00707	0.850	37.6471	0.22627	4.435	2.0293	0.06364	4.435	2.0293	0.06364	4.435	2.0293	0.06364	4.435	2.0293	0.06364
28APR89	6	07970	1.070	3.7383	0.02828	0.510	.	.	2.260	16.8142	0.26870	2.260	16.8142	0.26870	2.260	16.8142	0.26870	2.260	16.8142	0.26870
10MAY89	4	0812	0.890	6.7416	0.04243	0.685	62.7737	0.30406	3.445	7.8374	0.19092	3.445	7.8374	0.19092	3.445	7.8374	0.19092	3.445	7.8374	0.19092
22MAY89	2	0823	1.250	19.2000	0.16971	1.085	15.6682	0.12021	2.400	19.1667	0.32527	2.400	19.1667	0.32527	2.400	19.1667	0.32527	2.400	19.1667	0.32527
03JUN89	7	0840	0.605	1.6529	0.00707	0.545	16.5138	0.06364	0.710	33.8028	0.16971	0.710	33.8028	0.16971	0.710	33.8028	0.16971	0.710	33.8028	0.16971
15JUN89	5	0853	1.215	17.2840	0.14849	0.860	6.9767	0.04243	2.325	14.1935	0.23335	2.325	14.1935	0.23335	2.325	14.1935	0.23335	2.325	14.1935	0.23335
27JUN89	3	0870	1.065	29.1080	0.21920	0.780	5.1282	0.02828	1.060	64.1509	0.48083	1.060	64.1509	0.48083	1.060	64.1509	0.48083	1.060	64.1509	0.48083
09JUL89	1	08850	1.090	11.0092	0.08485	0.980	4.0816	0.02828	1.820	3.2967	0.04243	1.820	3.2967	0.04243	1.820	3.2967	0.04243	1.820	3.2967	0.04243
21JUL89	6	0903	2.210	19.9095	0.31113	1.030	5.8252	0.04243	3.060	0.6536	0.01414	3.060	0.6536	0.01414	3.060	0.6536	0.01414	3.060	0.6536	0.01414
02AUG89	4	0915	1.725	2.8986	0.03536	1.140	42.1053	0.33941	1.860	7.5269	0.09899	1.860	7.5269	0.09899	1.860	7.5269	0.09899	1.860	7.5269	0.09899
14AUG89	2	0929	0.795	3.7736	0.02121	.	.	.	3.480	1.1494	0.02828	3.480	1.1494	0.02828	3.480	1.1494	0.02828	3.480	1.1494	0.02828
26AUG89	7	0941	1.230	1.6260	0.01414	0.940	57.4468	0.38184	1.975	11.6456	0.16263	1.975	11.6456	0.16263	1.975	11.6456	0.16263	1.975	11.6456	0.16263
25SEP89	2	0979	2.415	5.3830	0.09192	3.295	3.3384	0.07778	0.800	.	0.09192	0.800	.	0.09192	0.800	.	0.09192	0.800	.	0.09192
01OCT89	1	0994	1.015	18.7192	0.13435	0.905	14.3646	0.09192	3.295	3.9454	0.09192	3.295	3.9454	0.09192	3.295	3.9454	0.09192	3.295	3.9454	0.09192
07OCT89	7	0999	1.585	0.6309	0.00707	1.030	9.7087	0.07071	1.480	22.9730	0.24042	1.480	22.9730	0.24042	1.480	22.9730	0.24042	1.480	22.9730	0.24042
13OCT89	6	10090	1.200	11.6667	0.09899	0.860	4.6512	0.02828	6.030	18.9055	0.80610	6.030	18.9055	0.80610	6.030	18.9055	0.80610	6.030	18.9055	0.80610
19OCT89	5	1017	2.495	14.0281	0.24749	1.785	8.4034	0.10607	1.380	30.4348	0.29698	1.380	30.4348	0.29698	1.380	30.4348	0.29698	1.380	30.4348	0.29698
25OCT89	4	1021	0.935	26.7380	0.17678	0.775	9.0323	0.04950	1.790	4.4693	0.05657	1.790	4.4693	0.05657	1.790	4.4693	0.05657	1.790	4.4693	0.05657
31OCT89	3	1032	1.325	15.8491	0.14849	0.830	7.2289	0.04243	1.460	20.5479	0.21213	1.460	20.5479	0.21213	1.460	20.5479	0.21213	1.460	20.5479	0.21213
06NOV89	2	1041	1.180	77.9661	0.65054	1.085	17.5115	0.13435	2.545	24.7544	0.44548	2.545	24.7544	0.44548	2.545	24.7544	0.44548	2.545	24.7544	0.44548
12NOV89	1	1046	0.875	3.4286	0.02121	1.085	0.9217	0.00707	3.885	5.4054	0.14849	3.885	5.4054	0.14849	3.885	5.4054	0.14849	3.885	5.4054	0.14849
18NOV89	7	1061	0.705	15.6028	0.07778	0.530	.	.	1.540	31.1688	0.33941	1.540	31.1688	0.33941	1.540	31.1688	0.33941	1.540	31.1688	0.33941
24NOV89	6	1065	0.880	22.7273	0.14142	0.470	.	.	2.490	6.4257	0.11314	2.490	6.4257	0.11314	2.490	6.4257	0.11314	2.490	6.4257	0.11314
30NOV89	5	1078	3.145	7.3132	0.16263	1.600	37.5000	0.42426	3.340	4.1916	0.09899	3.340	4.1916	0.09899	3.340	4.1916	0.09899	3.340	4.1916	0.09899
06DEC89	4	1084	1.580	22.7848	0.25456	1.220	19.6721	0.16971	2.590	6.1776	0.11314	2.590	6.1776	0.11314	2.590	6.1776	0.11314	2.590	6.1776	0.11314
12DEC89	3	1097	1.730	20.8092	0.25456	1.235	4.0486	0.03536	0.895	41.3408	0.26163	0.895	41.3408	0.26163	0.895	41.3408	0.26163	0.895	41.3408	0.26163
24DEC89	1	1116	2.660	3.7594	0.07071	2.175	21.6092	0.33234	2.185	5.0343	0.07778	2.185	5.0343	0.07778	2.185	5.0343	0.07778	2.185	5.0343	0.07778
05JAN90	6	11260	2.825	3.8938	0.07778	1.385	19.4946	0.19092	3.490	1.7192	0.04243	3.490	1.7192	0.04243	3.490	1.7192	0.04243	3.490	1.7192	0.04243
17JAN90	4	1146	1.820	17.5824	0.22627	1.085	23.0415	0.17678	3.540	26.5537	0.66468	3.540	26.5537	0.66468	3.540	26.5537	0.66468	3.540	26.5537	0.66468
AVERAGES			1.409	16.4219	0.15274	1.041	17.3125	0.13047	2.314	14.9412	0.20102	2.314	14.9412	0.20102	2.314	14.9412	0.20102	2.314	14.9412	0.20102

*In Case 1, mean concentrations are calculated using detectable tube concentrations only.

b_n indicates missing value resulting from invalidated samples and/or data below ADL.c_n indicates insufficient data to perform the calculation.

TABLE B-28. LISTING OF MEAN CONCENTRATIONS, PERCENT DIFFERENCES, AND STANDARD DEVIATIONS FOR CASE 2^a

SAMPLE DATE	DAY OF WEEK	ID NUMBER	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
			MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)	MEAN ^b CONC (ppbv)	PERCENT ^c DIF	STD ^c (ppbv)
22JAN89	1	0670	0.885	30.5085	0.19092	0.840	19.0476	0.11314	1.825	11.5068	0.14849	1.825	11.5068	0.14849
03FEB89	6	0682	0.395			0.525	13.3333	0.04950	0.785	8.9172	0.04950	0.785	8.9172	0.04950
15FEB89	4	0702	1.455	33.6770	0.34648	0.700	14.2857	0.07071	1.320	37.8788	0.35355	1.320	37.8788	0.35355
27FEB89	2	0711	1.755	2.8490	0.03536	0.770	2.5974	0.01414	1.260	7.9365	0.07071	1.260	7.9365	0.07071
11MAR89	7	0725	1.835	38.6921	0.50205	1.845	16.8022	0.21920	3.220	8.0745	0.18385	3.220	8.0745	0.18385
23MAR89	5	0741	0.700	45.7143	0.22627	0.315			1.790	4.4693	0.05657	1.790	4.4693	0.05657
04APR89	3	0759	0.970	16.4948	0.11314	0.565	15.9292	0.06364	1.530	7.8431	0.08485	1.530	7.8431	0.08485
16APR89	1	0773	0.995	1.0050	0.00707	0.850	37.6471	0.22627	4.435	2.0293	0.06364	4.435	2.0293	0.06364
28APR89	6	07970	1.070	3.7383	0.02828	0.345			2.260	16.8142	0.26870	2.260	16.8142	0.26870
10MAY89	4	0812	0.890	6.7416	0.04243	0.685	62.7737	0.30406	3.445	7.8374	0.19092	3.445	7.8374	0.19092
22MAY89	2	0823	1.250	19.2000	0.16971	1.085	15.6682	0.12021	2.400	19.1667	0.32527	2.400	19.1667	0.32527
03JUN89	7	0840	0.605	1.6529	0.00707	0.545	16.5138	0.06364	0.710	33.8028	0.16971	0.710	33.8028	0.16971
15JUN89	5	0853	1.215	17.2840	0.14849	0.860	6.9767	0.04243	2.325	14.1935	0.23335	2.325	14.1935	0.23335
27JUN89	3	0870	1.065	29.1080	0.21920	0.780	5.1282	0.02828	1.060	64.1509	0.48083	1.060	64.1509	0.48083
09JUL89	1	08850	1.090	11.0092	0.08485	0.980	4.0816	0.02828	1.820	3.2967	0.04243	1.820	3.2967	0.04243
21JUL89	6	0903	2.210	19.9095	0.31113	1.030	5.8252	0.04243	3.060	0.6536	0.01414	3.060	0.6536	0.01414
02AUG89	4	0915	1.725	2.8986	0.03536	1.140	42.1053	0.33941	1.860	7.5269	0.09899	1.860	7.5269	0.09899
14AUG89	2	0929	0.795	3.7736	0.02121				3.480	1.1494	0.02828	3.480	1.1494	0.02828
26AUG89	7	0941	1.230	1.6260	0.01414	0.940	57.4468	0.38184	1.975	11.6456	0.16263	1.975	11.6456	0.16263
25SEP89	2	0979	2.415	5.3830	0.09192	3.295	3.3384	0.07778	0.490			0.490		
01OCT89	1	0994	1.015	18.7192	0.13435	0.905	14.3646	0.09192	3.295	3.9454	0.09192	3.295	3.9454	0.09192
07OCT89	7	0999	1.585	0.6309	0.00707	1.030	9.7087	0.07071	1.480	22.9730	0.24042	1.480	22.9730	0.24042
13OCT89	6	10090	1.200	11.6667	0.09899	0.860	4.6512	0.02828	6.030	18.9055	0.80610	6.030	18.9055	0.80610
19OCT89	5	1017	2.495	14.0281	0.24749	1.785	8.4034	0.10607	1.380	30.4348	0.29698	1.380	30.4348	0.29698
25OCT89	4	1021	0.935	26.7380	0.17678	0.775	9.0323	0.04950	1.790	4.4693	0.05657	1.790	4.4693	0.05657
31OCT89	3	1032	1.325	15.8491	0.14849	0.830	7.2289	0.04243	1.460	20.5479	0.21213	1.460	20.5479	0.21213
06NOV89	2	1041	1.180	77.9661	0.65054	1.085	17.5115	0.13435	2.545	24.7544	0.44548	2.545	24.7544	0.44548
12NOV89	1	1046	0.875	3.4286	0.02121	1.085	0.9217	0.00707	3.885	5.4054	0.14849	3.885	5.4054	0.14849
18NOV89	7	1061	0.705	15.6028	0.07778	0.355			1.540	31.1688	0.33941	1.540	31.1688	0.33941
24NOV89	6	1065	0.880	22.7273	0.14142	0.325			2.490	6.4257	0.11314	2.490	6.4257	0.11314
30NOV89	5	1078	3.145	7.3132	0.16263	1.600	37.5000	0.42426	3.340	4.1916	0.09899	3.340	4.1916	0.09899
06DEC89	4	1084	1.580	22.7848	0.25456	1.220	19.6721	0.16971	2.590	6.1776	0.11314	2.590	6.1776	0.11314
12DEC89	3	1097	1.730	20.8092	0.25456	1.235	4.0486	0.03536	0.895	41.3408	0.26163	0.895	41.3408	0.26163
24DEC89	1	1116	2.660	3.7594	0.07071	2.175	21.6092	0.33234	2.185	5.0343	0.07778	2.185	5.0343	0.07778
05JAN90	6	11260	2.825	3.8938	0.07778	1.385	19.4946	0.19092	3.490	1.7192	0.04243	3.490	1.7192	0.04243
17JAN90	4	1146	1.820	17.5824	0.22627	1.085	23.0415	0.17678	3.540	26.5537	0.66468	3.540	26.5537	0.66468
AVERAGES			1.403	16.4219	0.15274	1.024	17.3125	0.13047	2.305	14.9412	0.20102	2.305	14.9412	0.20102

*In Case 2, mean concentrations are calculated using 1/2 analytical detection limit (ADL) for tube concentrations below ADL.

b_n indicates missing value resulting from invalidated samples and/or data below ADL.c_n indicates insufficient data to perform the calculation.

Appendix C - Analytical Data Listing

TABLE C-1. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SITECODE=BRLA															
SAMPLE DATE	WEEK DAY	ID NO.	LOT	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
16JAN89	2	0666	30	1.69	1.57	0.862	0.856	1.07	1.02	0.952	0.906	1.32	1.30	0.872	0.943
31JAN89	3	0678	14	3.59	3.23	0.958	0.956	1.70	1.78	0.977	0.992	0.75	0.90	0.729	0.905
09FEB89	5	0691D	30	1.11	1.09	0.961	0.956	0.68	0.67	0.909	0.900	0.88	0.92	0.946	0.899
21FEB89	3	0708	30	0.90	0.95	0.918	0.922	0.80	0.74	0.948	0.977	1.23	1.37	0.823	0.895
05MAR89	1	0719	30	-999	0.43	0.902	0.842	-999	-999	0.814	0.809	0.89	0.84	0.817	0.770
17MAR89	6	0733	30	1.43	1.48	0.939	0.933	0.78	0.74	0.979	0.982	-999	0.50	0.645	0.667
31MAR89	6	0755	30	1.21	1.25	0.945	0.867	1.05	1.10	0.971	0.930	1.34	1.62	0.739	0.768
10APR89	2	0766	32	1.32	1.36	0.996	0.978	0.76	0.60	0.977	0.973	1.90	1.66	0.921	0.918
22APR89	7	0783	32	1.67	1.73	1.000	0.999	1.33	1.48	0.979	0.990	7.12	7.86	0.971	0.974
10MAY89	4	0806	32	1.45	1.24	0.998	0.998	1.01	0.94	0.997	0.987	2.52	2.38	0.813	0.815
16MAY89	3	0817D	32	1.14	1.42	1.000	0.997	1.09	0.92	0.984	0.974	-999	-999	0.667	0.667
09JUN89	6	0846	35	1.99	2.12	0.995	0.999	1.29	1.62	0.992	0.993	1.47	1.79	0.804	0.818
21JUN89	4	0865	35	1.74	1.75	0.994	0.994	1.14	1.19	0.978	0.998	0.81	0.91	0.667	0.667
03JUL89	2	0877	35	1.82	1.70	0.998	0.999	1.24	1.52	0.984	0.994	0.53	0.63	0.667	0.667
15JUL89	7	0891	35	1.11	1.13	0.999	0.989	0.69	1.03	0.986	0.918	-999	-999	0.667	0.667
27JUL89	5	0907	39	1.64	1.73	0.997	1.000	2.26	2.19	0.998	0.996	0.36	0.49	0.811	0.667
08AUG89	3	0924D	39	1.73	1.49	0.985	0.999	1.34	1.12	0.999	0.985	2.22	2.25	0.818	0.816
20AUG89	1	0939D	39	1.61	1.45	0.998	0.998	2.12	2.00	0.992	0.999	0.73	0.82	0.800	0.667
01SEP89	6	0951	39	1.95	2.00	0.999	0.997	0.58	0.79	0.956	0.970	0.37	-999	0.790	0.785
13SEP89	4	0968	39	1.49	1.62	0.998	0.999	1.48	1.51	0.983	0.996	0.94	0.71	0.667	0.794
25SEP89	2	0981	39	1.29	1.27	0.995	0.999	1.04	1.48	0.996	0.963	1.86	2.14	0.817	0.817
07OCT89	7	1000	25	1.79	1.55	0.999	0.992	1.97	2.04	0.981	0.985	2.10	2.35	0.818	0.489
19OCT89	5	1014	42	0.64	0.69	0.991	0.981	0.41	0.41	0.975	0.924	1.63	1.70	0.810	0.933
31OCT89	3	1029	42	1.90	2.16	0.997	0.996	1.66	1.54	0.966	0.977	1.90	1.70	0.668	0.878
12NOV89	1	1050D	42	2.18	1.14	0.997	0.999	1.74	1.59	0.892	0.978	3.76	3.43	0.815	0.810
24NOV89	6	1064	42	1.18	1.57	0.999	0.998	0.74	0.83	0.959	0.984	1.86	1.57	0.861	0.912
06DEC89	4	1085	11	2.24	2.13	0.984	0.942	1.78	1.60	0.980	0.989	-999	-999	0.710	0.791
17DEC89	1	1099	11	1.16	1.20	0.929	0.958	0.99	1.54	0.994	0.969	-999	0.53	0.935	0.493
30DEC89	7	1115	11	0.86	0.84	0.997	0.996	1.21	0.95	0.983	0.995	-999	-999	0.862	0.728
11JAN90	5	1130	46	2.09	1.94	1.000	0.999	1.67	1.87	0.999	0.991	2.56	2.38	0.482	0.932
23JAN90	3	1151	46	1.70	1.30	0.979	0.998	1.16	1.35	0.988	0.987	1.69	1.79	0.925	0.516

"-999" indicates concentration below analytical detection limit (ADL).

"," indicates invalidated data.

TABLE C-2. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SITECODE=C4IL															
SAMPLE DATE	WEEK DAY	ID NO.	LOT	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
22JAN89	1	0673	15	0.75	0.59	0.931	0.867	0.40	0.38	0.808	0.920	1.32	1.25	0.837	0.886
06FEB89	2	0688	30	2.35	2.50	0.941	0.936	1.18	1.18	0.960	0.977	1.19	1.45	0.984	0.986
15FEB89	4	0698	30	4.83	4.23	0.959	0.957	1.88	1.68	0.972	0.961	2.00	0.45	0.992	0.984
27FEB89	2	07140	30	1.33	1.26	0.977	0.969	0.47	0.48	0.800	0.795	0.77	0.54	0.729	0.756
17MAR89	6	07350	30	0.76	0.83	0.914	0.918	-999	-999	0.925	0.924	1.04	1.00	0.888	0.880
23MAR89	5	0743	30	2.45	2.30	0.939	0.934	1.14	1.24	0.966	0.950	1.01	1.33	0.922	0.956
29MAR89	4	0752	30	1.61	1.53	0.940	0.933	0.53	0.51	0.798	0.808	1.30	1.42	0.872	0.863
04APR89	3	0757	30	0.46	0.57	0.898	0.893	-999	-999	0.814	0.814	1.10	1.23	0.819	0.816
16APR89	1	0782	32	1.20	1.04	0.996	0.998	0.79	0.82	0.989	0.956	1.19	1.13	0.993	0.915
28APR89	6	0794	32	3.30	2.98	0.999	0.999	1.87	1.94	0.988	0.991	2.83	2.40	0.991	0.991
10MAY89	4	0811	32	1.01	0.94	0.982	0.993	0.37	0.49	0.937	0.946	2.36	2.68	0.932	0.979
22MAY89	2	0827	32	3.13	3.21	0.998	0.999	2.03	2.09	0.993	0.992	4.52	4.11	0.974	0.988
03JUN89	7	08450	35	1.15	1.09	0.992	0.989	0.54	0.74	0.978	0.992	1.27	1.47	0.780	0.816
16JUN89	6	0860	35	0.54	0.48	0.998	0.997	0.30	-999	0.987	0.894	3.01	2.62	0.907	0.917
21JUN89	4	0902	35	0.42	2.97	0.994	1.000	-999	0.39	0.798	0.982	-999	-999	0.000	0.000
27JUN89	3	0869	35	2.88	2.87	0.993	1.000	1.71	1.86	0.793	0.991	1.86	2.32	0.923	0.888
09JUL89	1	0890	35	1.58	1.64	0.997	0.996	0.93	0.94	0.995	0.974	0.47	0.84	0.667	0.667
02AUG89	4	0911	39	3.15	3.32	1.000	0.998	1.78	1.98	0.994	0.995	4.47	3.33	0.932	0.932
14AUG89	2	0935	39	2.55	2.55	0.998	0.999	1.67	1.95	0.991	0.972	2.99	2.87	0.925	0.923
26AUG89	7	09500	39	2.58	2.81	0.998	1.000	1.84	2.25	0.978	0.988	2.76	3.04	0.817	0.815
07SEP89	5	0964	39	1.97	1.74	0.999	0.998	1.32	1.19	0.996	1.000	2.20	2.00	0.817	0.817
21SEP89	5	0984	39	2.68	2.46	0.999	0.999	1.89	1.87	0.968	0.995	3.18	2.72	0.808	0.935
01OCT89	1	0995	39	1.86	1.96	1.000	0.999	2.02	1.44	0.991	0.977	2.86	3.10	0.487	0.927
13OCT89	6	1012	42	6.52	6.52	1.000	1.000	4.81	4.34	0.983	0.998	7.69	6.21	0.982	0.985
25OCT89	4	1031	42	1.92	2.03	0.998	0.999	1.13	1.27	0.984	1.000	3.01	2.94	0.816	0.923
30NOV89	5	10810	42	1.96	1.98	0.983	0.997	1.19	1.18	0.907	0.942	1.92	1.89	0.951	0.907
13DEC89	4	1104	42	2.55	2.46	0.994	0.996	1.83	1.59	0.954	0.999	2.90	2.90	0.989	0.532
24DEC89	1	1120	11	1.09	1.18	0.966	0.998	1.11	0.97	0.916	0.947	0.98	0.69	0.981	0.978
05JAN90	6	1140	46	1.73	1.57	0.996	0.971	0.99	1.12	0.978	0.911	6.04	6.08	0.566	0.991
17JAN90	4	1155	46	0.99	1.49	0.995	0.961	0.74	0.99	0.942	0.976	3.06	2.89	0.879	0.883

"-999" indicates concentration below analytical detection limit (ADL).

"-." indicates invalidated data.

TABLE C-3. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SITECODE=CANJ															
SAMPLE DATE	WEEK DAY	ID NO.	LOT	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
22JAN89	1	0672	15	3.98	4.19	0.957	0.951	2.18	2.19	0.982	0.977	1.82	1.64	0.946	0.988
03FEB89	6	0685	30	2.36	2.20	0.959	0.955	1.40	1.15	0.977	0.959	0.44	-999	0.973	0.945
15FEB89	4	0696	30	3.65	3.85	0.959	0.952	2.01	2.24	0.979	0.974	1.67	2.03	0.979	0.985
27FEB89	2	0710	30	2.21	2.41	0.941	0.948	0.97	1.05	0.942	0.944	1.39	1.43	0.983	0.983
11MAR89	7	07300	30	2.21	2.12	0.915	0.909	1.60	1.63	0.946	0.957	2.06	2.18	0.971	0.954
23MAR89	5	0742	30	0.45	-999	0.890	0.894	0.44	0.55	0.811	0.814	1.04	1.01	0.901	0.917
04APR89	3	0760	30	1.21	1.56	0.924	0.911	0.84	0.79	0.916	0.991	0.92	0.92	0.799	0.796
16APR89	1	0777	32	2.37	2.17	0.998	0.996	1.28	1.24	0.994	0.989	3.22	2.69	0.970	0.983
28APR89	6	0793	32	1.77	1.44	0.988	0.998	0.84	0.69	0.992	0.984	3.79	3.26	0.984	0.993
10MAY89	4	0808	32	0.92	0.52	0.961	0.993	0.46	0.42	0.989	0.986	2.92	2.85	0.905	0.905
22MAY89	2	0822	32	2.49	2.52	0.997	0.995	2.28	2.02	0.997	0.994	4.07	4.15	0.984	0.985
03JUN89	7	0843	32	1.38	1.47	0.999	0.999	0.93	0.86	0.999	0.991	4.36	4.33	0.976	0.977
15JUN89	5	0852	35	1.58	1.73	0.999	0.997	0.96	0.92	0.992	0.995	1.32	1.28	0.773	0.818
27JUN89	3	08740	35	1.76	1.76	1.000	0.999	1.44	1.66	0.993	0.993	-999	0.98	0.000	0.667
09JUL89	1	0888	35	.	1.98	.	0.998	.	1.43	.	0.994	.	1.72	.	0.809
21JUL89	6	0900	35	1.23	1.13	0.999	0.999	1.00	1.04	0.994	1.000	0.61	0.78	0.667	0.667
02AUG89	4	0916	39	1.54	1.69	1.000	0.997	2.10	2.68	0.995	0.996	2.65	2.75	0.814	0.815
14AUG89	2	0926	39	2.28	2.38	0.997	0.996	1.86	1.68	0.985	0.996	2.39	1.93	0.816	0.816
26AUG89	7	0948	39	1.82	1.81	0.999	0.998	1.30	1.30	0.971	0.986	3.72	3.65	0.884	0.930
07SEP89	5	09590	39	2.01	2.11	0.998	0.998	1.78	1.52	0.981	0.998	4.99	4.51	0.966	0.928
19SEP89	3	0971	39	1.73	1.72	1.000	0.996	1.07	0.87	0.998	0.940	1.41	1.45	0.915	0.814
01OCT89	1	0989	39	1.11	0.90	0.990	0.977	0.75	0.73	0.964	0.901	2.25	2.31	0.879	0.925
13OCT89	6	1005	42	5.04	5.89	0.995	0.998	4.18	4.64	0.985	0.998	6.53	6.55	0.532	0.951
25OCT89	4	1028	42	7.08	6.93	1.000	0.999	4.63	4.54	0.994	0.997	8.35	8.50	0.980	0.624
06NOV89	2	1042	42	2.80	2.78	0.998	0.999	1.76	1.86	0.982	0.975	2.72	2.46	0.891	0.905
18NOV89	7	1056	42	1.98	1.93	0.995	0.998	1.12	0.94	0.965	0.985	0.72	-999	0.961	0.962
30NOV89	5	1076	42	1.84	1.92	0.999	0.993	0.89	1.00	0.934	0.983	2.43	1.84	0.678	0.963
12DEC89	3	1096	11	4.68	4.93	0.998	0.998	3.19	3.01	0.945	0.990	2.84	1.47	0.482	0.957
24DEC89	1	11080	11	2.68	2.57	0.993	0.955	1.45	1.06	0.924	0.993	2.57	2.05	0.982	0.967
05JAN90	6	1128	11	2.89	2.63	0.991	0.985	2.07	1.79	0.950	0.957	-999	-999	0.507	0.964
17JAN90	4	1144	46	5.14	5.01	0.990	0.996	2.57	2.46	0.957	0.924	5.66	5.80	0.985	0.971
29JAN90	2	1153	46	0.96	0.96	0.989	0.888	1.31	0.72	0.948	0.813	-999	-999	0.920	0.847

"-999" indicates concentration below analytical detection limit (ADL).

". ." indicates invalidated data.

TABLE C-4. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SITECODE=DLTX															
SAMPLE DATE	WEEK DAY	ID NO.	LOT	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
16JAN89	2	0664	30	3.34	3.10	0.867	0.911	1.81	1.83	0.960	0.967	1.28	2.03	0.896	0.970
28JAN89	7	0677	14	1.24	1.28	0.928	0.954	0.87	0.91	0.986	0.992	2.01	2.14	0.925	0.930
09FEB89	5	0693	30	2.71	3.08	0.951	0.949	1.74	2.04	0.982	0.981	1.34	1.67	0.978	0.989
21FEB89	3	0707	30	1.38	1.76	0.942	0.950	0.77	0.94	0.979	0.981	1.79	2.32	0.941	0.969
05MAR89	1	0723	30	0.56	0.69	0.860	0.883	0.41	0.43	0.928	0.905	1.12	1.23	0.913	0.891
17MAR89	6	0738	30	1.61	1.64	0.921	0.930	1.00	1.03	0.977	0.949	0.53	0.76	0.714	0.739
29MAR89	4	0754	30	2.66	2.12	0.938	0.949	1.71	2.01	0.965	0.956	-999	1.14	0.631	0.871
10APR89	2	0770	32	1.31	1.61	0.996	0.996	0.99	0.80	0.970	0.996	2.66	2.53	0.979	0.984
22APR89	7	0789	32	1.31	1.15	0.998	0.997	0.85	0.77	0.985	0.992	3.70	4.35	0.911	0.929
04MAY89	5	0802	32	1.48	1.54	0.999	1.000	1.06	1.09	0.994	0.984	1.78	2.40	0.927	0.916
16MAY89	3	0818	32	2.06	1.45	0.998	0.999	1.36	1.05	0.997	0.998	1.84	1.39	0.817	0.818
28MAY89	1	0834	32	1.94	1.93	0.997	0.990	1.45	1.31	0.988	0.982	1.12	1.75	0.806	0.917
09JUN89	6	08500	35	2.38	2.07	0.998	0.999	1.84	1.82	0.989	0.987	1.47	1.89	0.893	0.911
21JUN89	4	08640	35	2.07	1.83	0.999	0.999	1.27	1.18	1.000	0.998	0.78	1.21	0.779	0.793
15JUL89	7	0895	35	1.77	1.35	0.996	0.996	1.87	1.47	0.988	0.987	0.82	0.61	0.667	0.818
27JUL89	5	0908	39	1.55	1.66	0.999	0.996	1.51	1.33	0.990	0.991	1.63	1.51	0.815	0.816
08AUG89	3	0922	39	1.98	2.23	0.999	0.998	1.19	1.31	0.983	0.992	3.42	4.07	0.926	0.924
20AUG89	1	0940	39	2.23	1.94	0.999	0.996	1.01	1.04	0.971	0.982	0.95	0.96	0.808	0.828
01SEP89	6	0954	39	2.55	2.27	0.998	0.998	1.01	1.37	0.990	0.996	1.29	1.03	0.818	0.818
13SEP89	4	09660	39	2.52	2.36	0.997	1.000	1.11	0.92	0.997	0.999	1.19	1.12	0.477	0.808
25SEP89	2	0980	39	2.57	2.18	1.000	1.000	1.51	1.24	0.993	0.965	4.00	3.73	0.973	0.609
07OCT89	7	1001	42	-999	-999	0.996	0.995	-999	-999	0.990	0.977	-999	-999	0.498	0.488
19OCT89	5	1020	42	-999	-999	0.998	0.999	-999	-999	0.982	0.989	-999	-999	0.922	0.957
31OCT89	3	1034	42	5.14	4.41	0.999	0.999	2.85	2.41	0.996	0.990	3.84	3.38	0.535	0.959
12NOV89	1	1052	42	1.84	2.10	0.998	1.000	1.69	1.33	0.982	0.983	1.37	2.07	0.793	0.497
24NOV89	6	1068	42	1.57	1.42	0.997	0.992	0.90	0.72	0.985	0.890	1.59	1.63	0.640	0.903
06DEC89	4	1086	11	1.26	1.25	0.999	0.994	1.16	1.11	0.911	0.921	-999	-999	0.478	0.908
18DEC89	2	1106	11	3.09	2.67	0.992	0.998	1.89	1.74	0.967	0.956	1.25	1.77	0.919	0.489
30DEC89	7	11180	11	1.15	1.29	0.994	0.993	1.15	1.06	0.995	0.965	1.00	0.45	0.975	0.892
11JAN90	5	11350	46	1.79	1.61	0.992	0.998	1.50	1.29	0.996	0.964	3.32	3.25	0.911	0.967
23JAN90	3	11490	46	2.70	2.82	1.000	0.999	1.55	1.82	0.975	0.950	4.06	3.66	0.893	0.986

"-999" indicates concentration below analytical detection limit (ADL).

"." indicates invalidated data.

TABLE C-5. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SITECODE=FLFL															
SAMPLE DATE	WEEK DAY	ID NO.	LOT	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
16JAN89	2	0667	30	3.40	3.54	0.944	0.947	2.07	-999	0.977	0.977	-999	0.16	0.659	0.686
28JAN89	7	0676	14	2.25	2.31	0.959	0.941	1.30	1.42	0.992	0.990	0.73	0.75	0.837	0.862
09FEB89	5	0690	30	2.41	2.25	0.950	0.943	1.25	1.13	0.950	0.955	0.44	0.62	0.713	0.737
21FEB89	3	0704	30	2.03	1.79	0.971	0.950	1.04	0.86	0.970	0.988	-999	-999	0.594	0.642
05MAR89	1	0721	30	1.19	1.42	0.933	0.958	0.63	0.85	0.982	0.994	-999	-999	0.625	0.645
17MAR89	6	0732	30	1.03	1.05	0.872	0.916	0.66	0.78	0.977	0.973	-999	0.56	0.626	0.655
29MAR89	4	07500	30	1.03	1.06	0.918	0.935	0.55	0.60	0.976	0.978	0.37	-999	0.620	0.618
10APR89	2	0767	32	2.06	2.07	0.998	0.997	1.75	1.75	0.996	0.995	1.30	1.63	0.818	0.817
29APR89	7	0790	32	3.54	3.55	1.000	0.998	3.30	3.57	1.000	0.999	1.36	1.39	0.816	0.787
04MAY89	5	0801	32	0.72	0.62	0.996	0.996	0.48	0.43	0.993	0.961	2.12	2.91	0.791	0.787
16MAY89	3	0815	32	2.11	2.49	0.999	0.997	2.09	1.74	0.995	0.982	1.50	1.67	0.787	0.767
28MAY89	1	08310	32	0.88	1.15	0.999	0.991	0.76	0.87	0.993	0.987	0.88	0.63	0.817	0.667
09JUN89	6	0847	35	1.28	1.27	0.994	0.996	0.62	0.66	0.995	0.976	0.60	0.86	0.667	0.814
21JUN89	4	0862	35	1.49	1.51	0.998	0.996	0.87	0.88	0.996	0.999	0.46	0.65	0.667	0.819
03JUL89	2	08790	35	2.39	2.79	0.999	1.000	1.49	1.63	0.994	0.998	0.56	0.62	0.667	0.667
15JUL89	7	0892	35	2.30	2.57	0.998	1.000	1.67	1.68	0.988	0.989	-999	0.38	0.667	0.667
27JUL89	5	0905	39	1.95	1.72	0.999	0.991	1.17	1.32	0.986	0.987	0.68	0.73	0.802	0.667
08AUG89	3	0920	39	3.60	4.14	1.000	0.998	1.56	1.87	0.972	0.996	1.30	1.09	0.791	0.813
20AUG89	1	0934	39	1.20	0.85	0.995	0.987	1.14	0.48	0.943	0.968	0.47	-999	0.667	0.667
01SEP89	6	0952	39	1.89	1.87	0.995	0.997	0.90	0.62	0.981	0.962	0.75	0.84	0.667	0.667
13SEP89	4	0963	39	0.99	1.05	0.996	0.995	0.75	0.64	0.985	0.988	0.47	0.45	0.795	0.749
25SEP89	2	09780	39	2.69	2.92	0.999	0.998	1.53	1.67	0.968	0.985	0.69	0.66	0.817	0.667
07OCT89	7	0996	42	1.64	1.32	0.998	0.993	0.77	0.92	0.995	0.992	1.01	0.71	0.667	0.667
19OCT89	5	1013	42	2.71	3.27	0.999	0.999	1.11	1.30	0.988	0.989	1.18	1.04	0.803	0.790
31OCT89	3	1030	42	3.92	3.87	0.999	1.000	1.98	1.87	0.905	0.993	1.89	2.83	0.934	0.812
12NOV89	1	1045	42	1.15	1.06	0.979	0.996	0.59	-999	0.992	0.883	-999	0.51	0.794	0.820
24NOV89	6	1063	42	1.22	0.96	0.987	0.978	0.55	0.85	0.986	0.821	0.73	0.49	0.818	0.803
06DEC89	4	1083	11	4.36	4.70	0.997	1.000	2.24	2.10	0.992	0.944	-999	0.46	0.889	0.949
18DEC89	2	1098	11	4.06	3.65	0.995	0.990	1.59	1.84	0.976	0.915	-999	-999	0.902	0.809
30DEC89	7	1112	11	2.67	2.63	0.999	0.991	1.53	2.30	0.932	0.969	-999	-999	0.926	0.914
11JAN90	5	1133	46	5.02	5.34	0.997	0.990	2.59	2.69	0.991	0.996	3.08	4.21	0.902	0.990
23JAN90	3	1147	46	1.77	1.81	0.999	0.891	0.80	0.75	0.923	0.993	1.30	1.50	0.920	0.887

"-999" indicates concentration below analytical detection limit (ADL).

".-" indicates invalidated data.

TABLE C-6. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SITECODE=H1TX															
SAMPLE DATE	WEEK DAY	ID NO.	LOT	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
16JAN89	2	0665	30	2.53	2.54	0.911	0.908	1.56	1.59	0.970	0.970	1.49	1.91	0.912	0.963
28JAN89	7	0675	14	1.71	1.82	0.949	0.955	1.68	1.54	0.989	0.990	0.58	0.86	0.759	0.811
09FEB89	5	0689	30	3.14	3.10	0.946	0.949	1.70	1.66	0.955	0.952	0.85	1.27	0.939	0.967
22FEB89	4	0705	30	0.91	1.27	0.941	0.910	0.50	0.50	0.806	0.792	1.14	1.26	0.952	0.928
05MAR89	1	0720	30	0.55	0.38	0.920	0.839	0.37	0.38	0.776	0.814	0.90	1.00	0.881	0.847
17MAR89	6	0734	30	1.58	1.64	0.945	0.953	1.71	1.80	0.988	0.989	-999	-999	0.672	0.633
29MAR89	4	0753	30	2.12	1.74	0.945	0.938	1.62	1.23	0.961	0.982	0.88	0.92	0.690	0.732
10APR89	2	0769D	32	1.41	1.21	0.999	0.990	0.89	0.67	0.974	0.993	1.93	1.46	0.981	0.976
22APR89	7	0784	32	1.60	1.53	0.994	0.989	2.77	2.72	0.992	0.996	4.01	4.27	0.897	0.930
04MAY89	5	0800	32	1.45	1.49	0.998	0.996	1.51	1.65	0.996	0.993	0.71	0.93	0.667	0.813
16MAY89	3	0819	32	1.57	1.85	0.998	1.000	1.48	1.57	0.982	0.983	0.67	0.44	0.806	0.667
28MAY89	1	0833D	32	2.10	2.29	0.998	0.997	2.69	2.68	0.991	0.996	1.48	1.80	0.805	0.906
09JUN89	6	0848	35	1.81	1.79	0.999	0.995	1.77	1.43	0.992	0.990	1.55	1.39	0.816	0.803
21JUN89	4	0861	35	1.60	1.58	0.996	0.996	1.22	1.31	0.997	0.998	-999	0.54	0.667	0.667
03JUL89	2	0881	35	2.91	3.06	0.999	0.999	2.49	2.27	0.988	0.986	0.95	0.72	0.774	0.667
15JUL89	7	0893D	35	1.50	1.54	0.998	0.987	1.28	1.44	0.979	0.984	-999	0.40	0.667	0.737
27JUL89	5	0906	39	6.22	5.39	0.998	0.999	4.59	3.62	0.998	0.993	1.30	2.05	0.800	0.783
08AUG89	3	0919	39	3.33	3.40	1.000	0.999	1.11	1.14	0.994	0.998	2.14	2.40	0.815	0.818
20AUG89	1	0937	39	1.72	2.04	0.998	0.999	1.77	1.98	0.977	0.999	0.96	0.96	0.667	0.816
27SEP89	4	0982	39	3.61	3.78	0.999	1.000	1.58	1.40	0.995	0.998	3.84	4.03	0.482	0.922
01OCT89	1	0991	39	1.66	1.69	1.000	0.999	1.26	1.27	0.981	0.960	3.06	4.36	0.816	0.807
07OCT89	7	0997	39	2.59	2.41	0.992	1.000	1.62	2.14	0.986	0.957	1.64	1.68	0.816	0.813
13OCT89	6	1007	39	3.40	3.43	0.816	0.999	2.95	3.15	0.815	0.993	2.42	2.51	0.667	0.817
19OCT89	5	1019D	42	2.40	2.37	0.997	0.999	1.27	1.23	0.978	0.990	2.23	2.54	0.818	0.476
19OCT89	5	1027	42	1.47	1.57	0.999	0.996	1.58	1.83	0.489	0.984	1.43	2.36	0.818	0.813
31OCT89	3	1033	42	3.18	3.13	0.996	0.999	1.43	1.39	0.927	0.975	1.43	1.17	0.908	0.917
06NOV89	2	1039	42	1.43	1.63	0.994	0.995	1.13	1.30	0.984	0.982	-999	-999	0.667	0.861
12NOV89	1	1053	42	1.06	0.93	0.997	0.982	1.45	1.15	0.996	0.992	2.19	2.39	0.810	0.816
18NOV89	7	1058	42	3.96	3.39	1.000	1.000	2.19	2.11	0.994	0.577	2.28	2.14	0.921	0.469
24NOV89	6	1066	42	4.08	3.88	0.999	0.999	2.88	2.90	0.995	0.985	3.75	4.0	0.666	0.506
30NOV89	5	1074	42	2.22	2.79	0.980	0.989	1.19	1.14	0.968	0.930	1.01	0.9	0.872	0.914
06DEC89	4	1082	42	1.95	2.13	0.999	0.996	1.73	2.04	0.962	0.962	2.46	2.65	0.959	0.821
12DEC89	3	1094	11	2.45	2.44	0.995	0.999	1.34	1.57	0.994	0.952	-999	0.59	0.976	0.475
18DEC89	2	1100	11	1.98	1.74	0.983	0.999	1.24	1.57	0.944	0.953	0.67	0.38	0.44	0.475
03JAN90	4	1119	11	2.05	1.90	0.998	0.984	1.49	1.38	0.956	0.944	-999	-999	0.88	0.871
11JAN90	5	1132	11	2.69	2.37	0.997	0.998	1.71	1.68	0.984	0.982	-999	-999	0.918	0.828
17JAN90	4	1137	46	1.38	1.53	0.989	0.991	2.40	2.80	0.904	0.931	0.76	0.74	0.824	0.774
23JAN90	3	1152	46	4.90	5.24	0.998	1.000	7.42	7.71	0.993	0.974	2.67	3.47	0.544	0.518

"-999" indicates concentration below analytical detection limit (ADL).

"-." indicates invalidated data.

TABLE C-7. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SAMPLE DATE	WEEK DAY	ID NO.	LOT	SITECODE=MIFL											
				FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
16JAN89	2	0663	30	3.16	3.15	0.946	0.942	1.52	1.30	0.974	0.989	-999	-999	0.632	0.583
28JAN89	7	0679	14	3.23	3.04	0.965	0.969	2.18	1.72	0.982	0.994	1.47	1.15	0.871	0.875
09FEB89	5	06940	30	2.48	2.46	0.954	0.961	1.69	1.65	0.981	0.981	0.51	0.35	0.724	0.687
21FEB89	3	0706	30	1.05	1.16	0.941	0.947	0.65	0.59	0.994	0.994	-999	-999	0.724	0.651
05MAR89	1	0722	30	1.29	1.51	0.958	0.967	0.62	0.55	0.992	0.993	-999	-999	0.626	0.654
18MAR89	7	0749	30	0.78	0.89	0.854	0.941	0.53	0.51	0.909	0.984	-999	-999	0.606	0.000
29MAR89	4	0756	30	1.32	1.13	0.952	0.952	0.68	0.66	0.989	0.987	0.33	0.36	0.617	0.626
10APR89	2	0774	32	1.83	1.56	0.998	0.993	1.25	1.25	0.998	0.972	1.16	1.05	0.784	0.811
22APR89	7	07880	32	0.75	0.67	0.994	0.999	0.76	0.63	0.963	0.993	1.98	1.93	0.795	0.792
04MAY89	5	0805	32	0.62	0.53	0.996	0.999	0.62	0.36	0.924	0.986	2.64	2.33	0.789	0.796
16MAY89	3	0820	32	2.77	3.16	0.998	0.999	2.52	2.57	0.990	0.997	1.26	0.78	0.667	0.667
28MAY89	1	0835	32	0.96	0.93	0.996	0.997	0.72	0.92	0.995	0.956	1.07	1.01	0.716	0.798
09JUN89	6	0851	35	1.52	1.39	0.998	0.994	0.88	0.93	0.996	0.991	-999	-999	0.667	0.809
21JUN89	4	0880	35	1.72	1.69	0.999	0.996	0.79	0.93	0.893	0.986	0.55	0.60	0.667	0.667
03JUL89	2	0876	35	2.13	2.14	1.000	0.999	1.12	1.08	0.968	0.982	-999	-999	0.667	0.667
15JUL89	7	0896	35	1.61	1.70	0.997	0.998	1.39	1.26	0.926	0.991	0.37	-999	0.667	0.667
27JUL89	5	09100	39	2.04	1.84	0.997	1.000	1.36	1.15	0.996	0.974	-999	0.53	0.816	0.818
08AUG89	3	0925	39	2.19	2.17	0.995	0.999	1.80	1.79	0.988	0.990	0.66	-999	0.667	0.667
20AUG89	1	0936	39	1.40	1.07	0.996	0.999	-999	0.50	0.894	0.741	-999	-999	0.806	0.000
01SEP89	6	0953	39	1.77	1.96	0.999	0.998	1.05	1.19	0.975	0.987	-999	-999	0.667	0.515
13SEP89	4	0969	39	1.06	0.87	0.998	0.998	0.66	0.60	0.980	0.978	1.50	1.24	0.810	0.817
25SEP89	2	0983	39	1.33	0.94	0.993	0.998	1.34	0.61	0.962	0.977	0.56	0.53	0.735	0.667
07OCT89	7	1010	42	1.05	1.04	0.994	0.983	0.56	0.47	0.971	0.991	0.71	-999	0.667	0.667
19OCT89	5	10160	42	2.00	1.87	1.000	0.996	1.20	1.32	0.993	0.996	1.13	1.04	0.667	0.667
31OCT89	3	10360	42	2.69	2.82	0.999	0.999	1.95	1.92	0.974	0.987	1.79	1.57	0.817	0.495
12NOV89	1	1051	42	0.68	-999	0.996	0.942	-999	0.53	0.939	0.901	1.03	0.50	0.477	0.817
24NOV89	6	1069	42	0.82	0.85	0.995	0.995	0.70	0.43	0.995	0.959	1.36	1.12	0.816	0.815
06DEC89	4	1088	11	3.28	3.42	0.995	1.000	1.35	1.63	0.978	0.980	-999	-999	0.926	0.883
18DEC89	2	1105	11	2.73	2.21	0.993	1.000	1.39	1.37	0.978	0.963	-999	-999	0.924	0.763
30DEC89	7	1114	11	1.64	1.93	0.996	0.983	1.04	1.02	0.941	0.994	-999	-999	0.805	0.924
11JAN90	5	1136	46	3.26	3.55	0.998	0.998	2.94	2.54	0.914	0.954	5.42	4.83	0.560	0.993
23JAN90	3	1150	46	1.67	1.66	0.969	0.890	1.74	1.49	0.892	0.981	1.75	1.72	0.835	0.929

"-999" indicates concentration below analytical detection limit (ADL).

"." indicates invalidated data.

TABLE C-8. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SITECODE=PEFL															
SAMPLE DATE	WEEK DAY	ID NO.	LOT	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
22APR89	7	0786	32	1.40	1.19	0.980	0.993	1.10	1.00	0.985	0.973	4.11	4.15	0.932	0.930
11DEC89	2	1087	11	1.97	1.09	0.976	0.962	0.97	0.89	0.991	0.924	-999	-999	0.919	0.888
18DEC89	2	1101	11	1.16	1.47	0.942	0.994	0.81	1.01	0.898	0.970	1.43	0.57	0.888	0.433
04JAN90	5	1122	70	1.59	1.68	0.948	0.956	1.45	1.54	0.936	0.928	1.64	1.50	0.894	0.817
11JAN90	5	1131	11	2.56	2.75	0.997	0.996	1.44	1.78	0.993	0.924	1.48	2.10	0.963	0.451
17JAN90	4	1142D	46	1.35	-999	0.974	0.954	1.37	1.04	0.933	0.920	1.17	1.10	0.909	0.929
29JAN90	2	1154	46	2.00	1.88	0.989	0.975	0.92	1.01	0.971	0.983	1.29	1.73	0.931	0.868

"-999" indicates concentration below analytical detection limit (ADL).

"." indicates invalidated data.

TABLE C-9. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SITECODE=S2M0															
SAMPLE DATE	WEEK DAY	ID NO.	LOT	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
22JAN89	1	0669	15	1.83	1.71	0.883	0.854	0.94	0.93	0.916	0.908	1.90	1.82	0.932	0.972
03FEB89	6	0681	30	1.94	2.07	0.956	0.948	1.09	1.10	0.975	0.980	1.87	1.91	0.985	0.970
15FEB89	4	0697	30	2.99	2.99	0.949	0.948	1.57	1.67	0.976	0.979	1.99	1.74	0.968	0.982
27FEB89	2	07160	30	2.33	2.19	0.941	0.929	0.81	0.83	0.899	0.901	1.30	1.25	0.984	0.962
11MAR89	7	0739	30	0.67	0.00	0.799	0.000	-999	0.00	0.000	0.000	-999	0.00	0.000	0.000
25MAR89	7	0744	30	1.84	-999	0.917	0.000	1.08	-999	0.918	0.000	1.92	-999	0.854	0.928
04APR89	3	0763	30	1.96	-999	0.923	0.000	0.88	-999	0.805	0.000	2.12	-999	0.950	0.955
16APR89	1	0775	32	1.18	1.04	0.989	0.992	0.80	0.86	0.994	0.976	3.77	3.91	0.990	0.992
28APR89	6	0791	32	2.50	2.54	0.997	0.993	1.82	1.79	0.988	0.997	3.93	3.61	0.973	0.981
10MAY89	4	0809	32	1.98	1.60	0.994	0.996	1.05	1.05	0.963	0.997	2.91	3.26	0.988	0.961
22MAY89	2	0821	32	1.58	1.61	0.999	0.994	1.12	1.29	0.988	0.960	2.41	2.16	0.925	0.911
03JUN89	7	0841	35	1.35	1.36	0.998	0.991	1.18	1.18	0.980	0.990	1.95	2.01	0.907	0.932
15JUN89	5	0855	35	1.32	1.22	0.998	0.968	0.63	-999	0.994	0.977	2.42	2.09	0.782	0.813
27JUN89	3	0868	35	2.12	1.89	0.991	0.997	1.26	1.16	0.980	0.996	1.39	1.59	0.667	0.791
09JUL89	1	0882	35	3.95	3.97	0.997	1.000	1.39	1.57	0.988	0.987	1.11	1.35	0.804	0.815
21JUL89	6	0898	35	2.60	2.93	0.997	0.993	2.15	1.82	0.947	0.996	1.33	1.39	0.817	0.807
02AUG89	4	0914	39	2.71	2.44	0.999	0.990	2.18	2.30	0.981	0.970	2.90	2.84	0.916	0.905
14AUG89	2	09320	39	3.92	3.82	0.999	0.999	1.80	1.77	0.982	0.983	4.80	4.51	0.488	0.513
26AUG89	7	0943	39	2.09	2.00	0.999	1.000	1.94	1.78	0.995	0.959	-999	0.58	0.795	0.817
07SEP89	5	0957	39	3.34	3.33	1.000	0.999	2.43	1.57	0.988	0.926	1.36	1.21	0.817	0.789
19SEP89	3	0976	39	1.74	1.63	0.999	0.978	1.06	1.32	0.996	0.961	4.15	4.02	0.813	0.935
01OCT89	1	0988	39	3.02	2.84	0.998	0.998	1.35	1.33	0.996	0.985	2.89	3.33	0.475	0.903
13OCT89	6	1003	42	5.14	4.88	0.998	0.992	3.38	3.31	0.968	0.986	8.67	8.86	0.955	0.963
25OCT89	4	1022	42	2.00	2.85	0.997	0.997	1.55	1.67	0.980	0.996	6.44	7.18	0.691	0.967
08NOV89	4	10440	42	2.65	2.23	1.000	0.996	0.72	-999	0.973	0.952	1.88	2.14	0.484	0.975
18NOV89	7	1057	42	1.62	1.36	0.990	0.998	0.89	0.60	0.952	0.941	1.37	1.14	0.928	0.475
30NOV89	5	1075	42	5.42	5.31	1.000	0.999	2.62	2.40	0.986	0.951	4.03	3.68	0.985	0.903
12DEC89	3	1095	39	2.81	2.39	0.994	0.952	0.85	0.98	0.931	0.974	2.19	1.98	0.549	0.963
24DEC89	1	1102	11	1.96	2.21	0.925	0.997	1.16	1.35	0.995	0.937	1.02	1.19	0.918	0.954
05JAN90	6	1121	46	4.67	4.41	0.984	0.996	3.51	2.99	0.890	0.957	4.24	3.77	0.927	0.985
17JAN90	4	1139	46	2.23	2.09	0.996	0.980	1.96	2.27	0.981	0.951	2.38	2.60	0.930	0.935

"-999" indicates concentration below analytical detection limit (ADL).

"." indicates invalidated data.

TABLE C-10. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SITECODE=SAIL															
SAMPLE DATE	WEEK DAY	ID NO.	LOT	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
22JAN89	1	0668	15	0.61	0.40	0.825	0.803	0.40	0.40	0.812	0.807	0.66	0.53	0.850	0.960
02FEB89	5	0680	30	0.59	0.85	0.910	0.973	0.53	0.60	0.988	0.992	0.63	0.58	0.900	0.811
16FEB89	5	0703	30	0.70	1.04	0.943	0.967	-999	0.37	0.806	0.814	0.74	0.72	0.942	0.861
27FEB89	2	0718	30	0.94	0.93	0.908	0.892	0.47	0.43	0.807	0.809	0.77	0.77	0.955	0.897
11MAR89	7	07260	30	2.95	2.75	0.936	0.928	1.20	1.80	0.964	0.972	-999	1.94	0.000	0.869
21MAR89	3	0745	30	1.64	1.83	0.927	0.954	0.96	0.96	0.903	0.972	1.20	2.18	0.893	0.928
04APR89	3	0762	30	0.78	0.68	0.950	0.878	0.54	0.57	0.801	0.802	1.69	2.25	0.868	0.877
28APR89	6	0799	32	1.06	0.89	0.995	0.994	0.45	0.42	0.944	0.854	2.45	2.79	0.980	0.998
10MAY89	4	0807	32	1.40	1.49	0.996	0.997	0.94	1.13	0.991	0.989	2.84	2.68	0.988	0.955
22MAY89	2	0829	32	0.79	0.90	0.996	0.978	0.62	0.86	0.994	0.942	1.26	1.48	0.817	0.813
03JUN89	7	0842	35	1.08	0.98	0.998	0.950	0.82	0.79	0.982	0.975	0.95	1.37	0.915	0.816
15JUN89	5	0856	35	1.16	1.29	0.992	1.000	0.55	0.48	0.991	0.998	1.61	1.60	0.934	0.991
27JUN89	3	0866	35	1.03	1.35	1.000	1.000	-999	-999	0.929	0.930	-999	-999	0.000	0.667
09JUL89	1	0889	35	2.63	3.34	0.998	1.000	0.42	0.78	0.994	0.992	-999	-999	0.667	0.667
21JUL89	6	0904	39	0.96	1.01	1.000	0.978	0.60	-999	0.997	0.976	0.70	1.00	0.818	0.815
02AUG89	4	0918	39	1.25	1.50	1.000	0.995	1.08	1.37	0.993	0.981	0.94	0.68	0.817	0.667
16AUG89	4	0930	39	1.80	1.73	0.989	0.973	0.99	0.87	0.989	0.868	2.15	2.55	0.817	0.816
26AUG89	7	09450	39	1.66	1.73	0.999	0.995	1.27	1.04	0.989	0.995	-999	-999	0.667	0.867
07SEP89	5	0955	39	1.52	1.96	1.000	0.998	0.60	0.74	0.976	0.948	0.50	0.53	0.667	0.667
19SEP89	3	0972	39	1.31	1.34	0.997	0.999	0.83	0.98	0.967	0.981	2.45	3.16	0.817	0.812
03OCT89	3	0998	39	2.08	1.81	0.997	0.993	1.23	1.05	0.982	0.955	2.16	2.55	0.990	0.920
13OCT89	6	1006	42	2.06	1.88	0.999	0.998	2.34	1.93	0.986	0.991	6.64	7.20	0.981	0.989
25OCT89	4	1026	42	0.76	0.47	0.937	0.946	0.48	-999	0.906	0.736	3.59	3.89	0.885	0.813
07NOV89	3	1047	42	1.50	1.51	0.998	0.994	1.28	1.02	0.946	0.907	1.54	1.22	0.477	0.919
18NOV89	7	10600	42	0.78	0.80	0.995	0.993	0.44	0.78	0.782	0.980	1.59	1.08	0.489	0.478
30NOV89	5	1072	42	3.55	3.60	0.975	0.997	2.47	2.56	0.994	0.954	3.84	3.54	0.585	0.925
12DEC89	3	1093	39	1.42	1.27	0.949	0.996	1.51	1.51	0.982	0.989	2.00	2.02	0.958	.
24DEC89	1	1113	11	0.83	1.27	0.974	0.965	0.62	0.80	0.841	0.951	-999	0.71	0.490	0.425
05JAN90	6	1129	46	2.44	2.54	0.931	0.998	1.73	1.88	0.979	0.910	2.22	1.85	0.571	0.972
17JAN90	4	1143	46	1.60	0.98	0.954	0.996	0.90	0.52	0.971	0.978	2.45	1.42	0.908	0.882

"-999" indicates concentration below analytical detection limit (ADL).

".." indicates invalidated data.

TABLE C-11. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SITECODE=W1DC															
SAMPLE DATE	WEEK DAY	ID NO.	LOT	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
22JAN89	1	0674	15	5.19	5.38	0.958	0.958	2.11	2.12	0.984	0.973	1.82	1.56	0.945	0.983
03FEB89	6	0687	30	2.08	1.89	0.951	0.941	1.08	1.05	0.974	0.982	1.24	1.00	0.968	0.972
15FEB89	4	0699	30	4.59	4.36	0.957	0.954	2.26	1.83	0.973	0.960	0.83	-999	0.856	0.723
27FEB89	2	0712	30	2.59	2.42	0.939	0.942	0.97	0.81	0.955	0.962	1.36	1.35	0.982	0.966
11MAR89	7	0728	30	1.46	1.53	0.928	0.935	0.64	0.64	0.961	0.977	0.59	0.47	0.966	0.959
23MAR89	5	07460	30	1.61	1.84	0.946	0.923	0.61	0.78	0.806	0.888	1.39	1.32	0.956	0.946
04APR89	3	0758	30	1.76	2.02	0.921	0.945	0.88	1.10	0.896	0.914	1.07	0.76	0.813	0.836
16APR89	1	0776	32	1.53	1.75	0.976	0.992	0.58	0.97	0.990	0.986	2.97	2.86	0.982	0.992
28APR89	6	0792	32	2.03	1.79	0.989	0.995	0.97	1.04	0.981	0.999	2.83	3.28	0.952	0.971
22MAY89	2	0824	32	3.70	3.75	0.998	0.997	2.01	1.89	0.979	0.993	3.59	3.27	0.985	0.986
03JUN89	7	08380	32	2.63	2.72	0.998	0.999	1.59	1.72	0.996	0.998	2.59	2.41	0.931	0.934
19JUN89	2	0857	35	5.49	6.13	0.999	0.998	2.31	3.13	0.996	0.993	1.63	0.90	0.814	0.912
27JUN89	3	0867	35	3.42	3.72	1.000	0.999	1.76	1.93	0.999	0.994	1.49	1.02	0.816	0.818
09JUL89	1	0884	35	4.45	5.09	1.000	0.997	1.75	1.75	0.992	0.998	1.20	1.46	0.815	0.816
21JUL89	6	0899	35	5.58	6.28	0.999	0.999	2.39	2.18	0.994	0.987	1.01	1.26	0.815	0.814
02AUG89	4	0913	39	3.43	3.73	0.997	0.999	1.45	1.98	0.994	0.998	2.81	3.16	0.998	0.924
14AUG89	2	0928	39	5.06	6.18	0.998	1.000	2.34	2.80	0.997	0.980	1.45	1.86	0.815	0.811
20AUG89	1	0933	39	3.69	3.98	0.999	1.000	0.97	1.55	0.992	0.976	2.52	2.67	0.817	0.814
26AUG89	7	0947	39	4.14	4.20	0.998	0.999	2.71	2.17	0.982	0.997	3.23	2.35	0.812	0.926
07SEP89	5	09620	39	4.54	4.80	0.999	0.998	1.57	1.80	0.994	0.997	4.35	3.71	0.695	0.502
19SEP89	3	0973	39	1.81	1.85	0.999	0.999	0.94	0.96	0.962	0.966	1.62	1.67	0.817	0.802
01OCT89	1	0990	39	2.85	2.45	1.000	1.000	1.53	1.70	0.989	0.987	2.45	1.34	0.988	0.473
13OCT89	6	1004	42	5.99	6.67	1.000	0.999	4.10	3.70	0.999	0.983	6.65	4.54	0.840	0.989
25OCT89	4	1024	42	7.16	7.48	0.999	1.000	3.91	4.41	0.996	0.992	5.70	5.55	0.982	0.988
06NOV89	2	1038	42	5.79	5.54	0.997	0.998	2.35	2.44	0.997	0.989	2.60	2.76	0.919	0.981
18NOV89	7	1054	42	3.68	3.43	0.999	1.000	1.48	1.44	0.873	0.975	1.35	1.10	0.982	0.992
30NOV89	5	10710	42	3.32	3.24	0.997	0.999	1.89	1.64	0.994	0.950	1.77	2.03	0.965	0.935
12DEC89	3	1091	39	3.60	3.64	1.000	0.997	2.63	2.80	0.937	0.917	2.64	2.55	0.906	0.911

"-999" indicates concentration below analytical detection limit (ADL).

"," indicates invalidated data.

TABLE C-12. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SITECODE=WIKS															
SAMPLE DATE	WEEK DAY	ID NO.	LOT	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
22JAN89	1	0671	15	1.18	1.12	0.925	0.923	0.64	0.75	0.988	0.970	1.71	1.76	0.914	0.945
03FEB89	6	0683	30	-999	0.82	0.935	0.930	-999	0.48	0.714	0.912	0.39	0.58	0.630	0.850
15FEB89	4	0701	30	0.76	0.71	0.960	0.924	0.41	-999	0.800	0.918	0.80	1.01	0.840	0.877
27FEB89	2	0709	30	2.47	2.63	0.948	0.942	1.10	1.03	0.963	0.963	1.20	1.31	0.945	0.915
11MAR89	7	0724	30	1.27	1.15	0.935	0.931	1.26	0.83	0.917	0.896	2.12	-999	0.828	0.634
23MAR89	5	0740	30	0.70	0.80	0.892	0.832	0.43	0.47	0.783	0.799	1.96	2.29	0.881	0.874
04APR89	3	0761	32	0.72	0.93	0.887	0.901	0.45	0.44	0.906	0.921	1.53	1.54	0.898	0.904
16APR89	1	07720	32	1.07	1.18	0.996	0.992	0.82	0.95	0.980	0.997	4.03	4.08	0.971	0.980
28APR89	6	0798	32	1.72	1.47	0.990	0.993	1.42	1.64	0.999	0.998	2.76	3.07	0.995	0.979
10MAY89	4	0813	32	0.71	0.87	0.984	0.998	0.84	0.77	0.945	0.980	3.35	3.52	0.979	0.974
03JUN89	7	0839	35	1.15	1.16	0.999	0.989	0.98	1.23	0.995	0.995	1.30	1.40	0.807	0.777
15JUN89	5	0854	35	1.06	1.36	0.988	0.999	0.72	0.98	0.997	0.968	1.88	2.03	0.902	0.933
27JUN89	3	08720	35	0.48	0.56	0.895	0.000	0.68	0.68	0.985	0.921	1.09	1.03	0.764	0.786
09JUL89	1	0887	35	1.17	0.75	0.994	1.000	0.83	0.54	0.967	0.912	0.37	-999	0.667	0.667
21JUL89	6	0901	35	1.34	1.93	0.988	0.996	1.32	1.17	0.975	0.995	1.39	1.53	0.815	0.793
02AUG89	4	0917	39	2.06	2.39	0.996	0.999	0.46	0.61	0.994	0.988	0.46	0.69	0.810	0.783
14AUG89	2	0927	39	1.04	1.20	0.981	0.996	-999	-999	0.885	0.956	4.14	3.92	0.836	0.907
26AUG89	7	0942	39	2.08	2.78	0.965	0.972	-999	-999	0.997	0.939	1.78	2.53	0.845	0.467
07SEP89	5	0956	39	1.46	1.29	0.993	0.997	1.57	1.13	0.989	0.992	1.97	1.79	0.808	0.811
19SEP89	3	0970	39	1.16	1.01	0.995	0.995	0.84	0.54	0.985	0.972	3.44	3.53	0.809	0.811
01OCT89	1	09930	39	1.54	1.19	0.997	0.998	1.23	0.99	0.960	0.978	5.09	5.35	0.508	0.980
13OCT89	6	1011	42	1.40	1.39	0.999	0.570	0.79	0.84	0.984	0.475	5.46	6.94	0.979	0.630
25OCT89	4	1023	42	1.13	1.19	0.975	1.000	1.10	0.94	0.859	0.994	2.26	2.54	0.817	0.480
06NOV89	2	1040	42	1.86	1.49	0.999	0.997	1.18	1.08	0.932	0.967	1.91	2.06	0.970	0.810
18NOV89	7	1062	42	0.96	1.07	0.991	0.994	0.71	0.81	0.994	0.938	2.07	2.18	0.923	0.918
30NOV89	5	1077	42	4.85	5.18	0.997	0.993	2.94	3.16	0.995	0.984	4.55	4.51	0.973	0.920
12DEC89	3	1092	11	1.97	2.20	0.987	0.999	1.21	1.29	0.986	0.997	1.24	0.97	0.907	0.498
30DEC89	7	11110	11	1.12	1.03	0.916	0.838	0.43	0.85	0.935	0.972	-999	0.50	0.460	0.509
05JAN90	6	1127	26	2.58	2.88	0.987	0.943	1.58	2.21	0.933	0.871	2.11	2.16	0.954	0.970
17JAN90	4	1145	46	1.43	1.29	0.982	0.890	0.96	0.94	0.982	0.974	3.12	2.64	0.464	0.888

"-999" indicates concentration below analytical detection limit (ADL).

"." indicates invalidated data.

TABLE C-13. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SITECODE=W2DC															
SAMPLE DATE	WEEK DAY	ID NO.	LOT	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
22JAN89	1	0684	15	4.22	3.86	0.948	0.940	1.55	1.41	0.990	0.987	1.94	1.93	0.835	0.961
03FEB89	6	0686	30	2.73	2.72	0.951	0.947	1.25	1.19	0.972	0.977	0.95	1.06	0.872	0.900
15FEB89	4	0700	30	4.65	5.06	0.959	0.956	1.99	2.17	0.985	0.980	0.59	1.60	0.901	0.885
27FEB89	2	0713	30	1.46	3.19	0.980	0.944	0.56	1.05	0.996	0.902	1.25	1.32	0.980	0.958
11MAR89	7	0729	30	1.35	1.69	0.922	0.937	0.55	0.90	0.907	0.964	0.34	0.85	0.913	0.975
23MAR89	5	0748	30	2.19	2.42	0.924	0.943	0.96	1.29	0.920	0.899	1.12	1.59	0.981	0.966
04APR89	3	07640	30	1.29	1.43	0.927	0.914	0.61	0.72	0.905	0.793	1.43	2.40	0.756	0.783
16APR89	1	0778	32	2.57	2.61	0.998	0.996	1.19	1.48	0.984	0.996	3.23	3.42	0.943	0.982
28APR89	6	0795	32	2.04	2.30	0.998	0.996	1.31	1.29	0.973	0.996	3.08	3.59	0.974	0.980
10MAY89	4	0803	32	2.08	1.77	0.997	0.999	1.18	1.14	0.994	0.985	2.69	2.32	0.930	0.916
10MAY89	4	0804	32	1.27	1.33	0.998	0.997	0.79	0.71	0.999	0.996	2.20	2.90	0.810	0.889
22MAY89	2	0825	32	3.95	4.21	0.774	1.000	2.35	2.07	0.998	0.993	3.98	4.52	0.984	0.972
03JUN89	7	0836	32	2.12	2.38	0.998	0.996	1.63	1.76	0.990	0.986	2.60	4.40	0.935	0.909
15JUN89	5	0859D	35	2.77	2.09	1.000	0.997	1.31	1.20	0.973	0.944	0.93	0.49	0.809	0.797
27JUN89	3	0875	35	2.89	3.24	0.999	0.992	1.20	1.34	0.989	0.989	-999	-999	0.000	0.667
09JUL89	1	0883	35	4.28	3.95	0.997	0.999	1.39	1.95	0.972	0.957	1.35	1.39	0.814	0.818
21JUL89	6	0897	35	3.66	-999	0.999	0.000	1.57	-999	0.988	0.000	1.62	-999	0.811	0.952
26AUG89	7	0946	39	2.62	1.90	0.989	0.999	1.11	0.61	0.983	0.989	3.19	3.28	0.816	0.876
07SEP89	5	0960	39	2.61	2.49	0.997	0.994	1.58	0.99	0.984	0.981	3.08	3.02	0.930	0.630
19SEP89	3	0975D	39	2.11	2.08	0.995	0.999	1.20	0.98	0.963	0.973	1.75	1.82	0.815	0.777
01OCT89	1	0987	39	2.54	2.62	0.999	0.999	2.56	1.64	0.974	0.992	1.04	2.18	0.883	0.930
13OCT89	6	1002	24	5.84	5.24	1.000	0.999	3.40	3.49	0.997	0.998	6.30	6.95	0.636	0.536
25OCT89	4	1025	42	9.19	8.62	1.000	1.000	6.04	5.54	0.992	0.992	7.20	6.86	0.509	0.602
06NOV89	2	1037	42	1.69	2.01	0.999	0.984	1.03	1.04	0.983	0.829	3.21	2.68	0.536	0.967
18NOV89	7	1055	42	2.25	2.06	1.000	0.997	1.04	1.04	0.990	0.993	1.90	1.94	0.973	0.506
30NOV89	5	1073	42	3.08	3.49	0.941	0.990	1.52	1.06	0.980	0.977	1.80	1.48	0.489	0.464
12DEC89	3	1090D	11	4.76	3.67	0.977	0.999	3.00	2.40	0.973	0.989	1.15	1.36	0.424	0.885
24DEC89	1	1103	11	2.58	2.33	0.992	0.970	1.12	1.21	0.973	0.962	1.00	1.04	0.943	0.522
05JAN90	6	1123	46	4.52	3.23	1.000	0.988	1.80	1.39	0.997	0.929	2.74	2.75	0.488	0.962
17JAN90	4	1138	46	5.90	6.01	0.999	0.999	3.38	3.37	0.930	0.972	4.47	4.85	0.963	0.897

"-999" indicates concentration below analytical detection limit (ADL).

"." indicates invalidated data.

TABLE C-14. LISTING OF TUBE 1 AND TUBE 2 CONC (ppbv) AND PURITY DATA

SITECODE=W2KS															
SAMPLE DATE	WEEK DAY	ID NO.	LOT	FORMALDEHYDE				ACETALDEHYDE				ACETONE			
				CONC (ppbv)		PURITY		CONC (ppbv)		PURITY		CONC (ppbv)		PURITY	
				TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2	TUBE1	TUBE2
22JAN89	1	0670	15	1.02	0.75	0.939	0.857	0.76	0.92	0.986	0.918	1.93	1.72	0.901	0.892
03FEB89	6	0682	30	0.61	-999	0.902	0.827	0.49	0.56	0.925	0.810	0.75	0.82	0.946	0.977
15FEB89	4	0702	30	1.21	1.70	0.932	0.919	0.75	0.65	0.915	0.921	1.07	1.57	0.918	0.878
27FEB89	2	0711	30	1.73	1.78	0.932	0.941	0.76	0.78	0.897	0.889	1.21	1.31	0.931	0.924
11MAR89	7	0725	30	2.19	1.48	0.916	0.947	2.00	1.69	0.960	0.956	3.09	3.35	0.913	0.871
23MAR89	5	0741	30	0.54	0.86	0.821	0.877	-999	0.45	0.810	0.813	1.83	1.75	0.847	0.806
04APR89	3	0759	32	1.05	0.89	0.907	0.889	0.52	0.61	0.922	0.922	1.47	1.59	0.859	0.848
16APR89	1	0773	32	1.00	0.99	0.984	0.979	0.69	1.01	0.992	0.973	4.48	4.39	0.898	0.931
28APR89	6	0797D	32	1.05	1.09	0.994	0.976	-999	0.51	0.952	0.935	2.45	2.07	0.934	0.934
10MAY89	4	0812	32	0.92	0.86	0.996	0.997	0.47	0.90	0.986	0.996	3.58	3.31	0.967	0.976
22MAY89	2	0823	32	1.13	1.37	0.997	0.993	1.00	1.17	0.978	0.971	2.63	2.17	0.806	0.818
03JUN89	7	0840	35	0.61	0.60	0.991	0.981	0.59	0.50	0.983	0.913	0.83	0.59	0.667	0.667
15JUN89	5	0853	35	1.11	1.32	0.993	0.997	0.83	0.89	0.928	0.976	2.16	2.49	0.814	0.895
27JUN89	3	0870	35	0.91	1.22	0.986	0.998	0.80	0.76	0.965	0.959	1.40	0.72	0.774	0.797
09JUL89	1	0885D	35	1.15	1.03	0.989	0.998	0.96	1.00	0.966	0.976	1.79	1.85	0.817	0.786
21JUL89	6	0903	35	1.99	2.43	0.991	0.999	1.06	1.00	0.911	0.933	3.07	3.05	0.810	0.934
02AUG89	4	0915	39	1.70	1.75	0.994	0.997	0.90	1.38	0.996	0.999	1.79	1.93	0.817	0.800
14AUG89	2	0929	39	0.78	0.81	0.990	0.993	-999	-999	0.993	0.977	3.46	3.50	0.814	0.813
26AUG89	7	0941	39	1.24	1.22	0.989	0.998	1.21	0.67	0.883	0.985	2.09	1.86	0.813	0.818
25SEP89	2	0979	39	2.48	2.35	0.996	0.999	3.24	3.35	0.989	0.996	0.80	-999	0.480	0.927
01OCT89	1	0994	39	1.11	0.92	0.998	0.983	0.97	0.84	0.994	0.943	3.36	3.23	0.815	0.506
07OCT89	7	0999	42	1.59	1.58	0.989	0.999	1.08	0.98	0.996	0.992	1.31	1.65	0.811	0.515
13OCT89	6	1009D	42	1.13	1.27	0.987	0.971	0.84	0.88	0.994	0.950	6.60	5.46	0.521	0.492
19OCT89	5	1017	42	2.32	2.67	0.998	0.998	1.86	1.71	0.957	0.987	1.59	1.17	0.841	0.963
25OCT89	4	1021	42	0.81	1.06	0.973	0.990	0.74	0.81	0.984	0.985	1.75	1.83	0.668	0.814
31OCT89	3	1032	42	1.43	1.22	0.999	0.987	0.80	0.86	0.937	0.845	1.31	1.61	0.816	0.629
06NOV89	2	1041	42	0.72	1.64	0.946	0.994	0.99	1.18	0.994	0.984	2.23	2.86	0.921	0.474
12NOV89	1	1046	42	0.89	0.86	0.986	0.958	1.09	1.08	0.871	0.997	3.99	3.78	0.996	0.624
18NOV89	7	1061	42	0.76	0.65	0.989	0.957	-999	0.53	0.927	0.966	1.78	1.30	0.915	0.925
24NOV89	6	1065	42	0.98	0.78	0.985	0.993	0.47	-999	0.957	0.932	2.57	2.41	0.931	0.922
30NOV89	5	1078	42	3.03	3.26	0.991	0.996	1.30	1.90	0.926	0.907	3.27	3.41	0.452	0.538
06DEC89	4	1084	11	1.76	1.40	1.000	0.992	1.10	1.34	0.938	0.972	2.67	2.51	0.982	0.518
12DEC89	3	1097	11	1.55	1.91	0.982	0.996	1.21	1.26	0.912	0.981	1.08	0.71	0.911	0.939
24DEC89	1	1116	11	2.71	2.61	0.971	0.952	2.41	1.94	0.797	0.992	2.13	2.24	0.963	0.991
05JAN90	6	1126D	46	2.77	2.88	0.973	0.991	1.25	1.52	0.953	0.983	3.46	3.52	0.945	0.865
17JAN90	4	1146	46	1.66	1.98	0.954	0.922	0.96	1.21	0.876	0.996	3.07	4.01	0.854	0.920

"-999" indicates concentration below analytical detection limit (ADL).

". ." indicates invalidated data.

