

Note: This is a reference cited in AP 42, *Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources*. AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

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EMB Report 90-MWI-5
Volume III
December 1990



Medical Waste Incineration Emission Test Report

AMI Central Carolina Hospital Sanford, North Carolina



DCN: 90-275-026-26-03

MEDICAL WASTE INCINERATION

EMISSION TEST REPORT

**VOLUME III
APPENDICES C - L**

**Central Carolina Hospital
Sanford, North Carolina**

**EMB Project No. 90-MWI-05
Work Assignment 26
Contract No. 68-D-90054**

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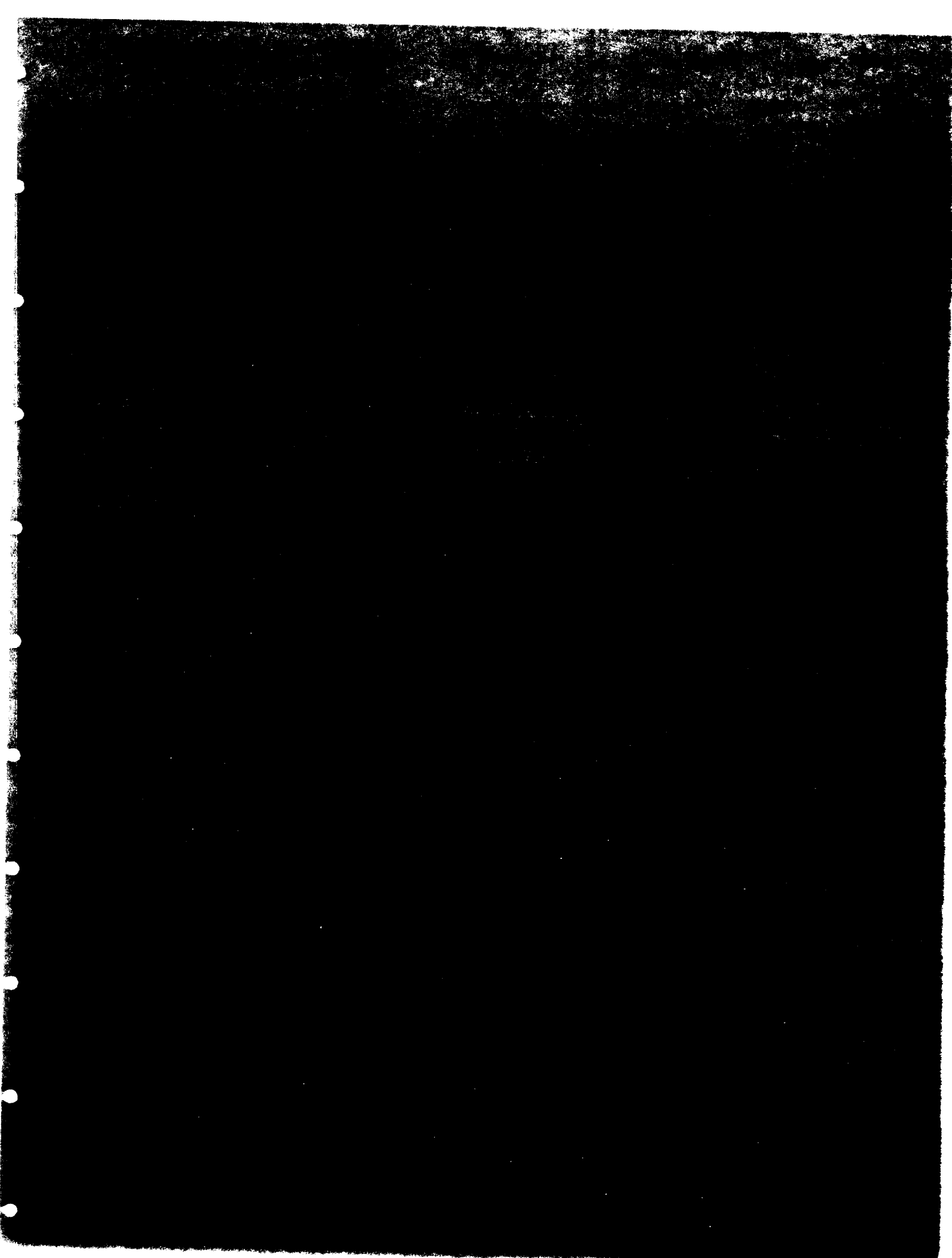
December 1991

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GREEN HILL

GREEN HILL & CO. SHEETS



FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/20/90

LOCATION: STACK

RUN NUMBER:1.00

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SAMPLING PARAMETER	CDD/CDF
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=====

Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.89
Absolute Stack Pressure, Ps (in. Hg)	29.88
Stack Static Pressure (in. H2O)	-0.12
Average Stack Temperature (F)	752.73
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	108.58
Average Meter Pressure (in.H2O)	0.61
Average Meter Temperature (F)	94.54
Moisture Collected (g)	225.70
Carbon Dioxide Concentration (%V)	3.14
Oxygen Concentration (%V)	15.76
Nitrogen Concentration (%V)	81.10
Dry Gas Meter Factor	0.98900
Pitot Constant	0.84

Average Sampling Rate (dscfm)	0.43
Standard Metered Volume, Vm(std) (dscf)	102.30
Standard Metered Volume, Vm(std) (dscm)	2.897
Standard Volume Water Vapor, Vw (scf)	10.64
Standard Volume Water Vapor, Vw (scm)	0.301
Stack Moisture (%V)	9.42
Mole Fraction Dry Stack Gas	0.906
Dry Molecular Weight	29.13
Wet Molecular Weight	28.08
Stack Gas Velocity, Vs (fpm)	1334.98
Stack Gas Velocity, Vs (mpm)	406.90
Volumetric Flow Rate (acfm)	2359.11
Volumetric Flow Rate (acmm)	66.810
Volumetric Flow Rate (dscfm)	928.59
Volumetric Flow Rate (dscmm)	26.298
Percent Isokinetic	100.83
Percent Excess Air	278.12
Fuel Factor, Fo	1.637
Ultimate CO2	12.77

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/21/90

LOCATION: STACK

RUN NUMBER:2.00

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SAMPLING PARAMETER	CDD/CDF
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Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.89
Absolute Stack Pressure, Ps (in. Hg)	29.88
Stack Static Pressure (in. H2O)	-0.12
Average Stack Temperature (F)	812.73
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	94.94
Average Meter Pressure (in.H2O)	0.51
Average Meter Temperature (F)	77.11
Moisture Collected (g)	161.10
Carbon Dioxide Concentration (%V)	3.76
Oxygen Concentration (%V)	15.69
Nitrogen Concentration (%V)	80.55
Dry Gas Meter Factor	0.98900
Pitot Constant	0.84

Average Sampling Rate (dscfm)	0.38
Standard Metered Volume, Vm(std) (dscf)	92.32
Standard Metered Volume, Vm(std) (dscm)	2.615
Standard Volume Water Vapor, Vw (scf)	7.60
Standard Volume Water Vapor, Vw (scm)	0.215
Stack Moisture (%V)	7.60
Mole Fraction Dry Stack Gas	0.924
Dry Molecular Weight	29.23
Wet Molecular Weight	28.38
Stack Gas Velocity, Vs (fpm)	1297.43
Stack Gas Velocity, Vs (mpm)	395.46
Volumetric Flow Rate (acfm)	2292.75
Volumetric Flow Rate (acmm)	64.931
Volumetric Flow Rate (dscfm)	877.20
Volumetric Flow Rate (dscmm)	24.842
Percent Isokinetic	96.33
Percent Excess Air	280.61
Fuel Factor, Fo	1.386
Ultimate CO2	15.08

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/22/90

LOCATION: STACK

RUN NUMBER:3.00

SAMPLING PARAMETER CDD/CDF

Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.66
Absolute Stack Pressure, Ps (in. Hg)	29.65
Stack Static Pressure (in. H2O)	-0.12
Average Stack Temperature (F)	734.21
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	105.85
Average Meter Pressure (in.H2O)	0.64
Average Meter Temperature (F)	83.08
Moisture Collected (g)	218.20
Carbon Dioxide Concentration (%V)	3.07
Oxygen Concentration (%V)	16.13
Nitrogen Concentration (%V)	80.80
Dry Gas Meter Factor	0.98900
Pitot Constant	0.84
Average Sampling Rate (dscfm)	0.42
Standard Metered Volume, Vm(std) (dscf)	101.06
Standard Metered Volume, Vm(std) (dscm)	2.862
Standard Volume Water Vapor, Vw (scf)	10.29
Standard Volume Water Vapor, Vw (scm)	0.291
Stack Moisture (%V)	9.24
Mole Fraction Dry Stack Gas	0.908
Dry Molecular Weight	29.14
Wet Molecular Weight	28.11
Stack Gas Velocity, Vs (fpm)	1375.81
Stack Gas Velocity, Vs (mpm)	419.35
Volumetric Flow Rate (acfm)	2431.26
Volumetric Flow Rate (acmm)	68.853
Volumetric Flow Rate (dscfm)	966.29
Volumetric Flow Rate (dscmm)	27.365
Percent Isokinetic	95.72
Percent Excess Air	309.16
Fuel Factor, Fo	1.554
Ultimate CO2	13.45

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/23/90

LOCATION: STACK

RUN NUMBER:4.00

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SAMPLING PARAMETER	CDD/CDF
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Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.64
Absolute Stack Pressure, Ps (in. Hg)	29.63
Stack Static Pressure (in. H2O)	-0.12
Average Stack Temperature (F)	772.90
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	102.17
Average Meter Pressure (in.H2O)	0.59
Average Meter Temperature (F)	81.42
Moisture Collected (g)	154.30
Carbon Dioxide Concentration (%V)	4.01
Oxygen Concentration (%V)	15.16
Nitrogen Concentration (%V)	80.83
Dry Gas Meter Factor	0.98900
Pitot Constant	0.84

Average Sampling Rate (dscfm)	0.41
Standard Metered Volume, Vm(std) (dscf)	97.76
Standard Metered Volume, Vm(std) (dscm)	2.769
Standard Volume Water Vapor, Vw (scf)	7.28
Standard Volume Water Vapor, Vw (scm)	0.206
Stack Moisture (%V)	6.93
Mole Fraction Dry Stack Gas	0.931
Dry Molecular Weight	29.25
Wet Molecular Weight	28.47
Stack Gas Velocity, Vs (fpm)	1360.73
Stack Gas Velocity, Vs (mpm)	414.75
Volumetric Flow Rate (acfm)	2404.62
Volumetric Flow Rate (acmm)	68.099
Volumetric Flow Rate (dscfm)	948.67
Volumetric Flow Rate (dscmm)	26.866
Percent Isokinetic	94.32
Percent Excess Air	244.70
Fuel Factor, Fo	1.431
Ultimate CO2	14.60

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/24/90
 LOCATION: STACK
 RUN NUMBER:5.00

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SAMPLING PARAMETER	CDD/CDF
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Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.89
Absolute Stack Pressure, Ps (in. Hg)	29.88
Stack Static Pressure (in. H2O)	-0.12
Average Stack Temperature (F)	747.67
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	104.65
Average Meter Pressure (in.H2O)	0.62
Average Meter Temperature (F)	78.88
Moisture Collected (g)	177.00
Carbon Dioxide Concentration (%V)	3.46
Oxygen Concentration (%V)	15.60
Nitrogen Concentration (%V)	80.94
Dry Gas Meter Factor	0.98900
Pitot Constant	0.84

Average Sampling Rate (dscfm)	0.42
Standard Metered Volume, Vm(std) (dscf)	101.47
Standard Metered Volume, Vm(std) (dscm)	2.874
Standard Volume Water Vapor, Vw (scf)	8.35
Standard Volume Water Vapor, Vw (scm)	0.236
Stack Moisture (%V)	7.60
Mole Fraction Dry Stack Gas	0.924
Dry Molecular Weight	29.18
Wet Molecular Weight	28.33
Stack Gas Velocity, Vs (fpm)	1366.63
Stack Gas Velocity, Vs (mpm)	416.55
Volumetric Flow Rate (acfm)	2415.03
Volumetric Flow Rate (acmm)	68.394
Volumetric Flow Rate (dscfm)	973.78
Volumetric Flow Rate (dscmm)	27.578
Percent Isokinetic	95.37
Percent Excess Air	269.69
Fuel Factor, Fo	1.532
Ultimate CO2	13.64

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/25/90

LOCATION: STACK

RUN NUMBER: 6.00

SAMPLING PARAMETER CDD/CDF

Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	30.10
Absolute Stack Pressure, Ps (in. Hg)	30.09
Stack Static Pressure (in. H2O)	-0.12
Average Stack Temperature (F)	726.67
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	108.46
Average Meter Pressure (in.H2O)	0.63
Average Meter Temperature (F)	83.88
Moisture Collected (g)	195.50
Carbon Dioxide Concentration (%V)	3.40
Oxygen Concentration (%V)	15.70
Nitrogen Concentration (%V)	80.90
Dry Gas Meter Factor	0.98900
Pitot Constant	0.84
Average Sampling Rate (dscfm)	0.44
Standard Metered Volume, Vm(std) (dscf)	104.92
Standard Metered Volume, Vm(std) (dscm)	2.971
Standard Volume Water Vapor, Vw (scf)	9.22
Standard Volume Water Vapor, Vw (scm)	0.261
Stack Moisture (%V)	8.08
Mole Fraction Dry Stack Gas	0.919
Dry Molecular Weight	29.17
Wet Molecular Weight	28.27
Stack Gas Velocity, Vs (fpm)	1371.69
Stack Gas Velocity, Vs (mpm)	418.09
Volumetric Flow Rate (acfm)	2423.98
Volumetric Flow Rate (acmm)	68.647
Volumetric Flow Rate (dscfm)	996.52
Volumetric Flow Rate (dscmm)	28.221
Percent Isokinetic	96.87
Percent Excess Air	276.71
Fuel Factor, Fo	1.529
Ultimate CO2	13.67

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/26/90

LOCATION: STACK

RUN NUMBER: 7.00

SAMPLING PARAMETER CDD/CDF

Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.77
Absolute Stack Pressure, Ps (in. Hg)	29.76
Stack Static Pressure (in. H2O)	-0.12
Average Stack Temperature (F)	805.00
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	106.91
Average Meter Pressure (in.H2O)	0.62
Average Meter Temperature (F)	87.75
Moisture Collected (g)	130.70
Carbon Dioxide Concentration (%V)	4.06
Oxygen Concentration (%V)	15.23
Nitrogen Concentration (%V)	80.71
Dry Gas Meter Factor	0.98900
Pitot Constant	0.84
Average Sampling Rate (dscfm)	0.42
Standard Metered Volume, Vm(std) (dscf)	101.57
Standard Metered Volume, Vm(std) (dscm)	2.876
Standard Volume Water Vapor, Vw (scf)	6.16
Standard Volume Water Vapor, Vw (scm)	0.175
Stack Moisture (%V)	5.72
Mole Fraction Dry Stack Gas	0.943
Dry Molecular Weight	29.26
Wet Molecular Weight	28.61
Stack Gas Velocity, Vs (fpm)	1422.11
Stack Gas Velocity, Vs (mpm)	433.46
Volumetric Flow Rate (acfm)	2513.08
Volumetric Flow Rate (acmm)	71.170
Volumetric Flow Rate (dscfm)	983.11
Volumetric Flow Rate (dscmm)	27.842
Percent Isokinetic	94.56
Percent Excess Air	249.94
Fuel Factor, Fo	1.397
Ultimate CO2	14.97

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/27/90

LOCATION: STACK

RUN NUMBER: 8.00

SAMPLING PARAMETER CDD/CDF

Total Sampling Time (min.)	
Corrected Barometric Pressure (in. Hg)	240.00
Absolute Stack Pressure, Ps (in. Hg)	29.91
Stack Static Pressure (in. H2O)	29.90
Average Stack Temperature (F)	-0.12
Stack Area (sq.in.)	750.06
Metered Volume, Vm (cu.ft.)	254.47
Average Meter Pressure (in.H2O)	110.77
Average Meter Temperature (F)	0.66
Moisture Collected (g)	95.67
Carbon Dioxide Concentration (%V)	159.00
Oxygen Concentration (%V)	3.86
Nitrogen Concentration (%V)	15.56
Dry Gas Meter Factor	80.58
Pitot Constant	0.98900
	0.84
Average Sampling Rate (dscfm)	
Standard Metered Volume, Vm(std) (dscf)	0.43
Standard Metered Volume, Vm(std) (dscm)	104.23
Standard Volume Water Vapor, Vw (scf)	2.952
Standard Volume Water Vapor, Vw (scm)	7.50
Stack Moisture (%V)	0.212
Mole Fraction Dry Stack Gas	6.71
Dry Molecular Weight	0.933
Wet Molecular Weight	29.24
Stack Gas Velocity, Vs (fpm)	28.49
Stack Gas Velocity, Vs (mpm)	1360.57
Volumetric Flow Rate (acfm)	414.70
Volumetric Flow Rate (acmm)	2404.33
Volumetric Flow Rate (dscfm)	68.091
Volumetric Flow Rate (dscmm)	977.53
Percent Isokinetic	27.684
Percent Excess Air	97.59
Fuel Factor, Fo	271.59
Ultimate CO2	1.383
	15.11

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/28/90

LOCATION: STACK

RUN NUMBER: 9.00

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SAMPLING PARAMETER	CDD/CDF
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Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.91
Absolute Stack Pressure, Ps (in. Hg)	29.90
Stack Static Pressure (in. H2O)	-0.12
Average Stack Temperature (F)	734.63
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	112.52
Average Meter Pressure (in.H2O)	0.69
Average Meter Temperature (F)	90.97
Moisture Collected (g)	219.30
Carbon Dioxide Concentration (%V)	3.67
Oxygen Concentration (%V)	15.28
Nitrogen Concentration (%V)	81.05
Dry Gas Meter Factor	0.98900
Pitot Constant	0.84

Average Sampling Rate (dscfm)	0.44
Standard Metered Volume, Vm(std) (dscf)	106.79
Standard Metered Volume, Vm(std) (dscm)	3.024
Standard Volume Water Vapor, Vw (scf)	10.34
Standard Volume Water Vapor, Vw (scm)	0.293
Stack Moisture (%V)	8.83
Mole Fraction Dry Stack Gas	0.912
Dry Molecular Weight	29.20
Wet Molecular Weight	28.21
Stack Gas Velocity, Vs (fpm)	1376.20
Stack Gas Velocity, Vs (mpm)	419.47
Volumetric Flow Rate (acfm)	2431.95
Volumetric Flow Rate (acmm)	68.873
Volumetric Flow Rate (dscfm)	978.80
Volumetric Flow Rate (dscmm)	27.719
Percent Isokinetic	99.86
Fuel Factor, Fo	249.13
Ultimate CO2	1.531
	13.65

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 10/02/90

LOCATION: STACK

RUN NUMBER:10.00

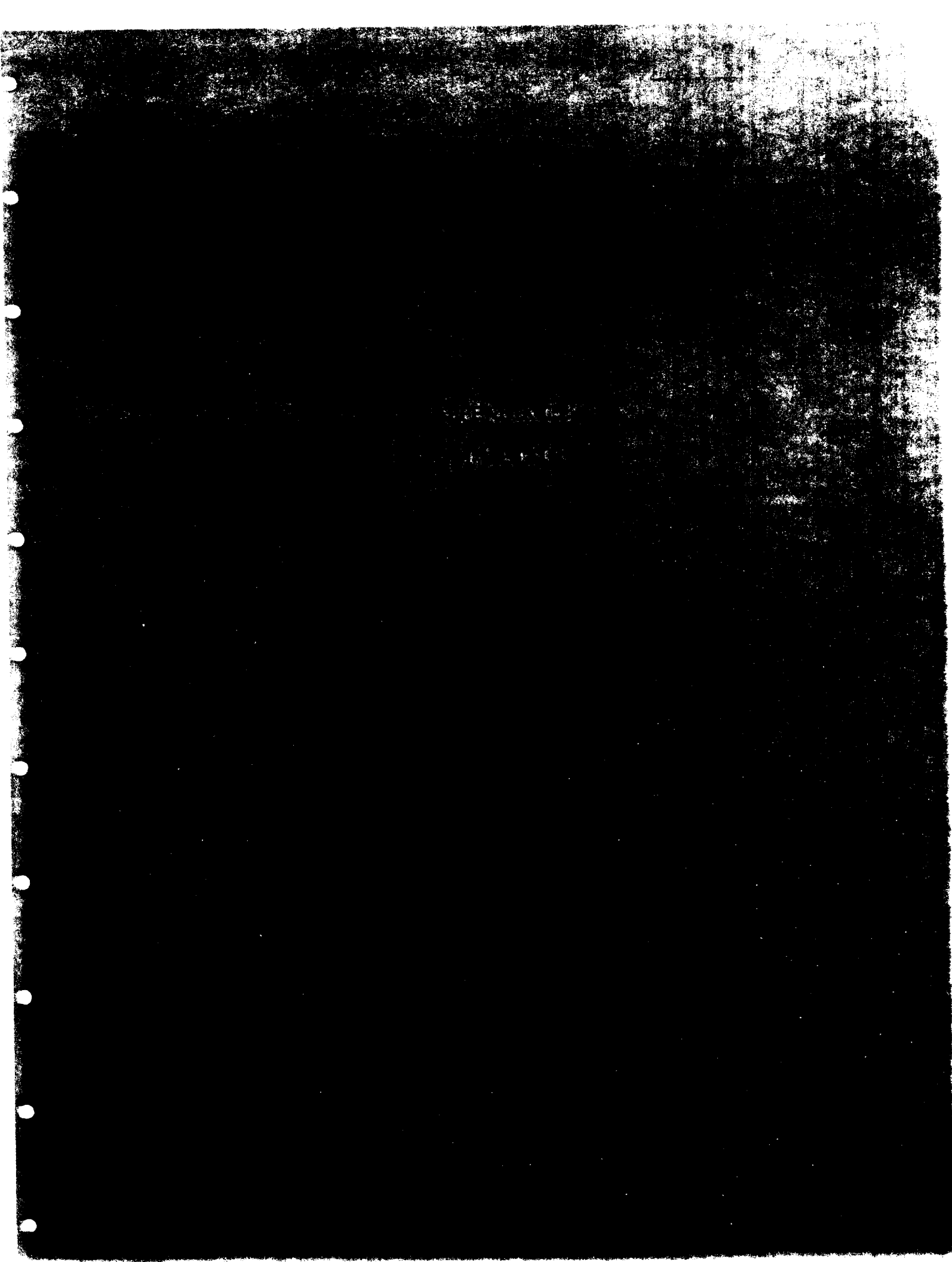
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SAMPLING PARAMETER	CDD/CDF
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Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	28.99
Absolute Stack Pressure, Ps (in. Hg)	28.98
Stack Static Pressure (in. H2O)	-0.12
Average Stack Temperature (F)	697.10
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	108.55
Average Meter Pressure (in.H2O)	0.65
Average Meter Temperature (F)	89.16
Moisture Collected (g)	175.10
Carbon Dioxide Concentration (%V)	3.37
Oxygen Concentration (%V)	15.72
Nitrogen Concentration (%V)	80.91
Dry Gas Meter Factor	0.98900
Pitot Constant	0.84

Average Sampling Rate (dscfm)	0.42
Standard Metered Volume, Vm(std) (dscf)	100.18
Standard Metered Volume, Vm(std) (dscm)	2.837
Standard Volume Water Vapor, Vw (scf)	8.26
Standard Volume Water Vapor, Vw (scm)	0.234
Stack Moisture (%V)	7.61
Mole Fraction Dry Stack Gas	0.924
Dry Molecular Weight	29.17
Wet Molecular Weight	28.32
Stack Gas Velocity, Vs (fpm)	1308.02
Stack Gas Velocity, Vs (mpm)	398.69
Volumetric Flow Rate (acfm)	2311.47
Volumetric Flow Rate (acmm)	65.461
Volumetric Flow Rate (dscfm)	943.32
Volumetric Flow Rate (dscmm)	26.715
Percent Isokinetic	97.20
Fuel Factor, Fo	277.91
Ultimate CO2	1.537
	13.60



FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/20/90

LOCATION: STACK

RUN NUMBER:1.00

SAMPLING PARAMETER TOXIC METALS

Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.89
Absolute Stack Pressure, Ps (in. Hg)	29.88
Stack Static Pressure (in. H2O)	-0.15
Average Stack Temperature ([F)	751.54
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	106.85
Average Meter Pressure (in.H2O)	0.62
Average Meter Temperature ([F)	93.99
Moisture Collected (g)	223.10
Carbon Dioxide Concentration (%V)	3.14
Oxygen Concentration (%V)	15.76
Nitrogen Concentration (%V)	81.10
Dry Gas Meter Factor	0.99920
Pitot Constant	0.84
Particulate catch (g)	0.10127
Average Sampling Rate (dscfm)	0.424
Standard Metered Volume, Vm(std) (dscf)	101.805
Standard Metered Volume, Vm(std) (dscm)	2.883
Standard Volume Water Vapor, Vw (scf)	10.519
Standard Volume Water Vapor, Vw (scm)	0.298
Stack Moisture (%V)	9.365
Mole Fraction Dry Stack Gas	0.906
Dry Molecular Weight	29.133
Wet Molecular Weight	28.090
Stack Gas Velocity, Vs (fpm)	1372.275
Stack Gas Velocity, Vs (mpm)	418.269
Volumetric Flow Rate (acfm)	2425.009
Volumetric Flow Rate (acmm)	68.676
Volumetric Flow Rate (dscfm)	955.997
Volumetric Flow Rate (dscmm)	27.074
Percent Isokinetic	96.965
Percent Excess Air	278.120
Fuel Factor, Fo	1.637
Ultimate CO2	12.768
Concentration of Particulate (grains/dscf)	0.01535
Concentration of Particulate (g/dscm)	0.03513
Concentration of Particulate (grains/dscf @7% O2)	0.04151
Concentration of Particulate (g/dscm @7% O2)	0.09499
Particulate Emissions (lbs/hr)	0.12579
Particulate Emissions (kg/hr)	0.05706

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/21/90

LOCATION: STACK

RUN NUMBER:2.00

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SAMPLING PARAMETER	TOXIC METALS
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Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.89
Absolute Stack Pressure, Ps (in. Hg)	29.88
Stack Static Pressure (in. H2O)	-0.15
Average Stack Temperature (F)	809.44
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	95.07
Average Meter Pressure (in.H2O)	0.51
Average Meter Temperature (F)	74.22
Moisture Collected (g)	181.80
Carbon Dioxide Concentration (%V)	3.76
Oxygen Concentration (%V)	15.69
Nitrogen Concentration (%V)	80.55
Dry Gas Meter Factor	0.99920
Pitot Constant	0.84
Particulate catch (g)	0.41185

Average Sampling Rate (dscfm)	0.391
Standard Metered Volume, Vm(std) (dscf)	93.915
Standard Metered Volume, Vm(std) (dscm)	2.660
Standard Volume Water Vapor, Vw (scf)	8.572
Standard Volume Water Vapor, Vw (scm)	0.243
Stack Moisture (%V)	8.364
Mole Fraction Dry Stack Gas	0.916
Dry Molecular Weight	29.229
Wet Molecular Weight	28.290
Stack Gas Velocity, Vs (fpm)	1284.303
Stack Gas Velocity, Vs (mpm)	391.455
Volumetric Flow Rate (acfm)	2269.550
Volumetric Flow Rate (acmm)	64.274
Volumetric Flow Rate (dscfm)	863.335
Volumetric Flow Rate (dscmm)	24.450
Percent Isokinetic	99.052
Percent Excess Air	280.614
Fuel Factor, Fo	1.386
Ultimate CO2	15.083
Concentration of Particulate (grains/dscf)	0.06768
Concentration of Particulate (g/dscm)	0.15485
Concentration of Particulate (grains/dscf @7% O2)	0.18056
Concentration of Particulate (g/dscm @7% O2)	0.41313
Particulate Emissions (lbs/hr)	0.50081
Particulate Emissions (kg/hr)	0.22716

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/22/90
LOCATION: STACK
RUN NUMBER: 3.00

SAMPLING PARAMETER TOXIC METALS

Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.66
Absolute Stack Pressure, Ps (in. Hg)	29.65
Stack Static Pressure (in. H2O)	-0.15
Average Stack Temperature ([F)	759.02
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	95.35
Average Meter Pressure (in.H2O)	0.52
Average Meter Temperature ([F)	80.35
Moisture Collected (g)	215.30
Carbon Dioxide Concentration (%V)	3.07
Oxygen Concentration (%V)	16.13
Nitrogen Concentration (%V)	80.80
Dry Gas Meter Factor	0.99920
Pitot Constant	0.84
Particulate catch (g)	0.09034

Average Sampling Rate (dscfm)	0.385
Standard Metered Volume, Vm(std) (dscf)	92.405
Standard Metered Volume, Vm(std) (dscm)	2.617
Standard Volume Water Vapor, Vw (scf)	10.151
Standard Volume Water Vapor, Vw (scm)	0.287
Stack Moisture (%V)	9.898
Mole Fraction Dry Stack Gas	0.901
Dry Molecular Weight	29.136
Wet Molecular Weight	28.034
Stack Gas Velocity, Vs (fpm)	1245.295
Stack Gas Velocity, Vs (mpm)	379.566
Volumetric Flow Rate (acfm)	2200.619
Volumetric Flow Rate (acmm)	62.322
Volumetric Flow Rate (dscfm)	850.541
Volumetric Flow Rate (dscmm)	24.087
Percent Isokinetic	98.924
Percent Excess Air	309.160
Fuel Factor, Fo	1.554
Ultimate CO2	13.451
Concentration of Particulate (grains/dscf)	0.01509
Concentration of Particulate (g/dscm)	0.03452
Concentration of Particulate (grains/dscf @7% O2)	0.04397
Concentration of Particulate (g/dscm @7% O2)	0.10060
Particulate Emissions (lbs/hr)	0.10999
Particulate Emissions (kg/hr)	0.04989

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/23/90

LOCATION: STACK

RUN NUMBER:4.00

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SAMPLING PARAMETER	TOXIC METALS
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Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.64
Absolute Stack Pressure, Ps (in. Hg)	29.63
Stack Static Pressure (in. H2O)	-0.15
Average Stack Temperature ([F)	778.90
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	102.34
Average Meter Pressure (in.H2O)	0.59
Average Meter Temperature ([F)	81.68
Moisture Collected (g)	176.50
Carbon Dioxide Concentration (%V)	4.01
Oxygen Concentration (%V)	15.16
Nitrogen Concentration (%V)	80.83
Dry Gas Meter Factor	0.99920
Pitot Constant	0.84
Particulate catch (g)	2.46270

Average Sampling Rate (dscfm)	0.412
Standard Metered Volume, Vm(std) (dscf)	98.889
Standard Metered Volume, Vm(std) (dscm)	2.801
Standard Volume Water Vapor, Vw (scf)	8.322
Standard Volume Water Vapor, Vw (scm)	0.236
Stack Moisture (%V)	7.762
Mole Fraction Dry Stack Gas	0.922
Dry Molecular Weight	29.248
Wet Molecular Weight	28.375
Stack Gas Velocity, Vs (fpm)	1348.530
Stack Gas Velocity, Vs (mpm)	411.032
Volumetric Flow Rate (acfm)	2383.050
Volumetric Flow Rate (acmm)	67.488
Volumetric Flow Rate (dscfm)	927.136
Volumetric Flow Rate (dscmm)	26.257
Percent Isokinetic	97.120
Percent Excess Air	244.702
Fuel Factor, Fo	1.431
Ultimate CO2	14.601
Concentration of Particulate (grains/dscf)	0.38433
Concentration of Particulate (g/dscm)	0.87937
Concentration of Particulate (grains/dscf @7% O2)	0.93068
Concentration of Particulate (g/dscm @7% O2)	2.12948
Particulate Emissions (lbs/hr)	3.05419
Particulate Emissions (kg/hr)	1.38535

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE:	9/24/90
LOCATION:	STACK
RUN NUMBER:	5.00
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SAMPLING PARAMETER	TOXIC METALS
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Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.89
Absolute Stack Pressure, Ps (in. Hg)	29.88
Stack Static Pressure (in. H ₂ O)	-0.15
Average Stack Temperature ([F)	746.40
Stack Area (sq.in.)	254.47
Metered Volume, V _m (cu.ft.)	106.00
Average Meter Pressure (in.H ₂ O)	0.64
Average Meter Temperature ([F)	79.76
Moisture Collected (g)	199.40
Carbon Dioxide Concentration (%V)	3.46
Oxygen Concentration (%V)	15.60
Nitrogen Concentration (%V)	80.94
Dry Gas Meter Factor	0.99920
Pitot Constant	0.84
Particulate catch (g)	0.09815
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Average Sampling Rate (dscfm)	0.432
Standard Metered Volume, V _m (std) (dscf)	103.670
Standard Metered Volume, V _m (std) (dscm)	2.936
Standard Volume Water Vapor, V _w (scf)	9.402
Standard Volume Water Vapor, V _w (scm)	0.266
Stack Moisture (%V)	8.315
Mole Fraction Dry Stack Gas	0.917
Dry Molecular Weight	29.178
Wet Molecular Weight	28.248
Stack Gas Velocity, V _s (fpm)	1371.318
Stack Gas Velocity, V _s (mpm)	417.978
Volumetric Flow Rate (acfm)	2423.319
Volumetric Flow Rate (acmm)	68.628
Volumetric Flow Rate (dscfm)	970.517
Volumetric Flow Rate (dscmm)	27.485
Percent Isokinetic	97.264
Percent Excess Air	269.693
Fuel Factor, F _o	1.532
Ultimate CO ₂	13.644
Concentration of Particulate (grains/dscf)	0.01461
Concentration of Particulate (g/dscm)	0.03343
Concentration of Particulate (grains/dscf @7% O ₂)	0.03832
Concentration of Particulate (g/dscm @7% O ₂)	0.08768
Particulate Emissions (lbs/hr)	0.12154
Particulate Emissions (kg/hr)	0.05513

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/25/90

LOCATION: STACK

RUN NUMBER: 6.00

SAMPLING PARAMETER	TOXIC METALS
Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	30.10
Absolute Stack Pressure, Ps (in. Hg)	30.09
Stack Static Pressure (in. H2O)	-0.15
Average Stack Temperature ([F)	724.56
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	101.44
Average Meter Pressure (in.H2O)	0.57
Average Meter Temperature ([F)	81.58
Moisture Collected (g)	198.10
Carbon Dioxide Concentration (%V)	3.40
Oxygen Concentration (%V)	15.70
Nitrogen Concentration (%V)	80.90
Dry Gas Meter Factor	0.99920
Pitot Constant	0.84
Particulate catch (g)	0.14767
Average Sampling Rate (dscfm)	0.415
Standard Metered Volume, Vm(std) (dscf)	99.549
Standard Metered Volume, Vm(std) (dscm)	2.819
Standard Volume Water Vapor, Vw (scf)	9.340
Standard Volume Water Vapor, Vw (scm)	0.265
Stack Moisture (%V)	8.578
Mole Fraction Dry Stack Gas	0.914
Dry Molecular Weight	29.172
Wet Molecular Weight	28.214
Stack Gas Velocity, Vs (fpm)	1263.757
Stack Gas Velocity, Vs (mpm)	385.193
Volumetric Flow Rate (acfm)	2233.242
Volumetric Flow Rate (acmm)	63.245
Volumetric Flow Rate (dscfm)	914.646
Volumetric Flow Rate (dscmm)	25.903
Percent Isokinetic	99.103
Percent Excess Air	276.711
Fuel Factor, Fo	1.529
Ultimate CO2	13.665
Concentration of Particulate (grains/dscf)	0.02289
Concentration of Particulate (g/dscm)	0.05238
Concentration of Particulate (grains/dscf @7% O2)	0.06119
Concentration of Particulate (g/dscm @7% O2)	0.14001
Particulate Emissions (lbs/hr)	0.17947
Particulate Emissions (kg/hr)	0.08141

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/27/90

LOCATION: STACK

RUN NUMBER:8.00

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SAMPLING PARAMETER	TOXIC METALS
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Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.91
Absolute Stack Pressure, Ps (in. Hg)	29.90
Stack Static Pressure (in. H2O)	-0.15
Average Stack Temperature ([F)	766.27
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	105.95
Average Meter Pressure (in.H2O)	0.62
Average Meter Temperature ([F)	94.03
Moisture Collected (g)	157.40
Carbon Dioxide Concentration (%V)	3.86
Oxygen Concentration (%V)	15.56
Nitrogen Concentration (%V)	80.58
Dry Gas Meter Factor	0.99920
Pitot Constant	0.84
Particulate catch (g)	0.61039

Average Sampling Rate (dscfm)	0.421
Standard Metered Volume, Vm(std) (dscf)	101.012
Standard Metered Volume, Vm(std) (dscm)	2.861
Standard Volume Water Vapor, Vw (scf)	7.421
Standard Volume Water Vapor, Vw (scm)	0.210
Stack Moisture (%V)	6.844
Mole Fraction Dry Stack Gas	0.932
Dry Molecular Weight	29.240
Wet Molecular Weight	28.471
Stack Gas Velocity, Vs (fpm)	1348.621
Stack Gas Velocity, Vs (mpm)	411.060
Volumetric Flow Rate (acfm)	2383.210
Volumetric Flow Rate (acmm)	67.493
Volumetric Flow Rate (dscfm)	954.688
Volumetric Flow Rate (dscmm)	27.037
Percent Isokinetic	96.342
Percent Excess Air	271.589
Fuel Factor, Fo	1.383
Ultimate CO2	15.107
Concentration of Particulate (grains/dscf)	0.09325
Concentration of Particulate (g/dscm)	0.21337
Concentration of Particulate (grains/dscf @7% O2)	0.24274
Concentration of Particulate (g/dscm @7% O2)	0.55541
Particulate Emissions (lbs/hr)	0.76310
Particulate Emissions (kg/hr)	0.34614

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 9/28/90

LOCATION: STACK

RUN NUMBER: 9.00

SAMPLING PARAMETER TOXIC METALS

Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	29.91
Absolute Stack Pressure, Ps (in. Hg)	29.90
Stack Static Pressure (in. H2O)	-0.15
Average Stack Temperature ([F)	770.92
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	111.38
Average Meter Pressure (in.H2O)	0.70
Average Meter Temperature ([F)	90.06
Moisture Collected (g)	225.30
Carbon Dioxide Concentration (%V)	3.67
Oxygen Concentration (%V)	15.28
Nitrogen Concentration (%V)	81.05
Dry Gas Meter Factor	0.99920
Pitot Constant	0.84
Particulate catch (g)	0.13395
Average Sampling Rate (dscfm)	0.446
Standard Metered Volume, Vm(std) (dscf)	106.976
Standard Metered Volume, Vm(std) (dscm)	3.030
Standard Volume Water Vapor, Vw (scf)	10.623
Standard Volume Water Vapor, Vw (scm)	0.301
Stack Moisture (%V)	9.033
Mole Fraction Dry Stack Gas	0.910
Dry Molecular Weight	29.198
Wet Molecular Weight	28.187
Stack Gas Velocity, Vs (fpm)	1446.473
Stack Gas Velocity, Vs (mpm)	440.885
Volumetric Flow Rate (acfm)	2556.129
Volumetric Flow Rate (acmm)	72.390
Volumetric Flow Rate (dscfm)	996.121
Volumetric Flow Rate (dscmm)	28.210
Percent Isokinetic	97.786
Percent Excess Air	249.127
Fuel Factor, Fo	1.531
Ultimate CO2	13.648
Concentration of Particulate (grains/dscf)	0.01932
Concentration of Particulate (g/dscm)	0.04421
Concentration of Particulate (grains/dscf @7% O2)	0.04779
Concentration of Particulate (g/dscm @7% O2)	0.10936
Particulate Emissions (lbs/hr)	0.16499
Particulate Emissions (kg/hr)	0.07484

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE: 10/02/90

LOCATION: STACK

RUN NUMBER:10.00

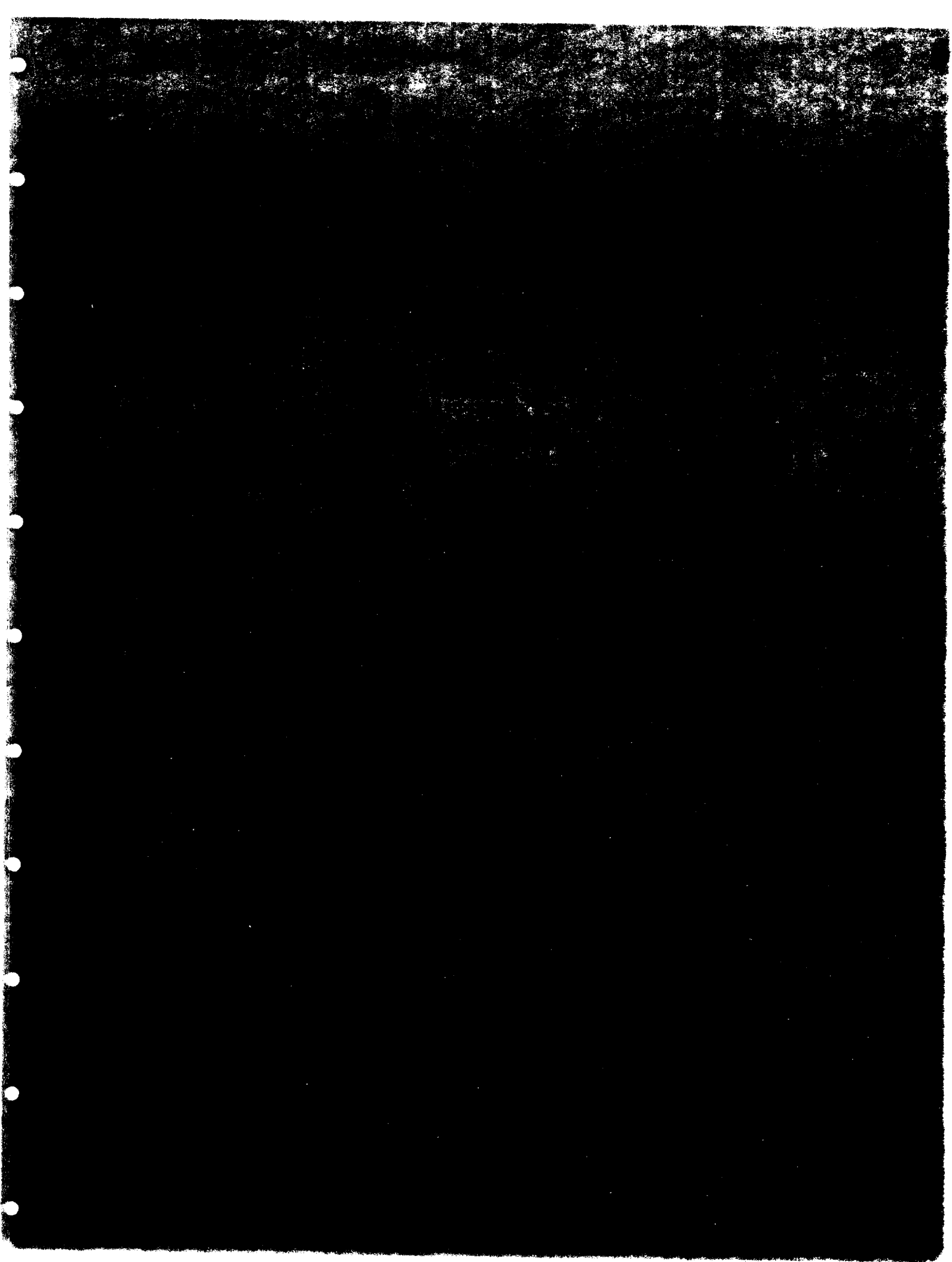
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SAMPLING PARAMETER	TOXIC METALS
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Total Sampling Time (min.)	240.00
Corrected Barometric Pressure (in. Hg)	28.99
Absolute Stack Pressure, Ps (in. Hg)	28.98
Stack Static Pressure (in. H2O)	-0.15
Average Stack Temperature ([F)	749.42
Stack Area (sq.in.)	254.47
Metered Volume, Vm (cu.ft.)	105.13
Average Meter Pressure (in.H2O)	0.60
Average Meter Temperature ([F)	94.77
Moisture Collected (g)	182.40
Carbon Dioxide Concentration (%V)	3.37
Oxygen Concentration (%V)	15.72
Nitrogen Concentration (%V)	80.91
Dry Gas Meter Factor	0.99920
Pitot Constant	0.84
Particulate Catch (g)	0.09739

Average Sampling Rate (dscfm)	0.404
Standard Metered Volume, Vm(std) (dscf)	97.017
Standard Metered Volume, Vm(std) (dscm)	2.748
Standard Volume Water Vapor, Vw (scf)	8.600
Standard Volume Water Vapor, Vw (scm)	0.244
Stack Moisture (%V)	8.143
Mole Fraction Dry Stack Gas	0.919
Dry Molecular Weight	29.168
Wet Molecular Weight	28.259
Stack Gas Velocity, Vs (fpm)	1285.863
Stack Gas Velocity, Vs (mpm)	391.931
Volumetric Flow Rate (acfm)	2272.308
Volumetric Flow Rate (acmm)	64.352
Volumetric Flow Rate (dscfm)	882.083
Volumetric Flow Rate (dscmm)	24.981
Percent Isokinetic	100.148
Percent Excess Air	277.914
Fuel Factor, Fo	1.537
Ultimate CO2	13.597
Concentration of Particulate (grains/dscf)	0.01549
Concentration of Particulate (g/dscm)	0.03545
Concentration of Particulate (grains/dscf @7% O2)	0.04157
Concentration of Particulate (g/dscm @7% O2)	0.09512
Particulate Emissions (lbs/hr)	0.11713
Particulate Emissions (kg/hr)	0.05313



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FACILITY : CENTRAL CAROLINA HOSPITAL

DATE:	9/20/90	9/20/90	9/22/90	9/22/90	10/02/90	10/02/90
LOCATION:	STACK	STACK	STACK	STACK	STACK	STACK
RUN NUMBER:	1A	1B	3A	3B	10A	10B

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SAMPLING PARAMETER MICROORGANISMS

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Total Sampling Time (min.)	120.00	120.00	120.00	120.00	120.00	120.00
Corrected Barometric Pressure (in. Hg)	29.89	29.89	29.66	29.66	28.98	28.98
Absolute Stack Pressure,Ps(in. Hg)	29.88	29.88	29.65	29.65	28.97	28.97
Stack Static Pressure (in. H2O)	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12
Average Stack Temperature (°F)	644.04	795.92	687.88	741.08	692.58	745.46
Stack Area (sq.in.)	254.47	254.47	254.47	254.47	254.47	254.47
Metered Volume,Vm (cu.ft.)	75.38	76.42	72.48	74.32	77.20	78.46
Average Meter Pressure (in.H2O)	1.32	1.27	1.29	1.26	1.48	1.34
Average Meter Temperature (°F)	101.88	105.58	78.92	89.63	80.46	108.63
Moisture Collected (g)	162.20	135.40	133.80	124.20	139.00	88.10
Carbon Dioxide Concentration (%V)	3.08	3.26	3.25	3.10	3.51	3.28
Oxygen Concentration (%V)	15.72	15.63	15.76	16.16	15.38	15.97
Nitrogen Concentration (%V)	81.20	81.11	80.99	80.74	81.11	80.75
Dry Gas Meter Factor	1.00020	1.00700	1.00020	1.00700	1.00020	1.00700
Pitot Constant	0.84	0.84	0.84	0.84	0.84	0.84
Average Sampling Rate (dscfm)	0.59	0.60	0.59	0.60	0.61	0.59
Standard Metered Volume,Vm(std) (dscf)	71.00	71.99	70.63	71.49	73.33	71.29
Standard Metered Volume,Vm(std) (dscm)	2.011	2.039	2.000	2.025	2.077	2.019
Standard Volume Water Vapor,Vw (scf)	NA	NA	NA	NA	NA	NA
Standard Volume Water Vapor,Vw (scm)	NA	NA	NA	NA	NA	NA
Stack Moisture (%V)	9.39	9.39	9.57	9.57	7.88	7.88
Mole Fraction Dry Stack Gas	0.906	0.906	0.904	0.904	0.921	0.921
Dry Molecular Weight	29.12	29.15	29.15	29.14	29.18	29.16
Wet Molecular Weight	28.08	28.10	28.08	28.08	28.30	28.28
Stack Gas Velocity,Vs (fpm)	1233.60	1398.70	1289.56	1328.99	1347.65	1334.43
Stack Gas Velocity,Vs (mpm)	376.00	426.32	393.06	405.08	410.76	406.74
Volumetric Flow Rate (acfm)	2179.95	2471.71	2278.85	2348.53	2381.49	2358.14
Volumetric Flow Rate (acmm)	61.736	69.999	64.537	66.510	67.444	66.783
Volumetric Flow Rate (dscfm)	942.78	939.68	938.75	924.60	972.47	920.69
Volumetric Flow Rate (dscmm)	26.699	26.612	26.585	26.185	27.540	26.074
Percent Isokinetic	95.24	96.88	95.14	96.11	95.36	96.25
Percent Excess Air	274.20	269.52	279.55	312.48	254.25	297.72
Fuel Factor,Fo	1.682	1.617	1.582	1.529	1.573	1.503
Ultimate CO2	12.43	12.93	13.21	13.67	13.29	13.91

FACILITY : CENTRAL CAROLINA HOSPITAL

DATE:

LOCATION:

RUN NUMBER:

9/21/90	9/21/90	9/23/90	9/23/90	9/27/90	9/27/90
STACK	STACK	STACK	STACK	STACK	STACK
2A	2B	4A	4B	8A	8B

SAMPLING PARAMETER MICROORGANISMS

Total Sampling Time (min.)	105.00	135.00	120.00	120.00	120.00	120.00
Corrected Barometric Pressure (in. Hg)	29.89	29.89	29.64	29.64	29.91	29.91
Absolute Stack Pressure,Ps(in. Hg)	29.88	29.88	29.63	29.63	29.90	29.90
Stack Static Pressure (in. H2O)	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12
Average Stack Temperature ([F)	848.24	756.67	706.96	705.67	770.33	707.79
Stack Area (sq.in.)	254.47	254.47	254.47	254.47	254.47	254.47
Metered Volume,Vm (cu.ft.)	63.22	75.50	67.89	71.28	70.90	71.03
Average Meter Pressure (in.H2O)	1.31	1.03	1.13	1.23	1.19	1.15
Average Meter Temperature ([F)	78.19	86.96	74.96	86.27	98.42	106.90
Moisture Collected (g)	137.20	96.20	188.30	0.00	NA	37.10
Carbon Dioxide Concentration (%V)	4.40	3.41	4.22	4.01	4.17	3.59
Oxygen Concentration (%V)	14.50	16.30	14.85	15.16	15.09	15.98
Nitrogen Concentration (%V)	81.10	80.29	80.93	80.83	80.74	80.43
Dry Gas Meter Factor	1.00020	1.00700	1.00020	1.00700	1.00020	1.00700
Pitot Constant	0.84	0.84	0.84	0.84	0.84	0.84
Average Sampling Rate (dscfm)	0.59	0.54	0.55	0.57	0.56	0.56
Standard Metered Volume,Vm(std) (dscf)	62.16	73.49	66.57	68.94	67.22	66.78
Standard Metered Volume,Vm(std) (dscm)	1.760	2.081	1.885	1.952	1.904	1.891
Standard Volume Water Vapor,Vw (scf)	6.47	4.54	8.88	0.00	NA	NA
Standard Volume Water Vapor,Vw (scm)	0.183	0.128	0.251	0.000	NA	NA
Stack Moisture (%V)	7.98	7.98	7.35	7.35	6.78	6.78
Mole Fraction Dry Stack Gas	0.920	0.920	0.927	0.927	0.932	0.932
Dry Molecular Weight	29.28	29.20	29.27	29.25	29.27	29.21
Wet Molecular Weight	28.38	28.30	28.44	28.42	28.51	28.45
Stack Gas Velocity,Vs (fpm)	1473.51	1232.15	1211.59	1266.52	1283.41	1163.45
Stack Gas Velocity,Vs (mpm)	449.13	375.56	369.29	386.04	391.18	354.62
Volumetric Flow Rate (acfm)	2603.91	2177.39	2141.06	2238.13	2267.98	2055.98
Volumetric Flow Rate (acmm)	73.743	61.664	60.635	63.384	64.229	58.225
Volumetric Flow Rate (dscfm)	965.14	867.80	888.26	929.57	906.13	865.42
Volumetric Flow Rate (dscmm)	27.333	24.576	25.156	26.325	25.661	24.509
Percent Isokinetic	93.09	93.58	94.78	92.18	93.82	95.92
Percent Excess Air	209.34	331.80	227.35	244.70	241.77	303.25
Fuel Factor,Fo	1.455	1.349	1.434	1.431	1.393	1.370
Ultimate CO2	14.37	15.49	14.58	14.60	15.00	15.25

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FACILITY : CENTRAL CAROLINA HOSPITAL.

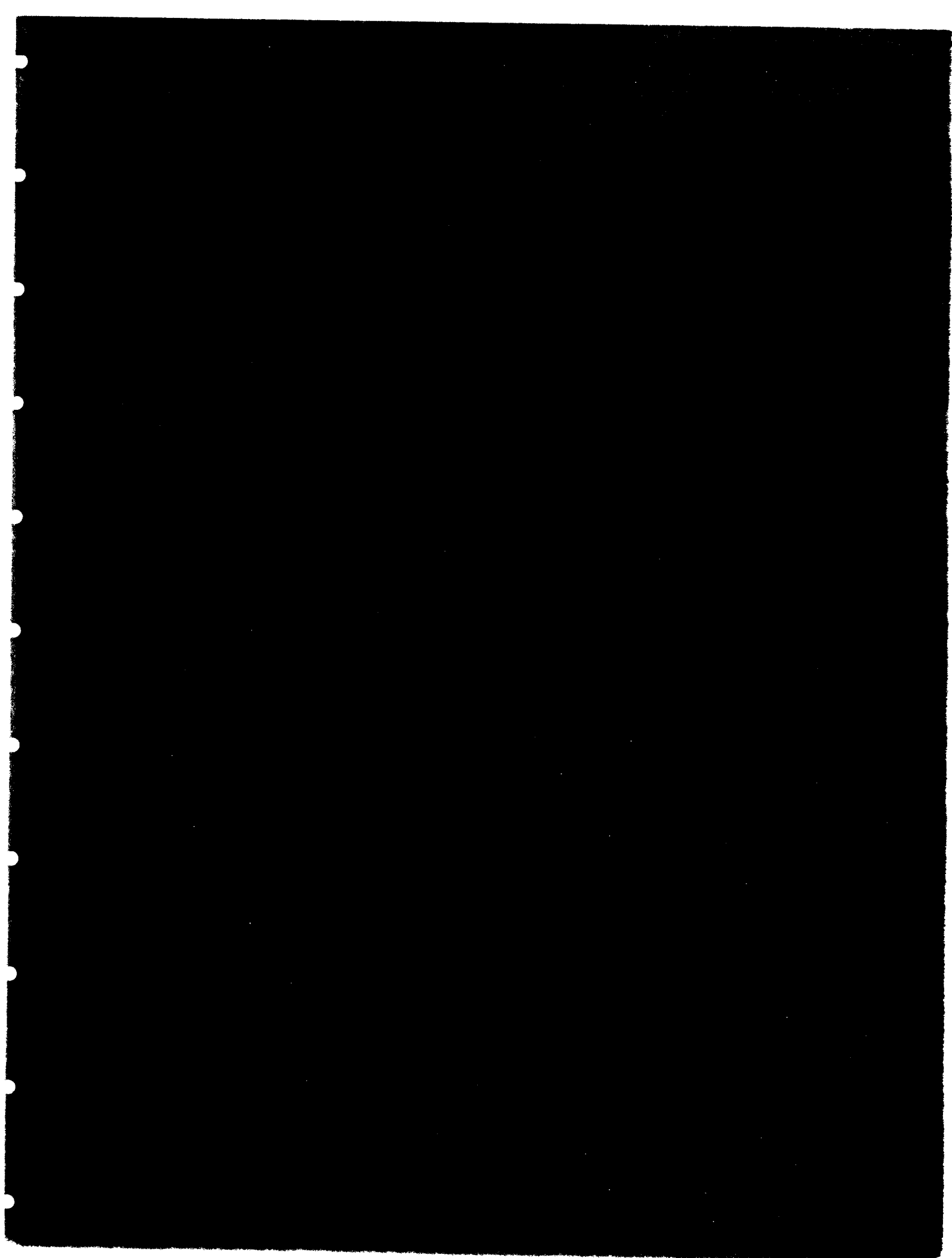
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LOCATION:	STACK	STACK	STACK	STACK	STACK	STACK
RUN NUMBER:	5A	5B	6A	6B	9A	9B

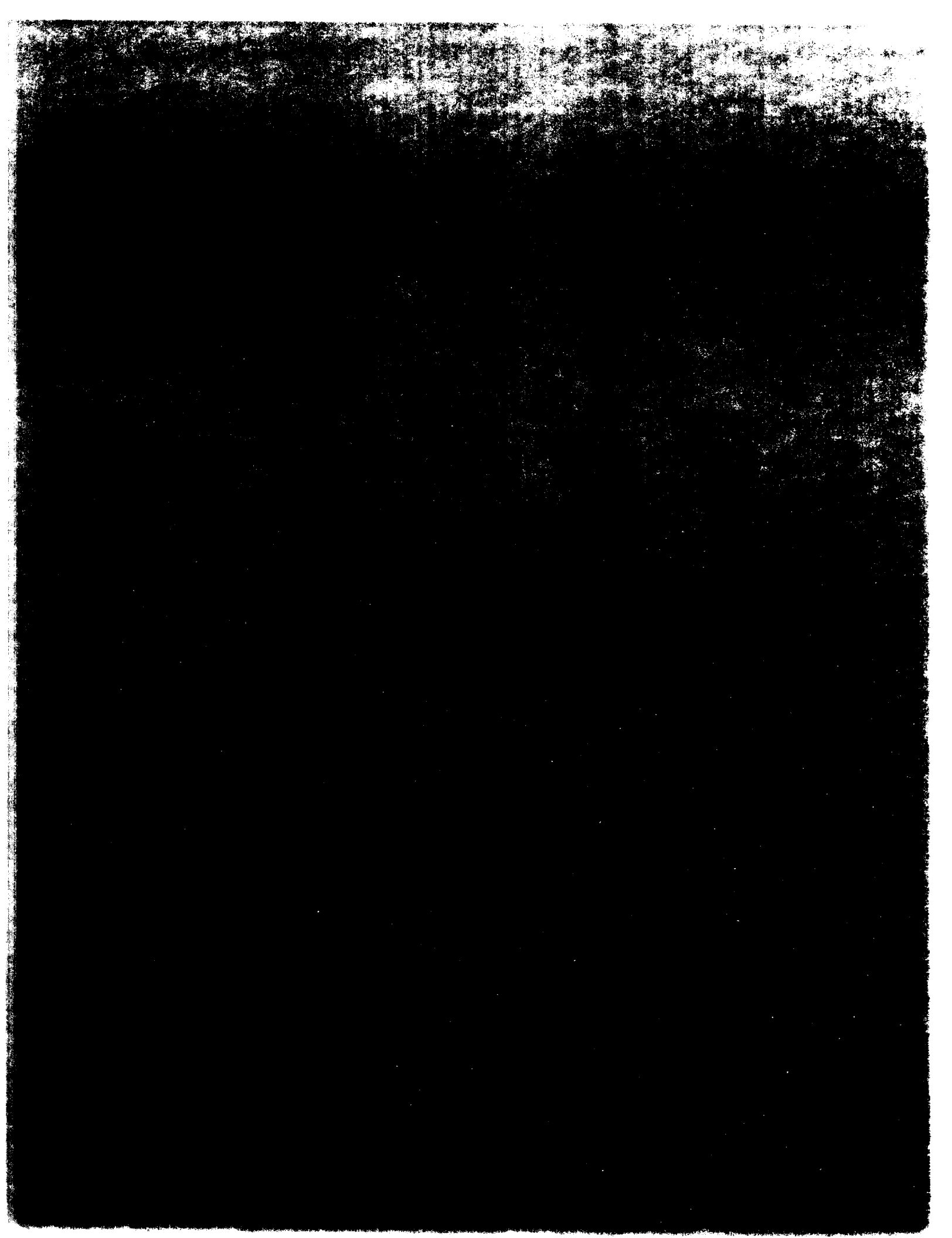
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SAMPLING PARAMETER MICROORGANISMS

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Total Sampling Time (min.)	120.00	120.00	120.00	120.00	120.00	120.00
Corrected Barometric Pressure (in. Hg)	29.89	29.89	30.10	30.10	29.91	29.91
Absolute Stack Pressure,Ps(in. Hg)	29.88	29.88	30.09	30.09	29.90	29.90
Stack Static Pressure (in. H2O)	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12
Average Stack Temperature ([F)	687.29	761.17	672.25	796.33	728.50	764.46
Stack Area (sq.in.)	254.47	254.47	254.47	254.47	254.47	254.47
Metered Volume,Vm (cu.ft.)	69.59	61.06	77.66	76.89	75.71	74.75
Average Meter Pressure (in.H2O)	1.22	0.92	1.52	1.35	1.42	1.22
Average Meter Temperature ([F)	70.52	83.02	72.63	94.52	86.98	104.10
Moisture Collected (g)	211.70	178.80	171.40	141.00	134.60	113.80
Carbon Dioxide Concentration (%V)	3.48	3.44	3.34	3.50	3.79	3.58
Oxygen Concentration (%V)	15.49	15.68	15.61	15.71	15.01	15.50
Nitrogen Concentration (%V)	81.03	80.88	81.05	80.79	81.20	80.92
Dry Gas Meter Factor	1.00020	1.00700	1.00020	1.00700	1.00020	1.00700
Pitot Constant	0.84	0.84	0.84	0.84	0.84	0.84
Average Sampling Rate (dscfm)	0.58	0.50	0.65	0.62	0.61	59
Standard Metered Volume,Vm(std) (dscf)	69.40	59.86	77.74	74.40	73.32	70.64
Standard Metered Volume,Vm(std) (dscm)	1.965	1.695	2.202	2.107	2.076	2.001
Standard Volume Water Vapor,Vw (scf)	9.98	8.43	8.08	6.65	6.35	5.37
Standard Volume Water Vapor,Vw (scm)	0.283	0.239	0.229	0.188	0.180	0.152
Stack Moisture (%V)	7.96	7.96	8.29	8.29	8.93	8.93
Mole Fraction Dry Stack Gas	0.920	0.920	0.917	0.917	0.911	0.911
Dry Molecular Weight	29.18	29.18	29.16	29.19	29.21	29.19
Wet Molecular Weight	28.29	28.29	28.23	28.26	28.21	28.19
Stack Gas Velocity,Vs (fpm)	1237.29	1145.33	1366.14	1418.84	1327.17	1263.23
Stack Gas Velocity,Vs (mpm)	377.12	349.10	416.40	432.46	404.52	385.03
Volumetric Flow Rate (acfm)	2186.46	2023.97	2414.16	2507.29	2345.31	2232.30
Volumetric Flow Rate (acmm)	61.921	57.319	68.369	71.007	66.419	63.219
Volumetric Flow Rate (dscfm)	924.30	803.85	1037.65	971.25	947.63	875.48
Volumetric Flow Rate (dscmm)	26.176	22.765	29.386	27.506	26.837	24.794
Percent Isokinetic	94.96	92.56	94.75	95.23	97.85	100.30
Percent Excess Air	261.74	275.64	268.98	278.81	232.96	263.65
Fuel Factor,Fo	1.555	1.517	1.584	1.483	1.554	1.508
Ultimate CO2	13.44	13.77	13.20	14.09	13.45	13.86





TEST NUMBER	HCL-010A
DATE	10/02/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	77.33333
Meter pressure (in. Hg)	29.3381
Vm, dry (actual cubic meters)	0.11982
Vm, dry (std cubic meters)	0.116649
Percent H2O	NA
Vm, dry (std cubic feet)	4.121893

TEST NUMBER	HCL-010B
DATE	10/02/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	96.16666
Meter pressure (in. Hg)	29.3381
Vm, dry (actual cubic meters)	0.12028
Vm, dry (std cubic meters)	0.113132
Percent H2O	NA
Vm, dry (std cubic feet)	3.997603

TEST NUMBER	HCL-010C
DATE	10/02/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	104.5
Meter pressure (in. Hg)	29.34177
Vm, dry (actual cubic meters)	0.12175
Vm, dry (std cubic meters)	0.112838
Percent H2O	NA
Vm, dry (std cubic feet)	3.987224

TEST NUMBER	HCL-09A
DATE	09/28/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	83
Meter pressure (in. Hg)	30.2581
Vm, dry (actual cubic meters)	0.12004
Vm, dry (std cubic meters)	0.119270
Percent H2O	NA
Vm, dry (std cubic feet)	4.214509

TEST NUMBER	HCL-09B
DATE	09/28/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	98.16666
Meter pressure (in. Hg)	30.2581
Vm, dry (actual cubic meters)	0.11889
Vm, dry (std cubic meters)	0.114918
Percent H2O	NA
Vm, dry (std cubic feet)	4.060713

TEST NUMBER	HCL-09C
DATE	09/28/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	103.6666
Meter pressure (in. Hg)	30.2581
Vm, dry (actual cubic meters)	0.120257
Vm, dry (std cubic meters)	0.115105
Percent H2O	NA
Vm, dry (std cubic feet)	4.067325

TEST NUMBER	HCL-08A
DATE	09/27/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	99.33333
Meter pressure (in. Hg)	30.2581
Vm, dry (actual cubic meters)	0.12076
Vm, dry (std cubic meters)	0.116482
Percent H2O	NA
Vm, dry (std cubic feet)	4.115980

TEST NUMBER	HCL-08B
DATE	09/27/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	109.6666
Meter pressure (in. Hg)	30.2581
Vm, dry (actual cubic meters)	0.12029
Vm, dry (std cubic meters)	0.113924
Percent H2O	NA
Vm, dry (std cubic feet)	4.025590

TEST NUMBER	HCL-08C
DATE	09/27/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	109
Meter pressure (in. Hg)	30.2581
Vm, dry (actual cubic meters)	0.12064
Vm, dry (std cubic meters)	0.114389
Percent H2O	NA
Vm, dry (std cubic feet)	4.042033

TEST NUMBER	HCL-07A
DATE	09/26/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	74
Meter pressure (in. Hg)	30.1181
Vm, dry (actual cubic meters)	0.11999
Vm, dry (std cubic meters)	0.120669
Percent H2O	NA
Vm, dry (std cubic feet)	4.263935

TEST NUMBER	HCL-07B
DATE	09/26/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	87
Meter pressure (in. Hg)	30.1181
Vm, dry (actual cubic meters)	0.1158
Vm, dry (std cubic meters)	0.113687
Percent H2O	NA
Vm, dry (std cubic feet)	4.017242

TEST NUMBER	HCL-07C
DATE	09/26/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	93.83333
Meter pressure (in. Hg)	30.1181
Vm, dry (actual cubic meters)	0.12046
Vm, dry (std cubic meters)	0.116803
Percent H2O	NA
Vm, dry (std cubic feet)	4.127343

TEST NUMBER	HCL-06A
DATE	09/25/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	71.5
Meter pressure (in. Hg)	30.4481
Vm, dry (actual cubic meters)	0.12011
Vm, dry (std cubic meters)	0.122687
Percent H2O	NA
Vm, dry (std cubic feet)	4.335261

TEST NUMBER	HCL-06B
DATE	09/25/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	86.83333
Meter pressure (in. Hg)	30.4481
Vm, dry (actual cubic meters)	0.12032
Vm, dry (std cubic meters)	0.119456
Percent H2O	NA
Vm, dry (std cubic feet)	4.221067

TEST NUMBER	HCL-06C
DATE	09/25/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	92.16666
Meter pressure (in. Hg)	30.4481
Vm, dry (actual cubic meters)	0.11911
Vm, dry (std cubic meters)	0.117112
Percent H2O	NA
Vm, dry (std cubic feet)	4.138257

TEST NUMBER
DATE
LOCATION

HCL-05A
09/24/90
STACK

Results of calculations:

Avg meter temp (degrees F)	74
Meter pressure (in. Hg)	30.2381
Vm, dry (actual cubic meters)	0.11977
Vm, dry (std cubic meters)	0.120928
Percent H2O	NA
Vm, dry (std cubic feet)	4.273075

TEST NUMBER
DATE
LOCATION

HCL-05B
09/24/90
STACK

Results of calculations:

Avg meter temp (degrees F)	85.83333
Meter pressure (in. Hg)	30.2381
Vm, dry (actual cubic meters)	0.12104
Vm, dry (std cubic meters)	0.119560
Percent H2O	NA
Vm, dry (std cubic feet)	4.224765

TEST NUMBER
DATE
LOCATION

HCL-05C
09/24/90
STACK

Results of calculations:

Avg meter temp (degrees F)	87.83333
Meter pressure (in. Hg)	30.2381
Vm, dry (actual cubic meters)	0.12215
Vm, dry (std cubic meters)	0.120216
Percent H2O	NA
Vm, dry (std cubic feet)	4.247943

TEST NUMBER	HCL-04A
DATE	09/23/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	78.66666
Meter pressure (in. Hg)	29.98075
Vm, dry (actual cubic meters)	0.11979
Vm, dry (std cubic meters)	0.118879
Percent H2O	NA
Vm, dry (std cubic feet)	4.200705

TEST NUMBER	HCL-04B
DATE	09/23/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	82.83333
Meter pressure (in. Hg)	29.9881
Vm, dry (actual cubic meters)	0.11867
Vm, dry (std cubic meters)	0.116893
Percent H2O	NA
Vm, dry (std cubic feet)	4.130499

TEST NUMBER	HCL-04C
DATE	09/23/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	85
Meter pressure (in. Hg)	29.99545
Vm, dry (actual cubic meters)	0.12108
Vm, dry (std cubic meters)	0.118822
Percent H2O	NA
Vm, dry (std cubic feet)	4.198658

TEST NUMBER	HCL-03A
DATE	09/22/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	77.71428
Meter pressure (in. Hg)	29.9892
Vm, dry (actual cubic meters)	0.10028
Vm, dry (std cubic meters)	0.099722
Percent H2O	NA
Vm, dry (std cubic feet)	3.523764

TEST NUMBER	HCL-03B
DATE	09/22/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	83.33333
Meter pressure (in. Hg)	30.0179
Vm, dry (actual cubic meters)	0.12529
Vm, dry (std cubic meters)	0.123422
Percent H2O	NA
Vm, dry (std cubic feet)	4.361236

TEST NUMBER	HCL-03C
DATE	09/22/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	84
Meter pressure (in. Hg)	30.02157
Vm, dry (actual cubic meters)	0.12043
Vm, dry (std cubic meters)	0.118504
Percent H2O	NA
Vm, dry (std cubic feet)	4.187439

TEST NUMBER	HCL-02A
DATE	09/21/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	76.83333
Meter pressure (in. Hg)	30.19767
Vm, dry (actual cubic meters)	0.09779
Vm, dry (std cubic meters)	0.098083
Percent H2O	NA
Vm, dry (std cubic feet)	3.465833

TEST NUMBER	HCL-02B
DATE	09/21/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	81.875
Meter pressure (in. Hg)	30.17746
Vm, dry (actual cubic meters)	0.12055
Vm, dry (std cubic meters)	0.119706
Percent H2O	NA
Vm, dry (std cubic feet)	4.229899

TEST NUMBER	HCL-01A
DATE	09/20/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	98.5
Meter pressure (in. Hg)	30.18787
Vm, dry (actual cubic meters)	0.12053
Vm, dry (std cubic meters)	0.116163
Percent H2O	NA
Vm, dry (std cubic feet)	4.104722

TEST NUMBER	HCL-01B
DATE	09/20/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	108.3333
Meter pressure (in. Hg)	30.2136
Vm, dry (actual cubic meters)	0.11978
Vm, dry (std cubic meters)	0.113540
Percent H2O	NA
Vm, dry (std cubic feet)	4.012018

TEST NUMBER	HCL-01C
DATE	09/20/90
LOCATION	STACK

Results of calculations:

Avg meter temp (degrees F)	107
Meter pressure (in. Hg)	30.2136
Vm, dry (actual cubic meters)	0.11773
Vm, dry (std cubic meters)	0.111859
Percent H2O	NA
Vm, dry (std cubic feet)	3.952626

THE JOURNAL

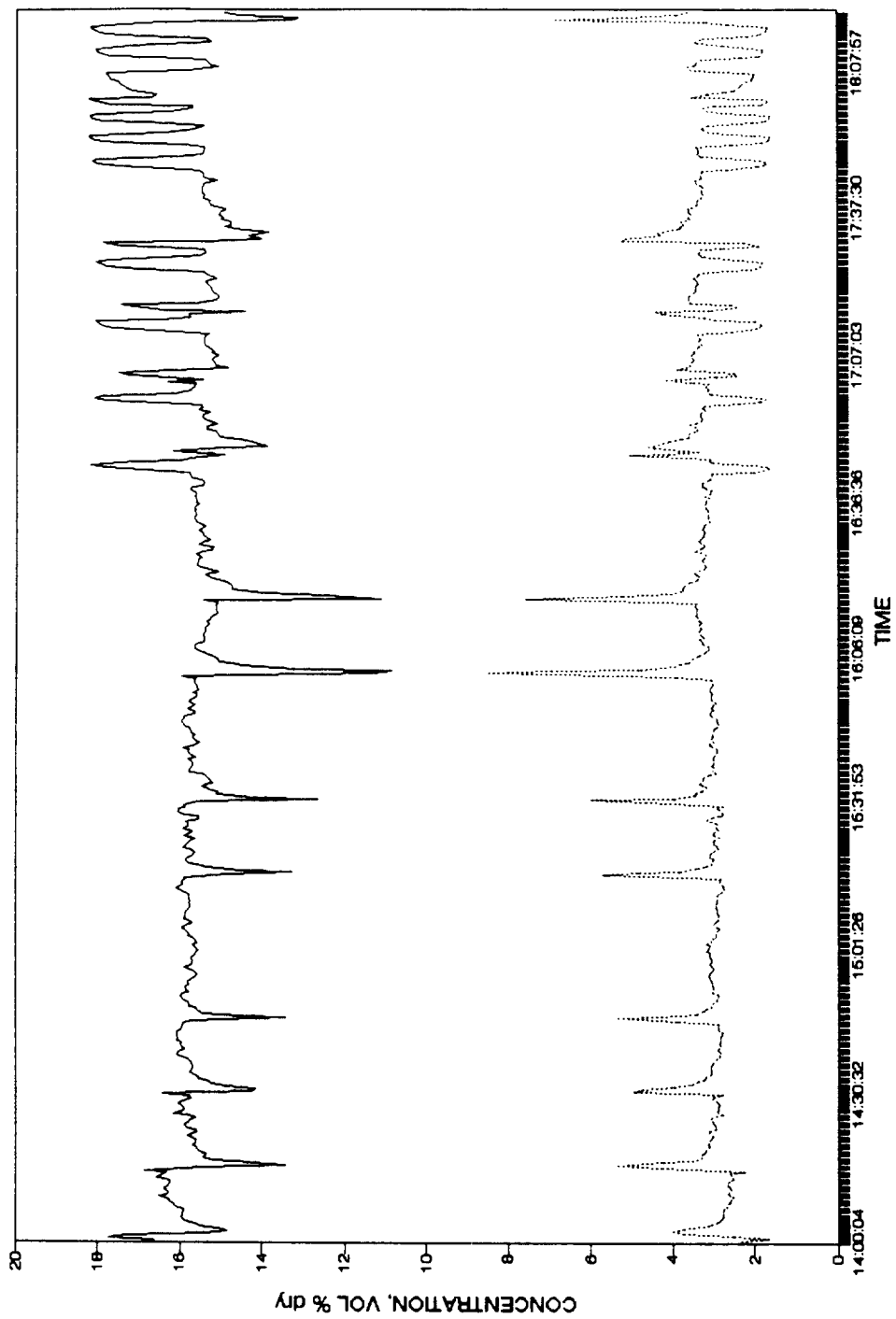
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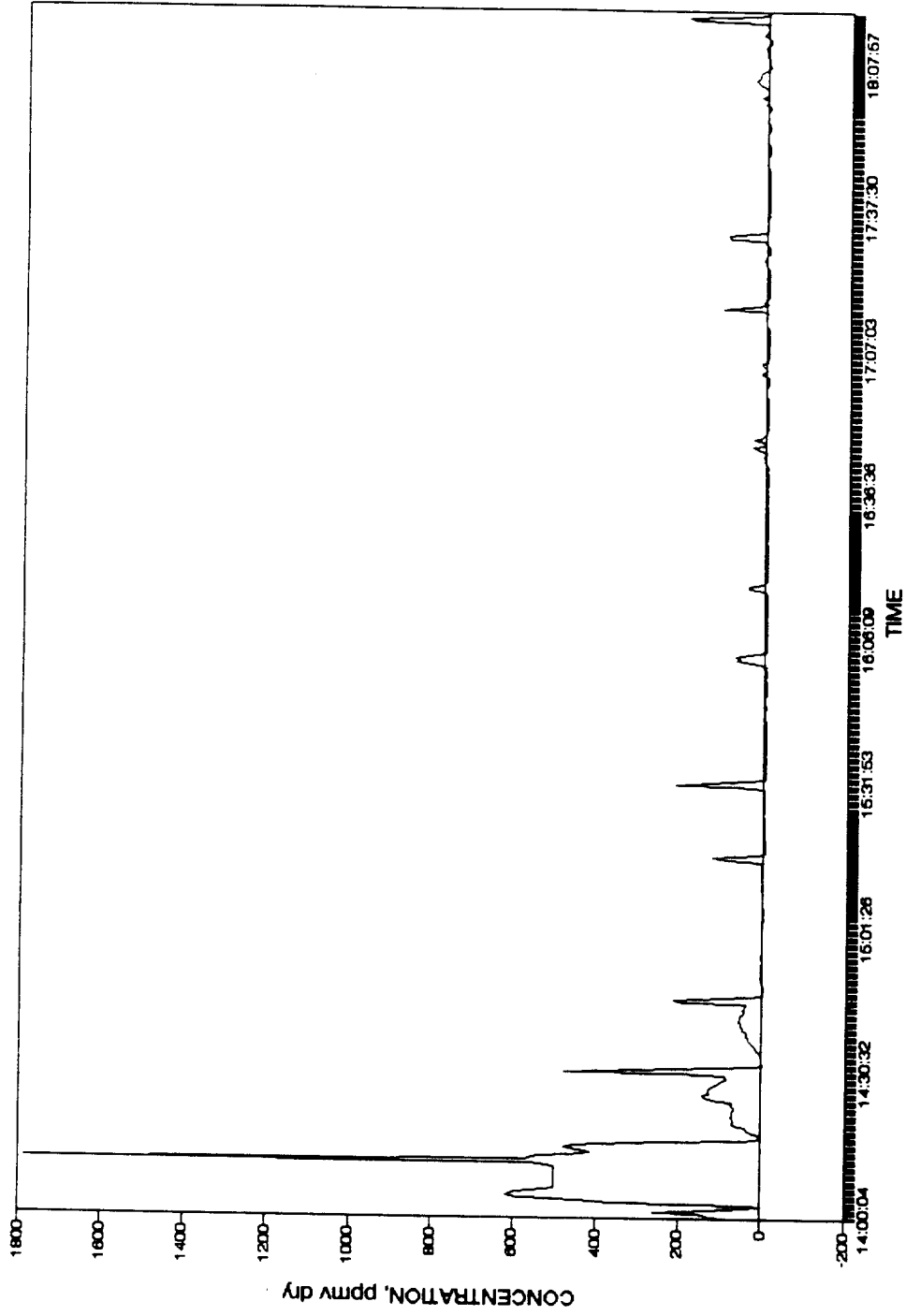
OXYGEN AND CARBON DIOXIDE CONCENTRATION

RUN 01 09/20/90



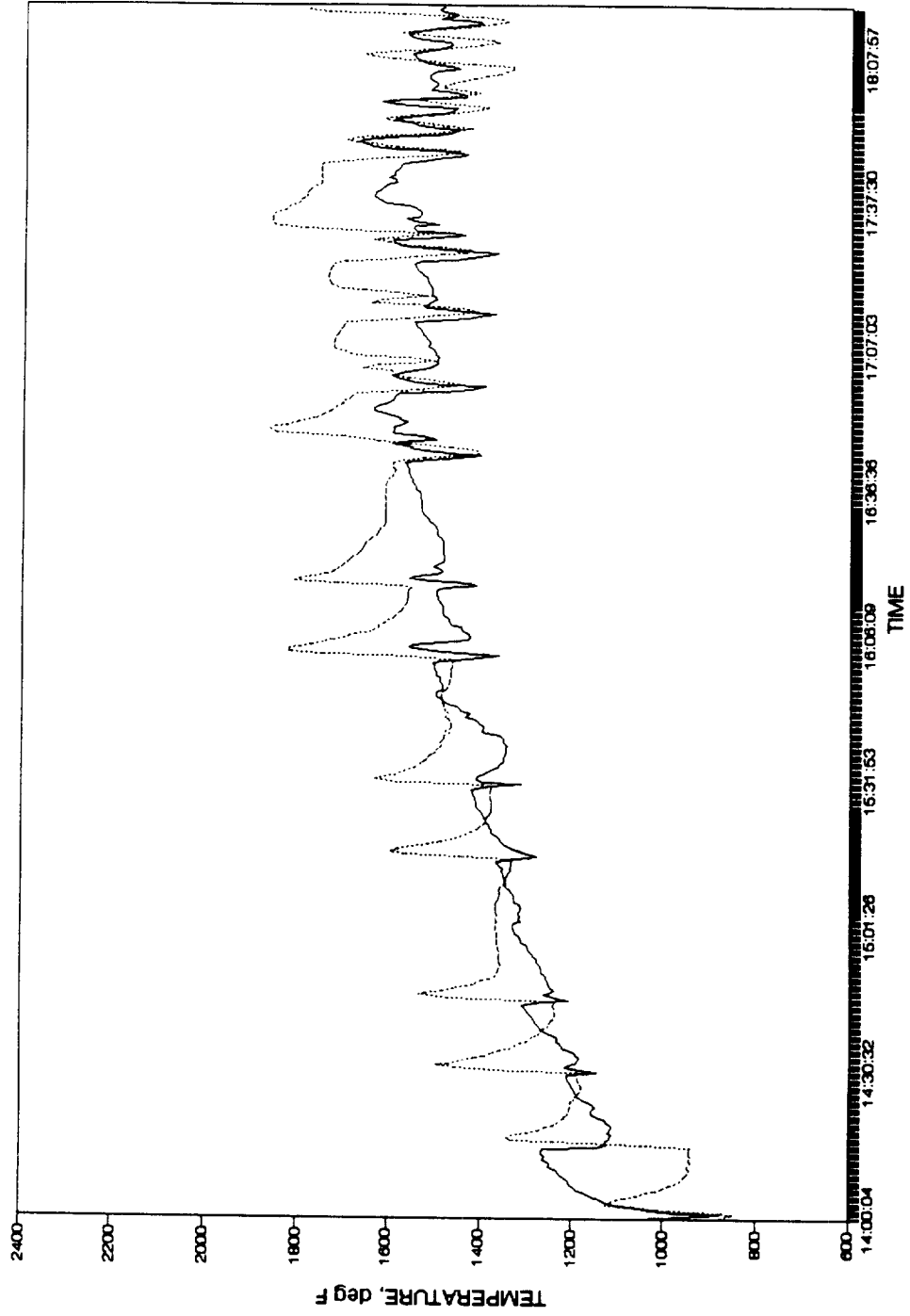
— OXYGEN CARBON DIOXIDE

CARBON MONOXIDE CONCENTRATION
RUN 01 09/20/90



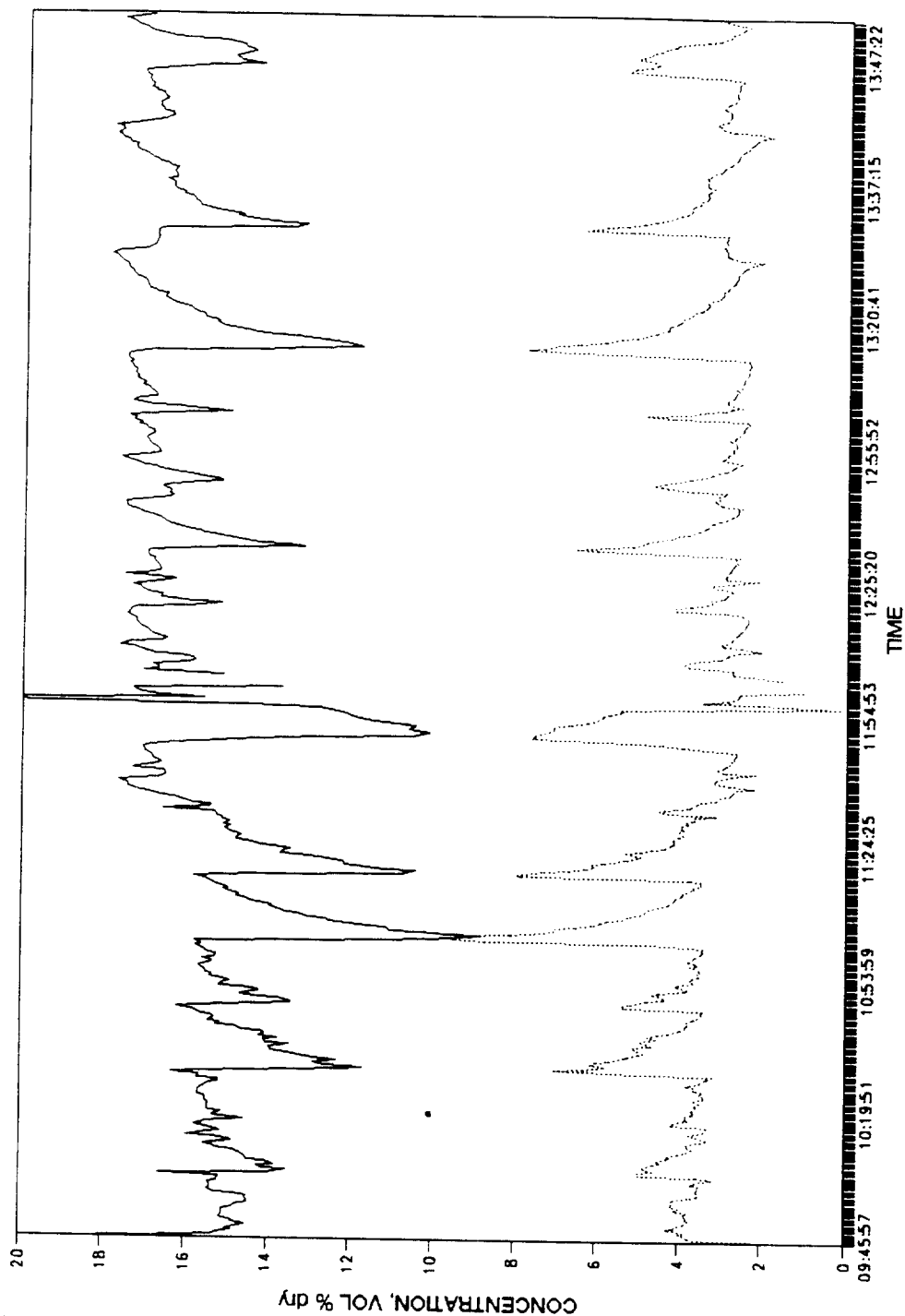
— CARBON MONOXIDE

INCINERATOR TEMPERATURES
RUN 01 09/20/90



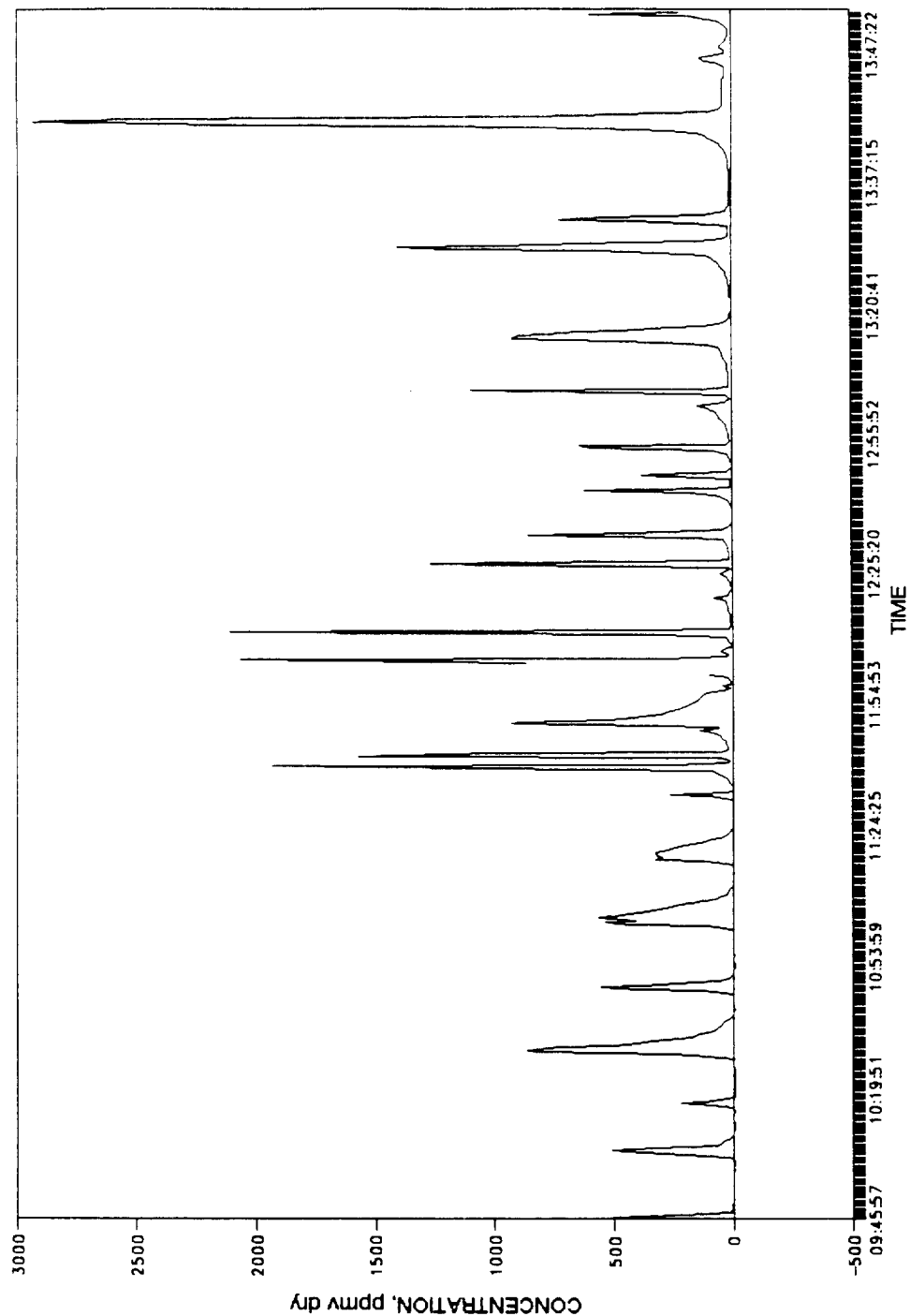
— LOWER CHAMBER UPPER CHAMBER

OXYGEN AND CARBON DIOXIDE CONCENTRATION
RUN 02 09/21/90



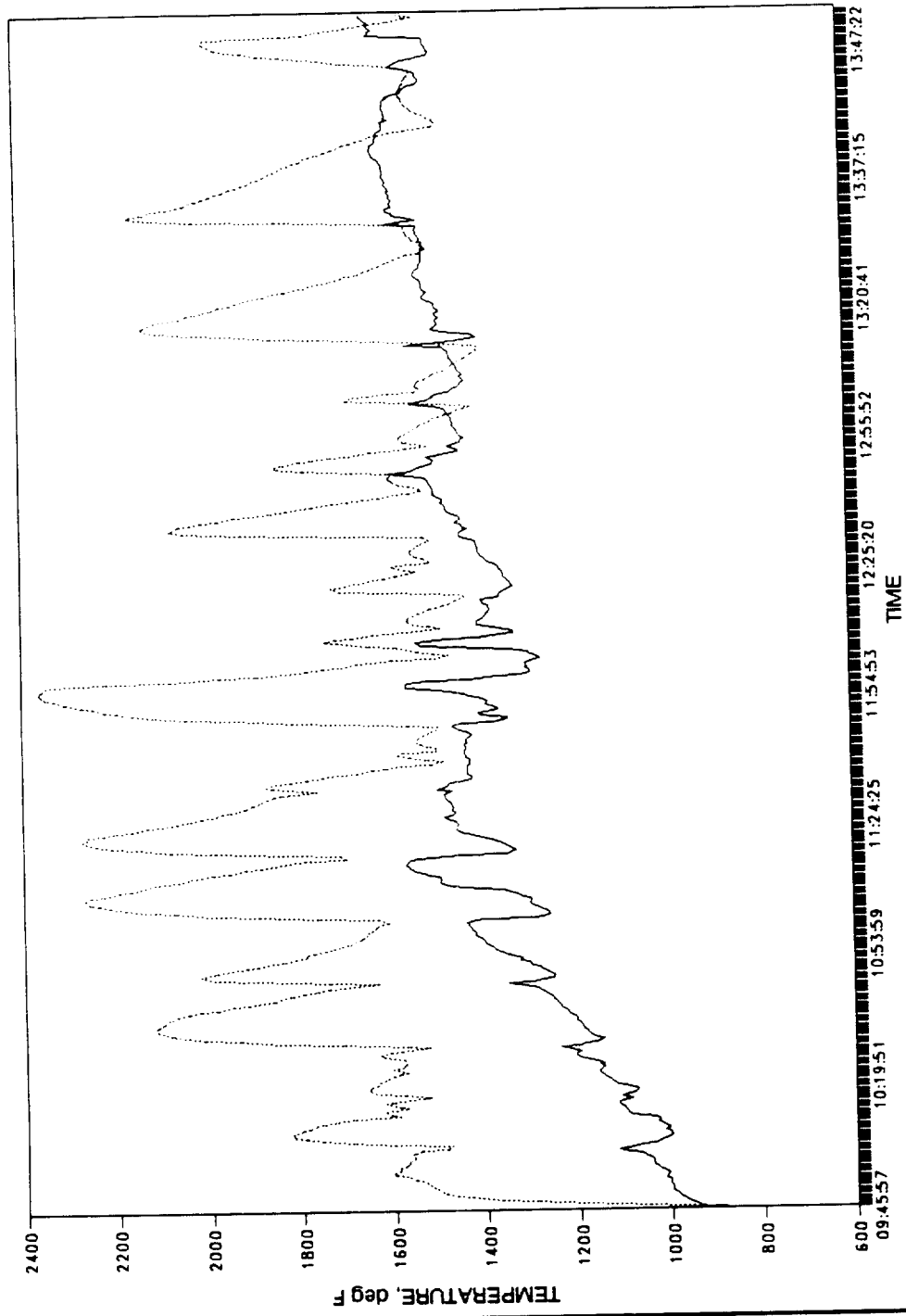
— OXYGEN
... CARBON DIOXIDE

CARBON MONOXIDE CONCENTRATION
RUN 02 09/21/90



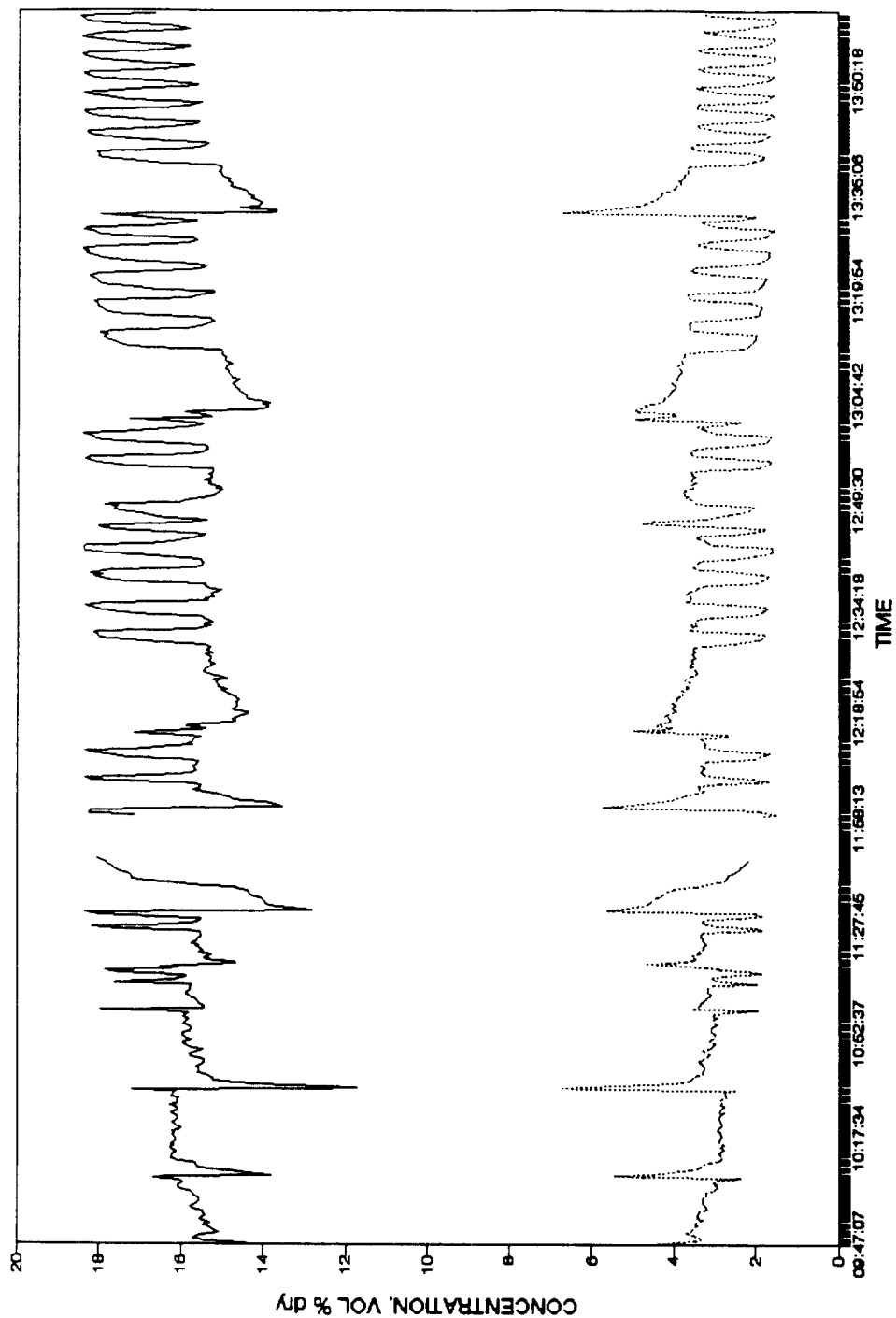
— CARBON MONOXIDE

INCINERATOR TEMPERATURES
RUN 02 09/21/90



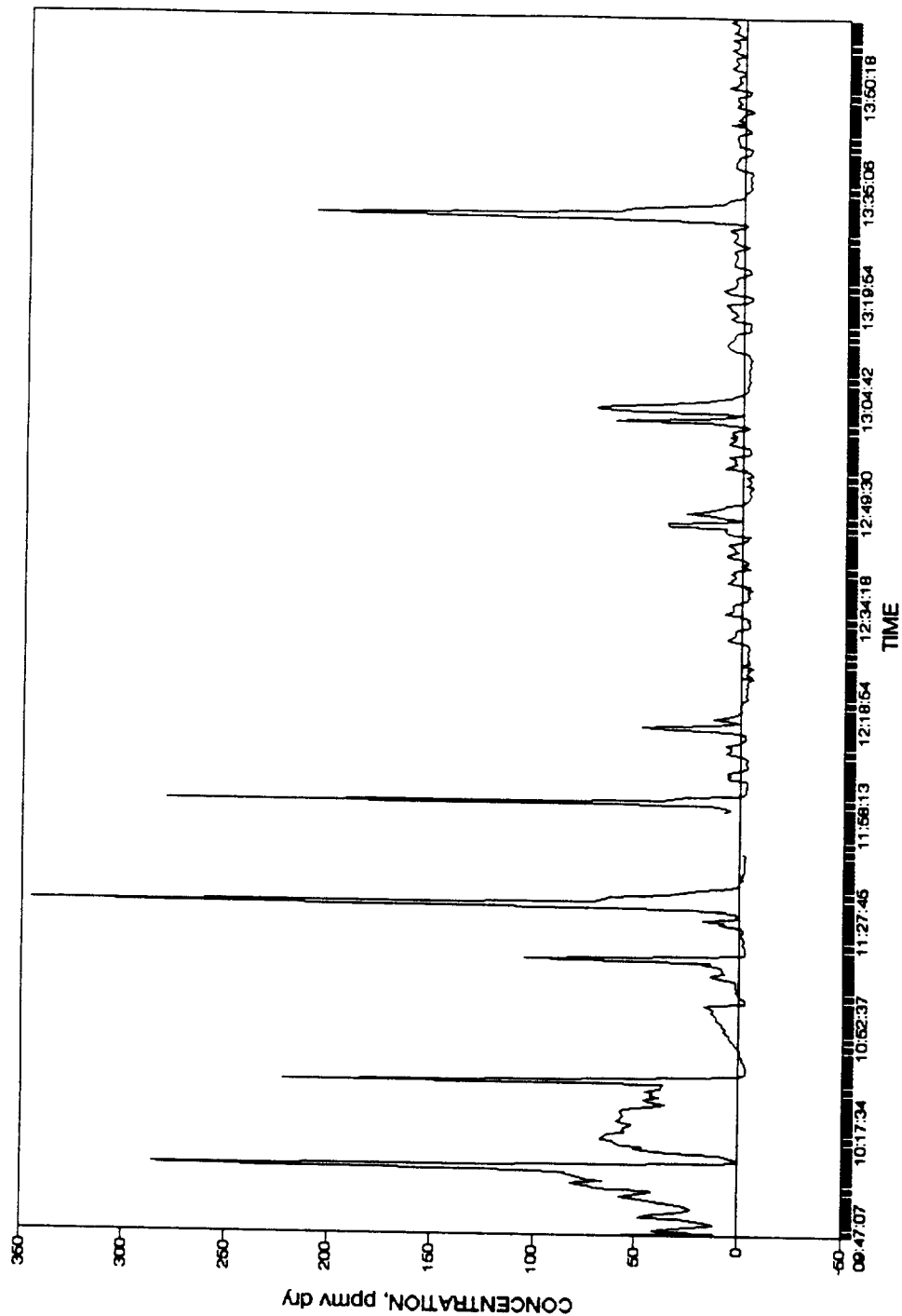
— LOWER CHAMBER UPPER CHAMBER

OXYGEN AND CARBON DIOXIDE CONCENTRATION
RUN 03 09/22/90

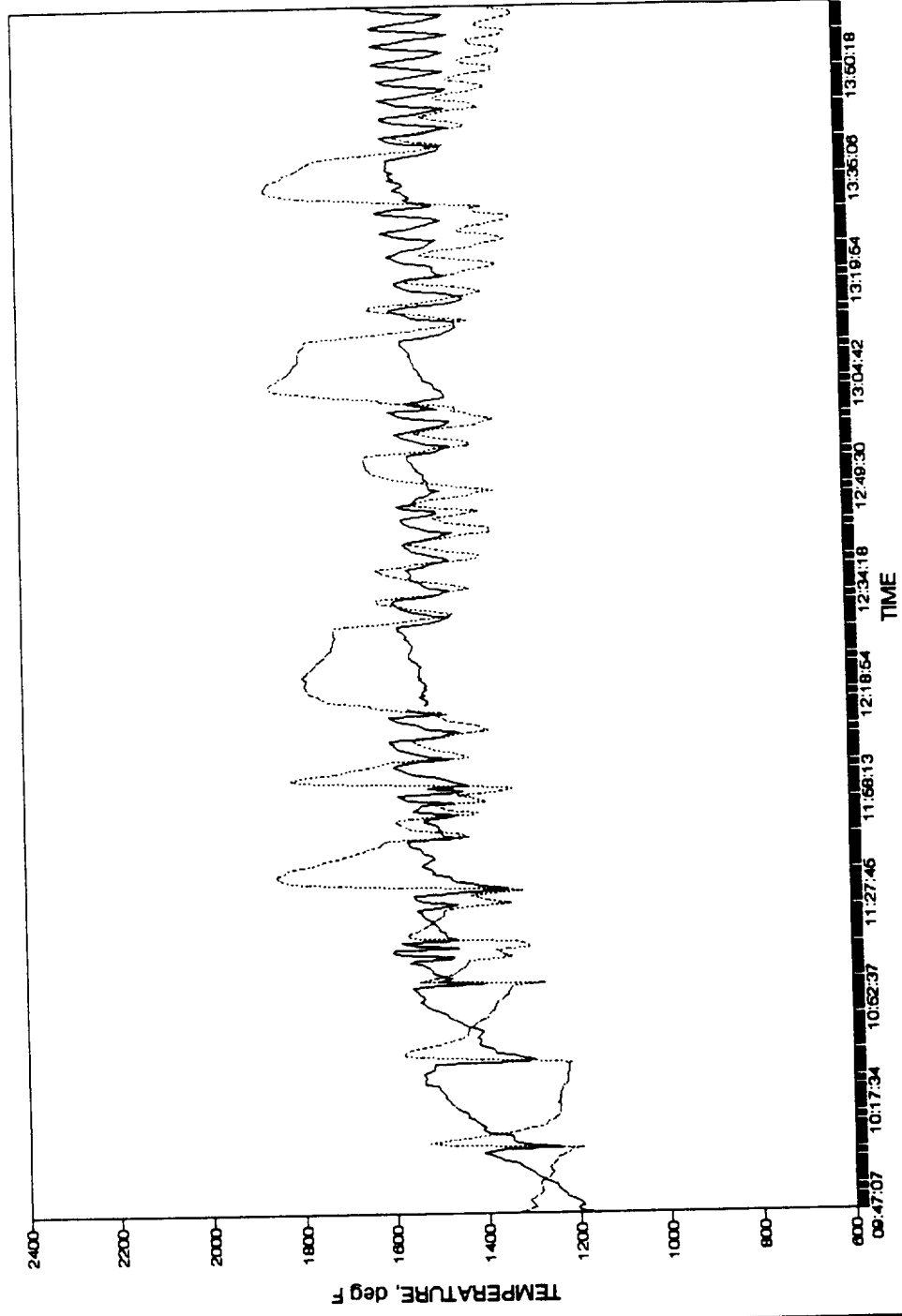


— OXYGEN CARBON DIOXIDE

CARBON MONOXIDE CONCENTRATION
RUN 03 09/22/90

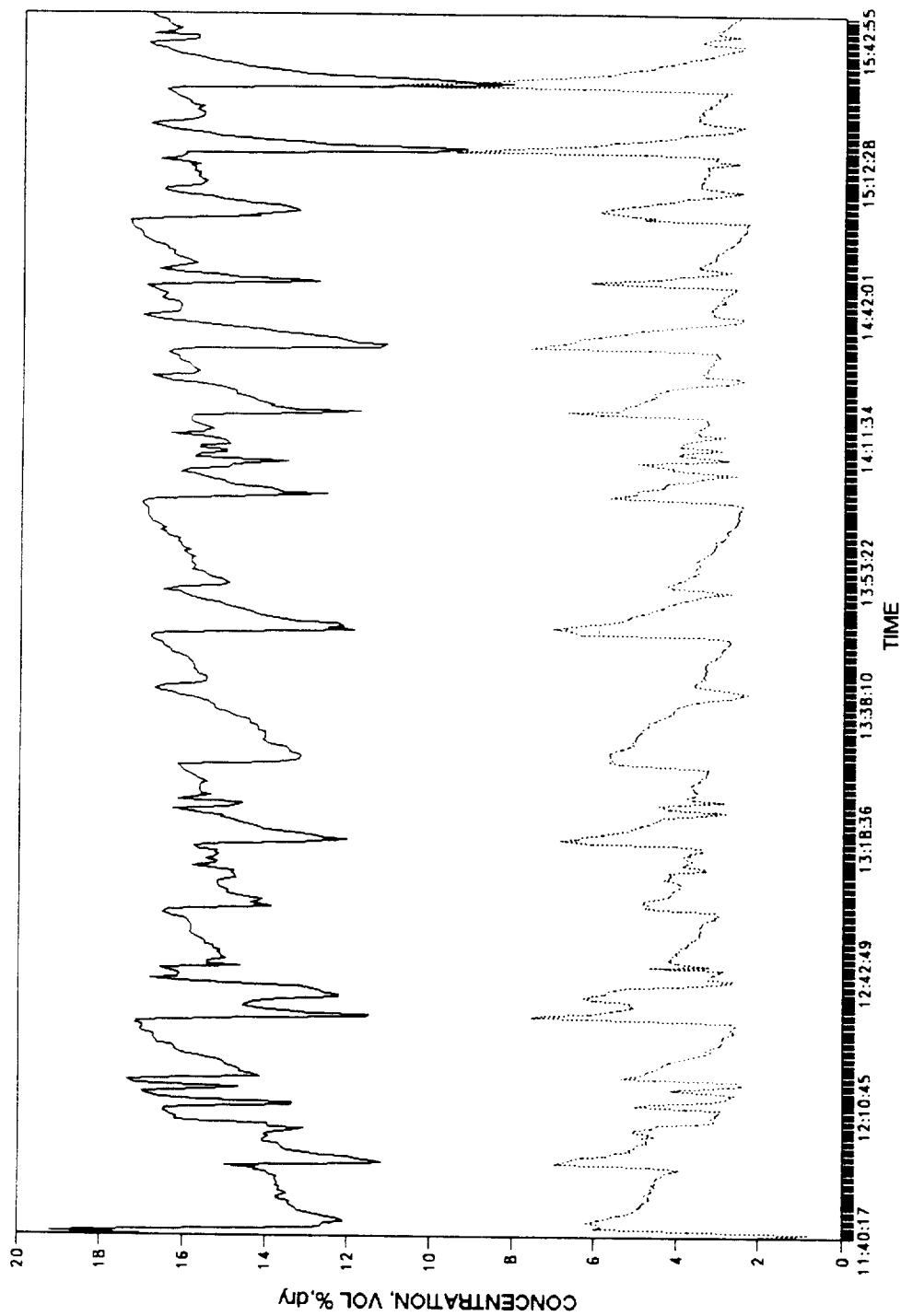


INCINERATOR TEMPERATURES
RUN 03 09/22/90



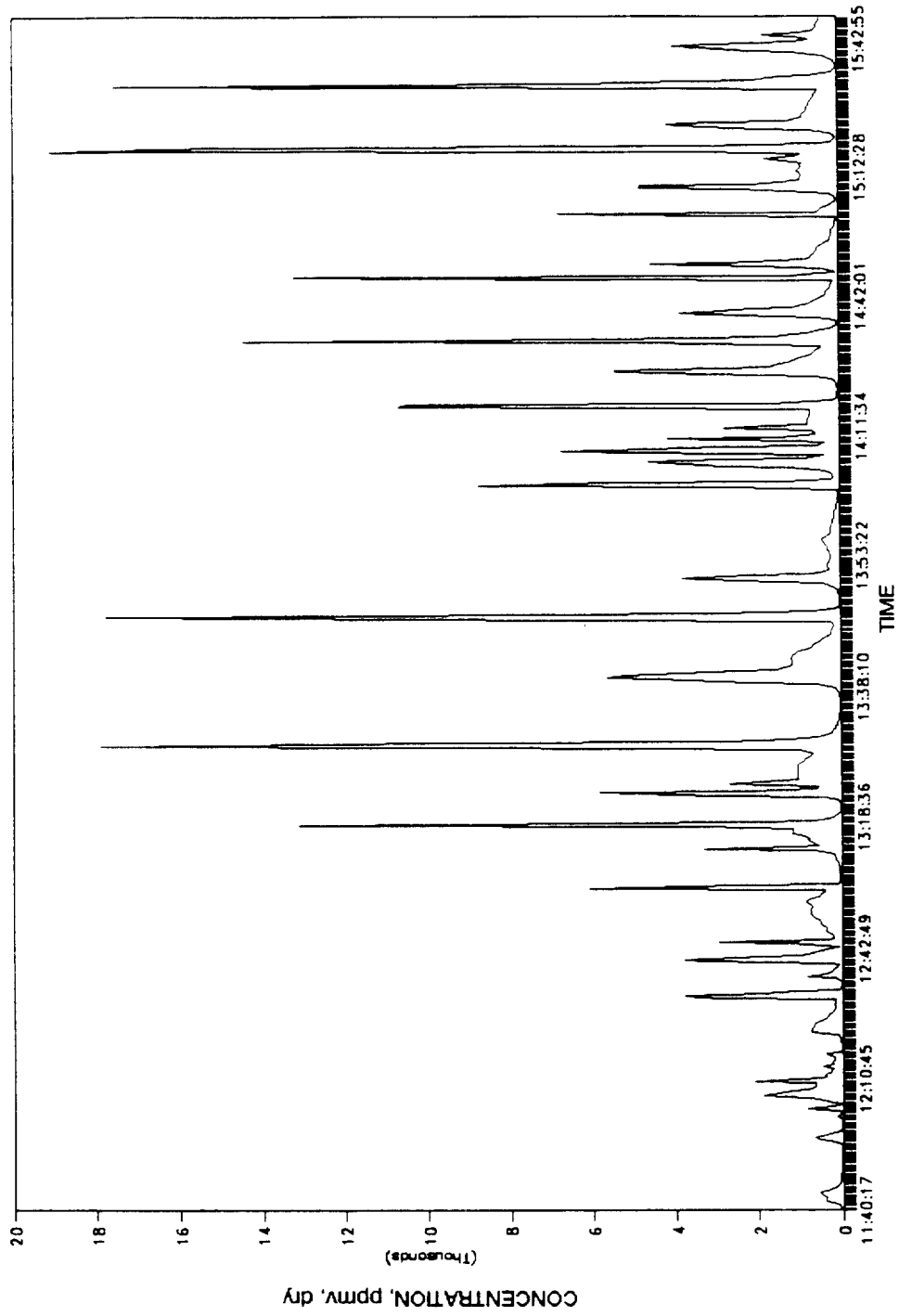
— LOWER CHAMBER UPPER CHAMBER

OXYGEN AND CARBON DIOXIDE CONCENTRATION
RUN 04, 09/23/90

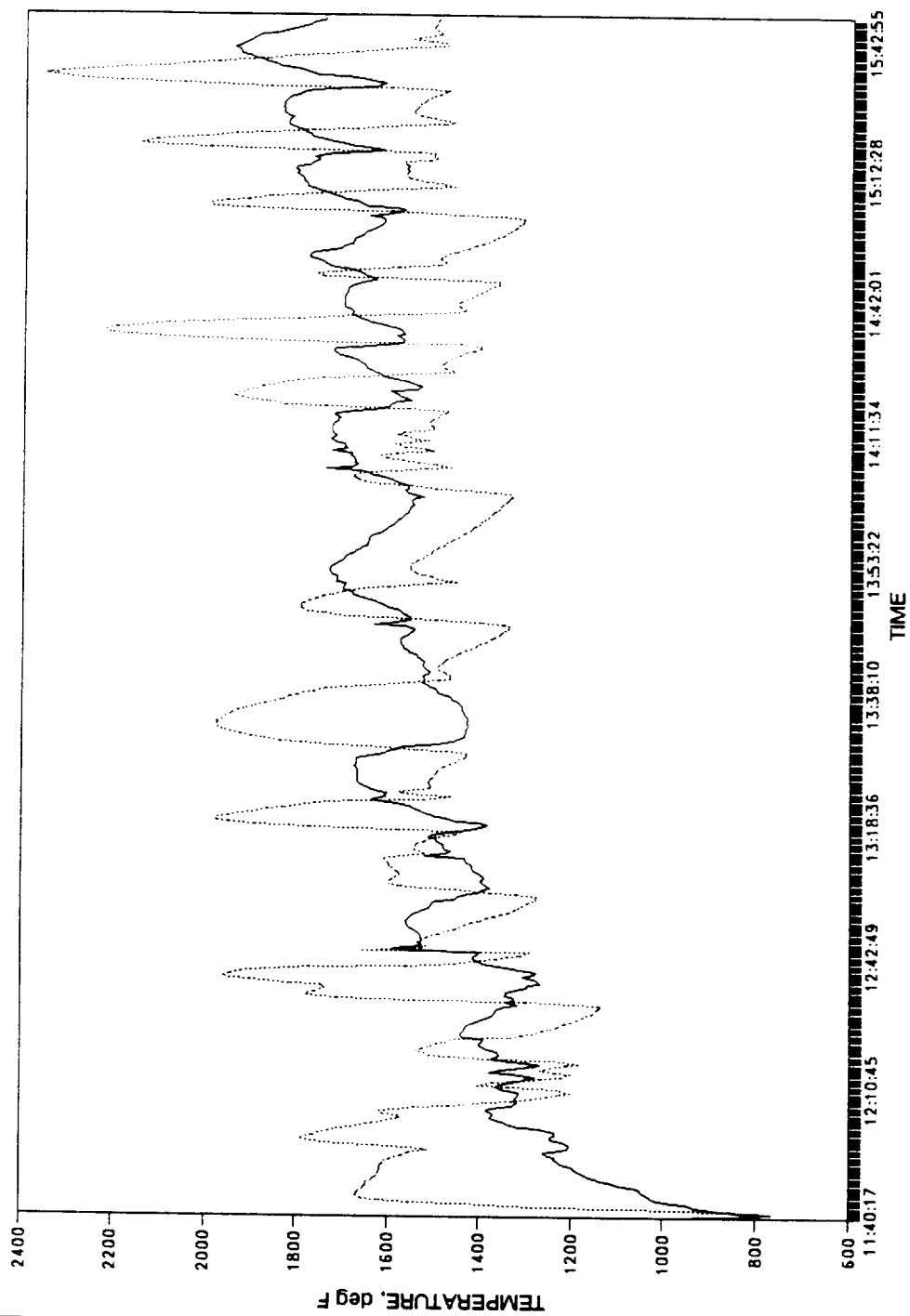


— OXYGEN ···· CARBON DIOXIDE

CARBON MONOXIDE CONCENTRATION
RUN 04, 09/23/90

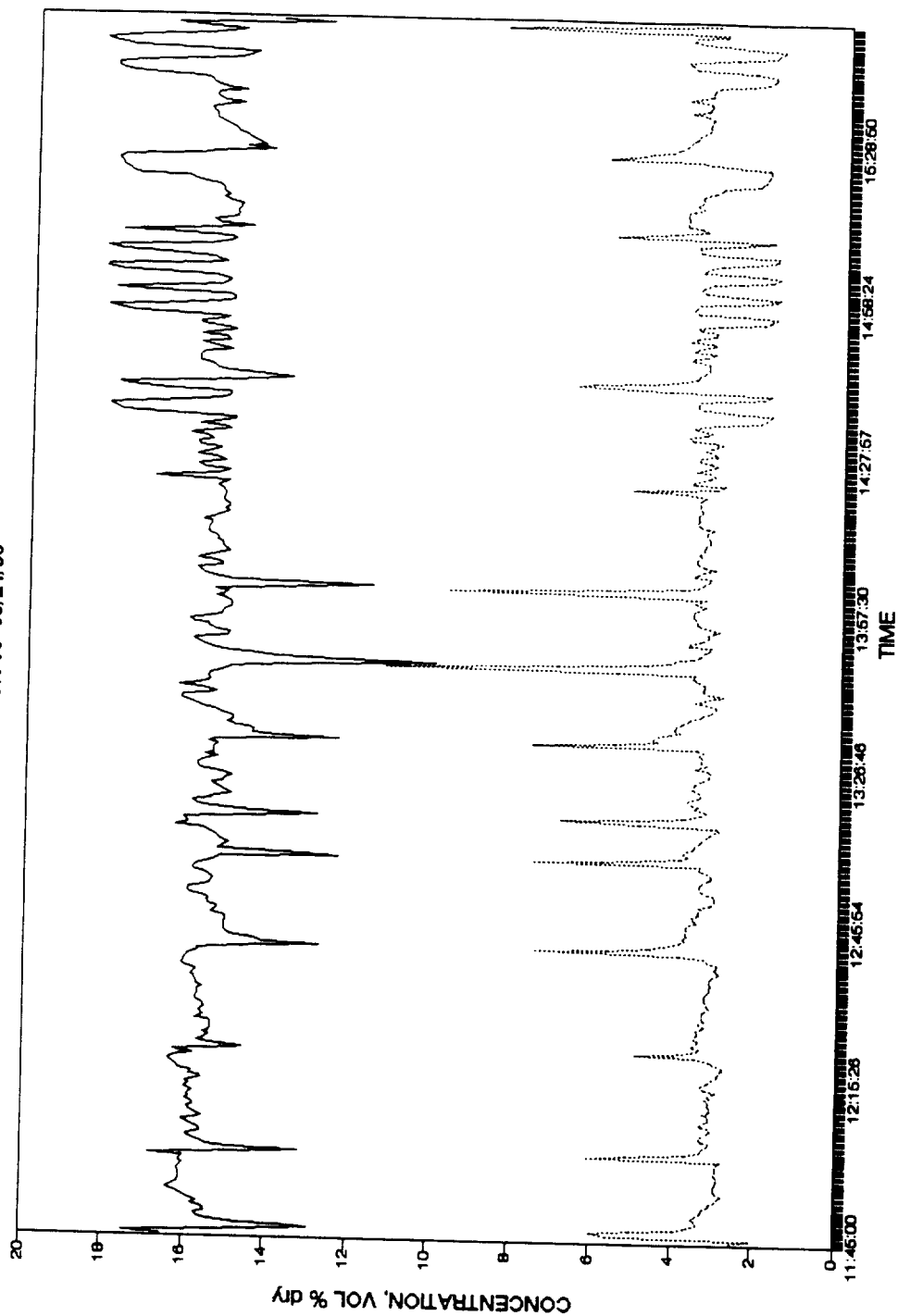


INCINERATOR TEMPERATURES
RUN 04, 09/23/90



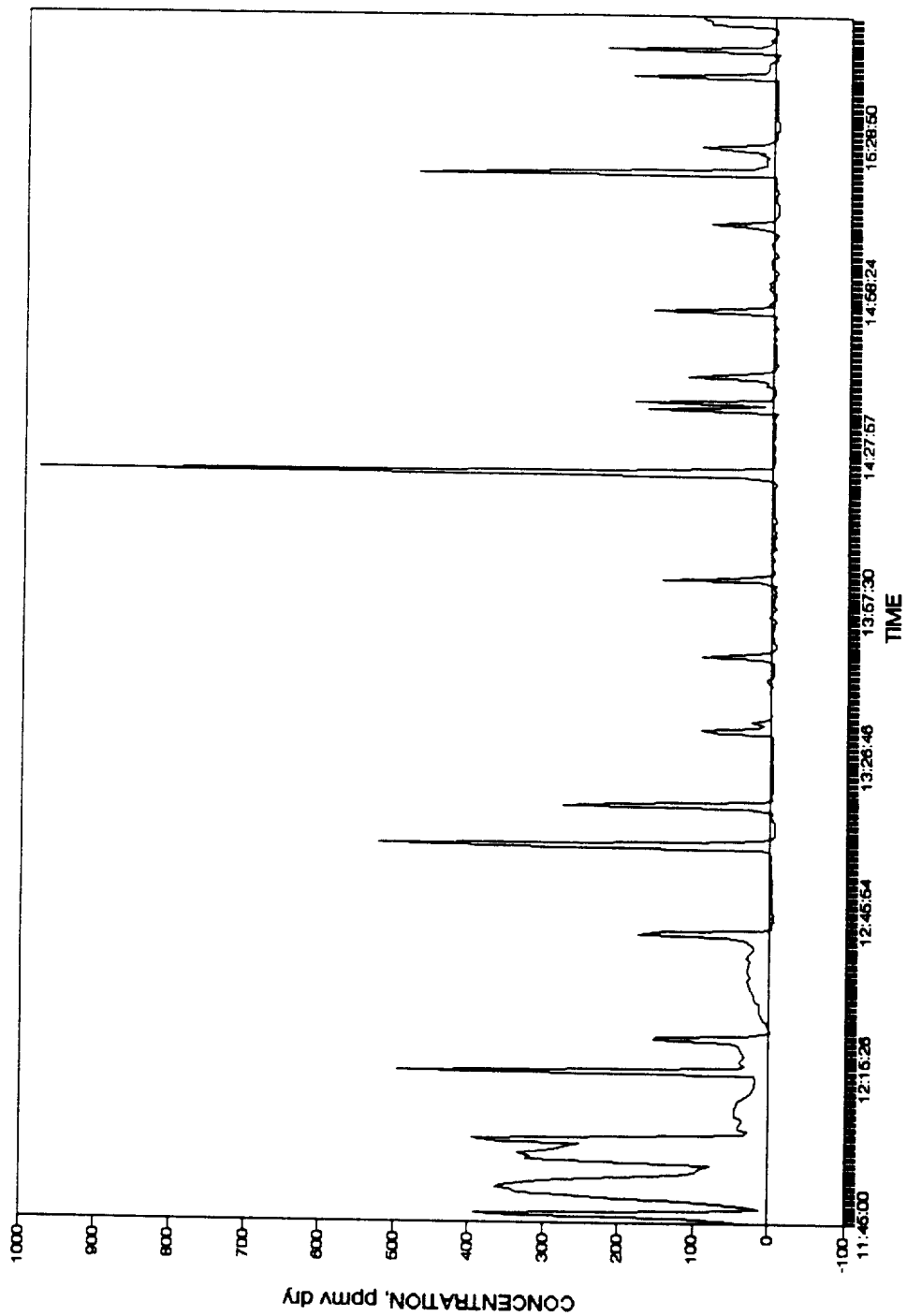
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RUN 05 09/24/90

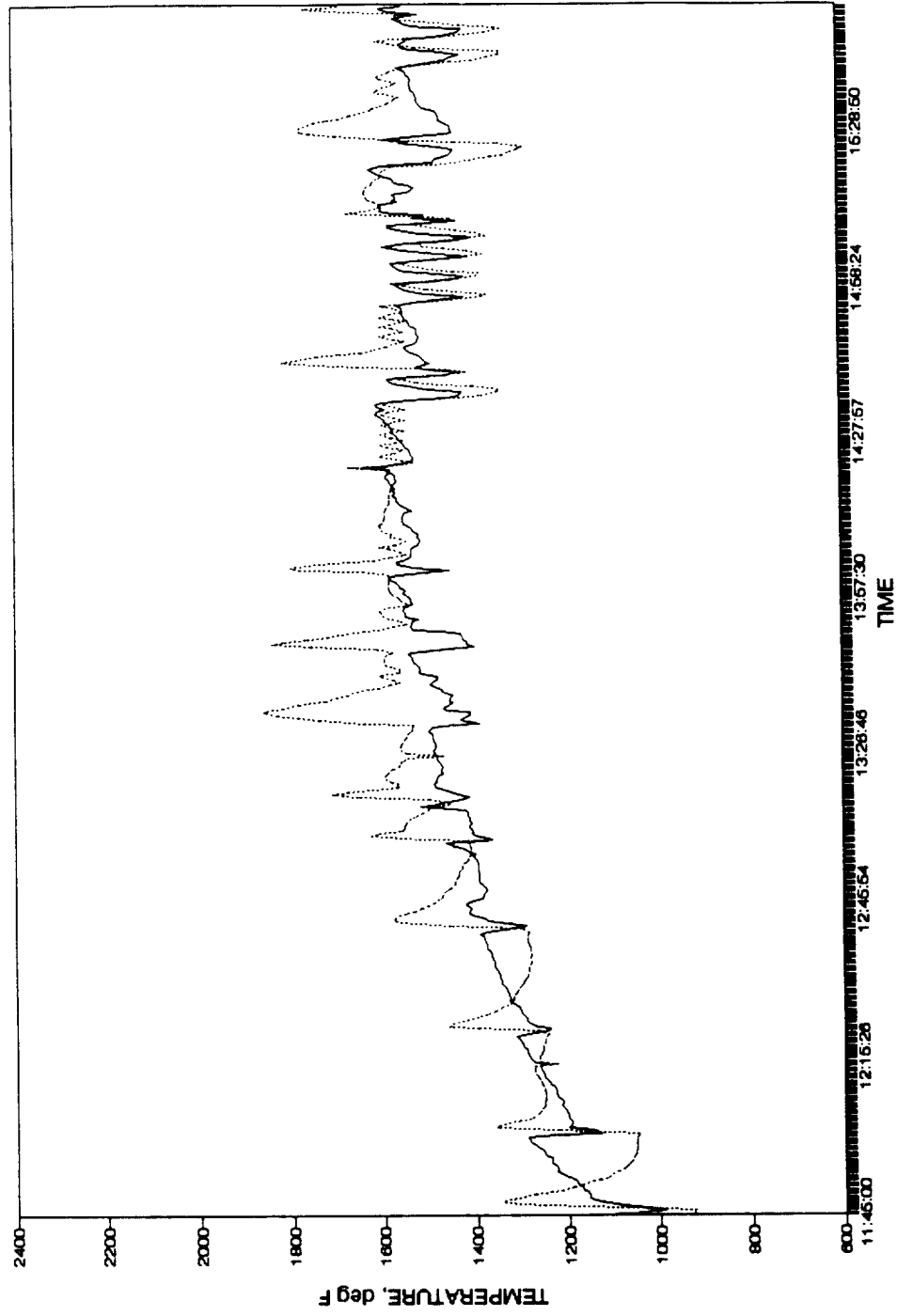


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CARBON MONOXIDE CONCENTRATION
RUN 05 09/24/90

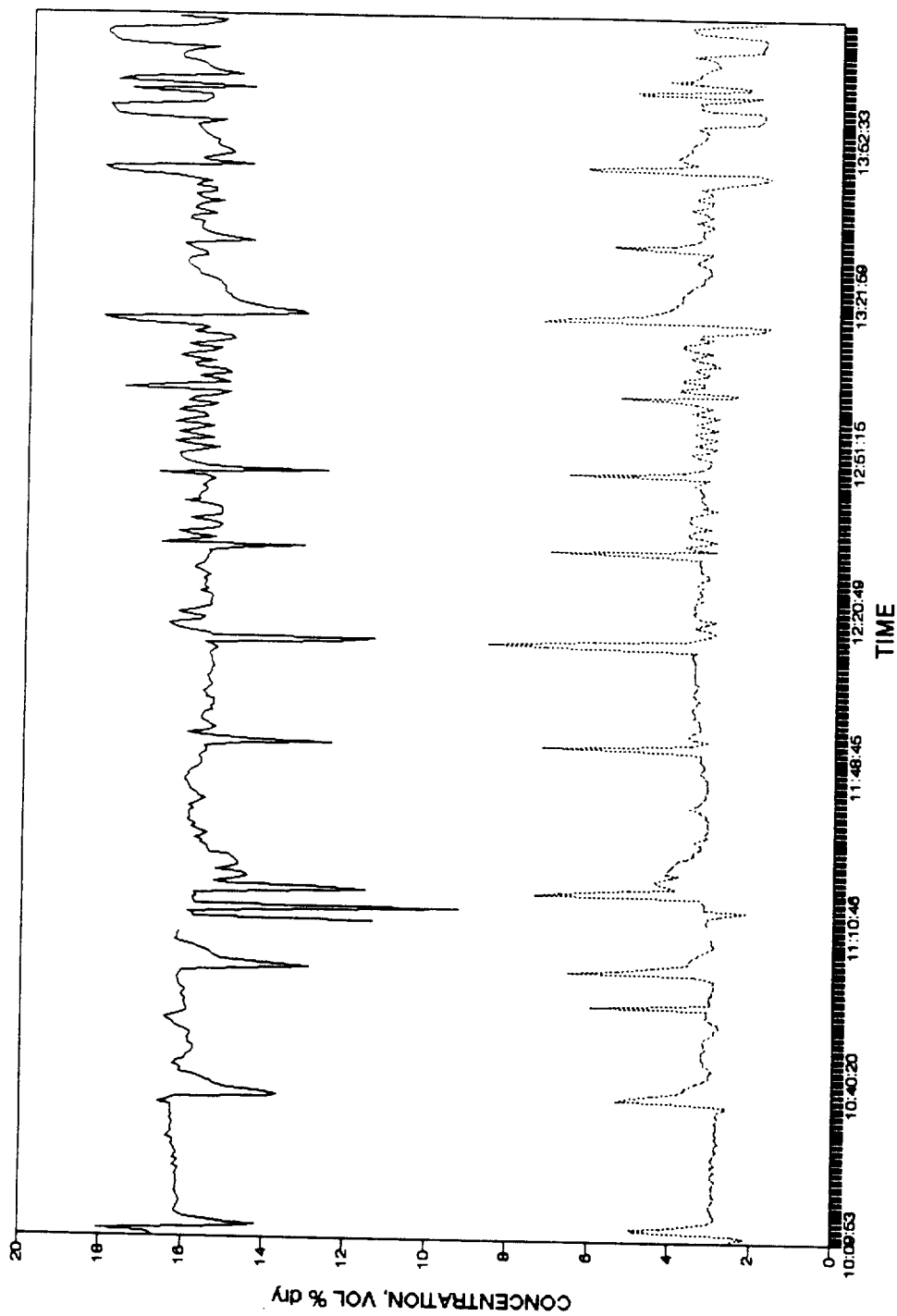


INCINERATOR TEMPERATURES
RUN 06 09/24/90



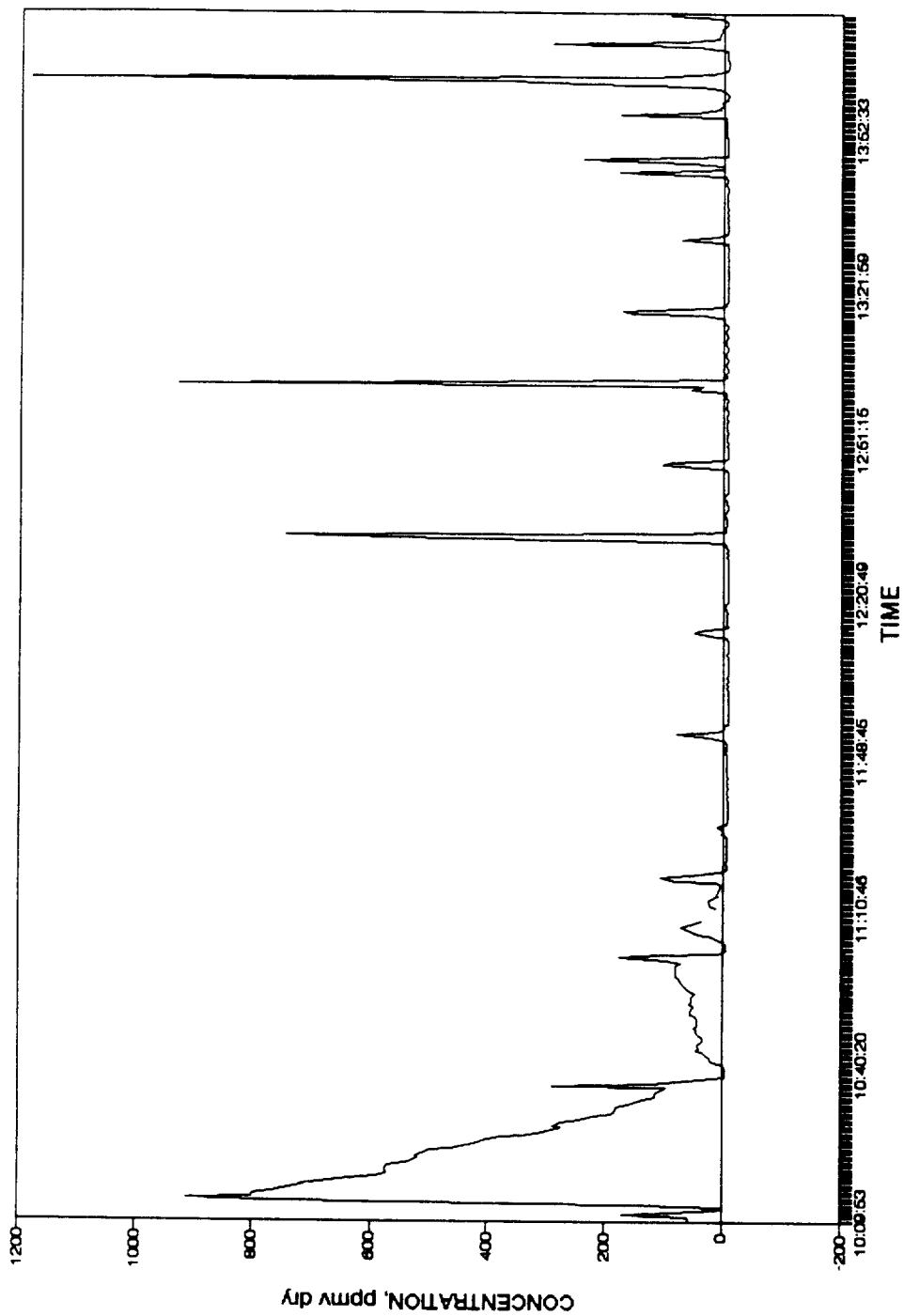
— LOWER CHAMBER UPPER CHAMBER

OXYGEN AND CARBON DIOXIDE CONCENTRATION
RUN 06 09/25/90



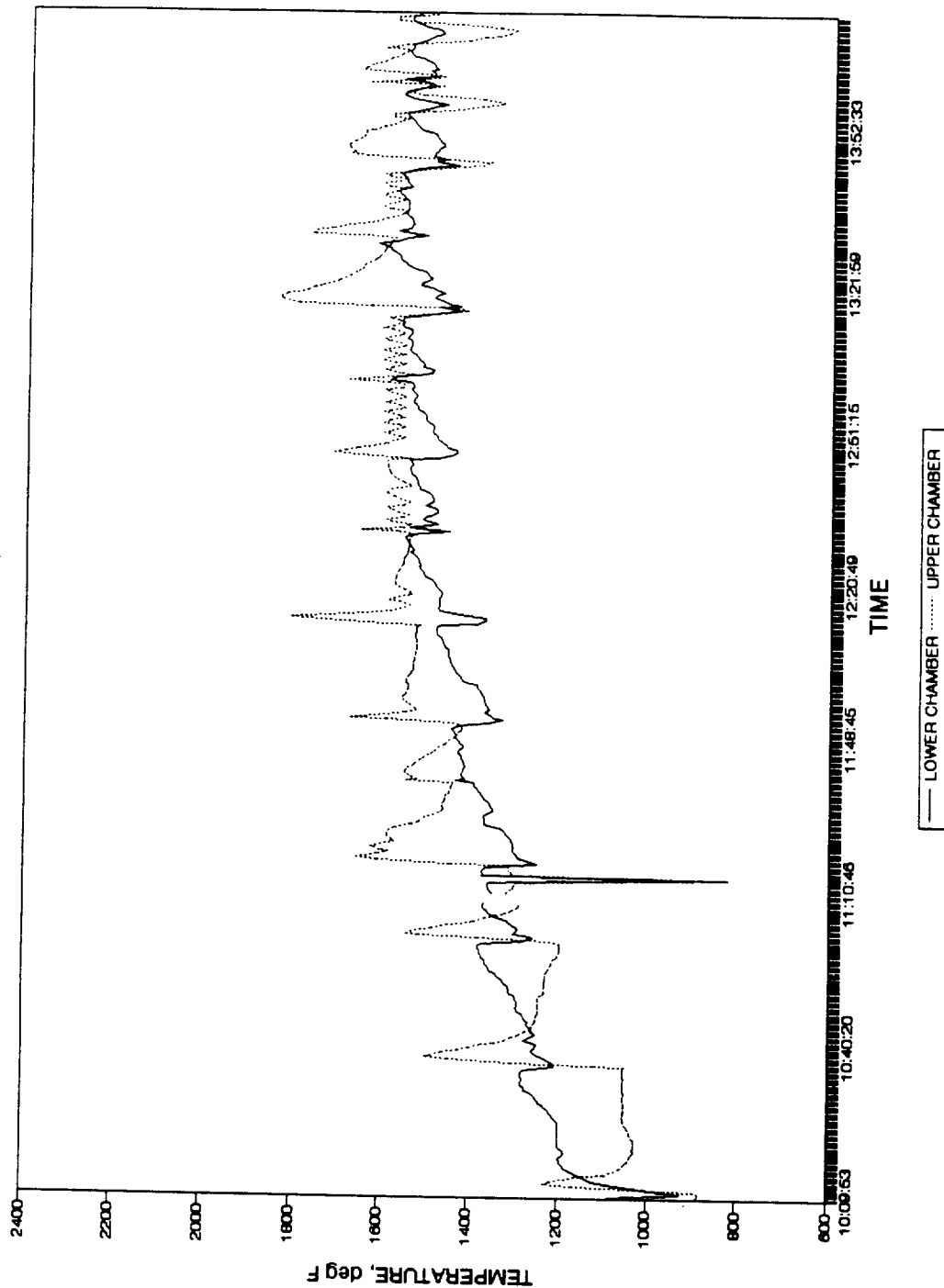
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CARBON MONOXIDE CONCENTRATION
RUN 06 09/25/90

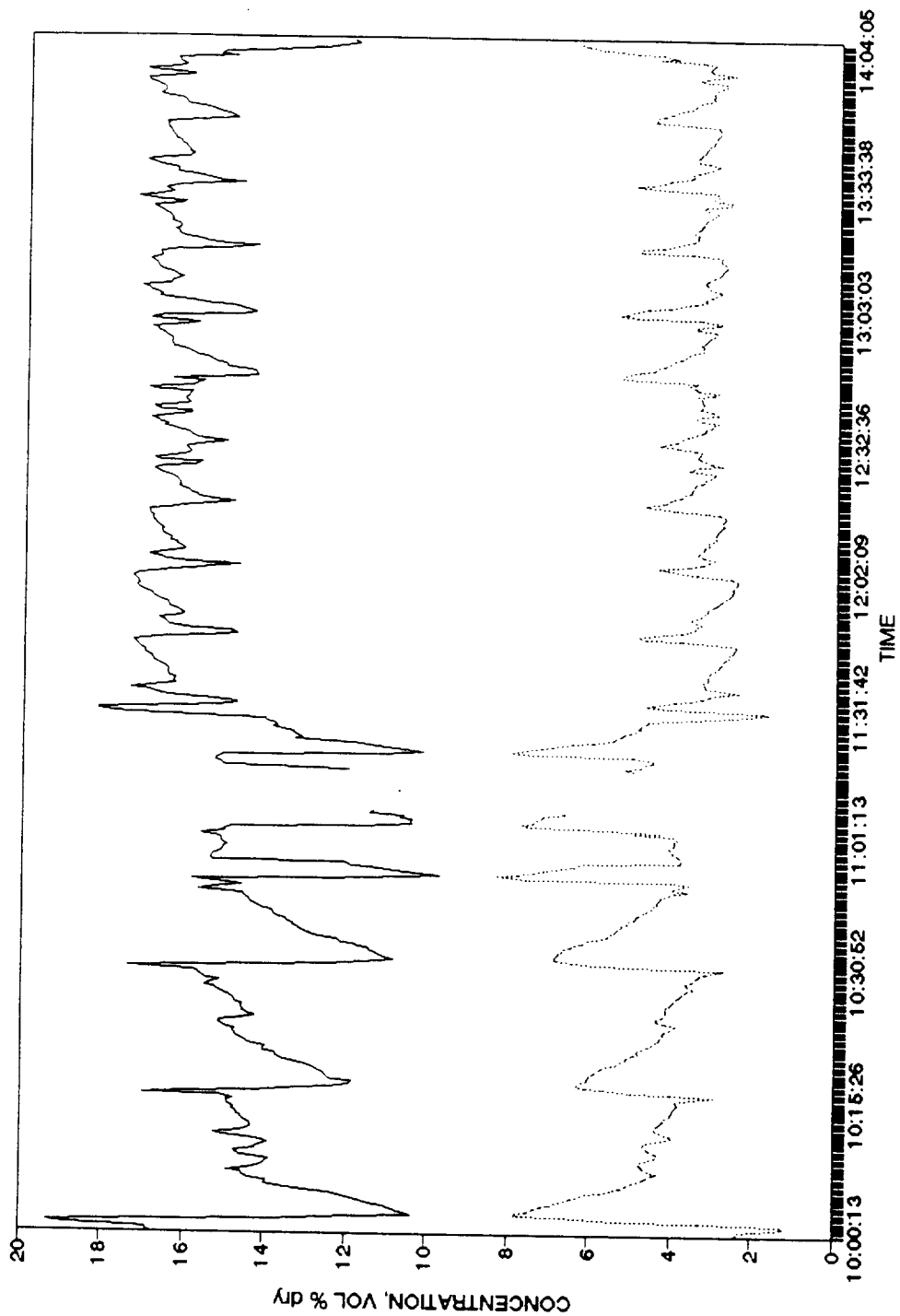


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INCINERATOR TEMPERATURES
RUN 06 09/25/90

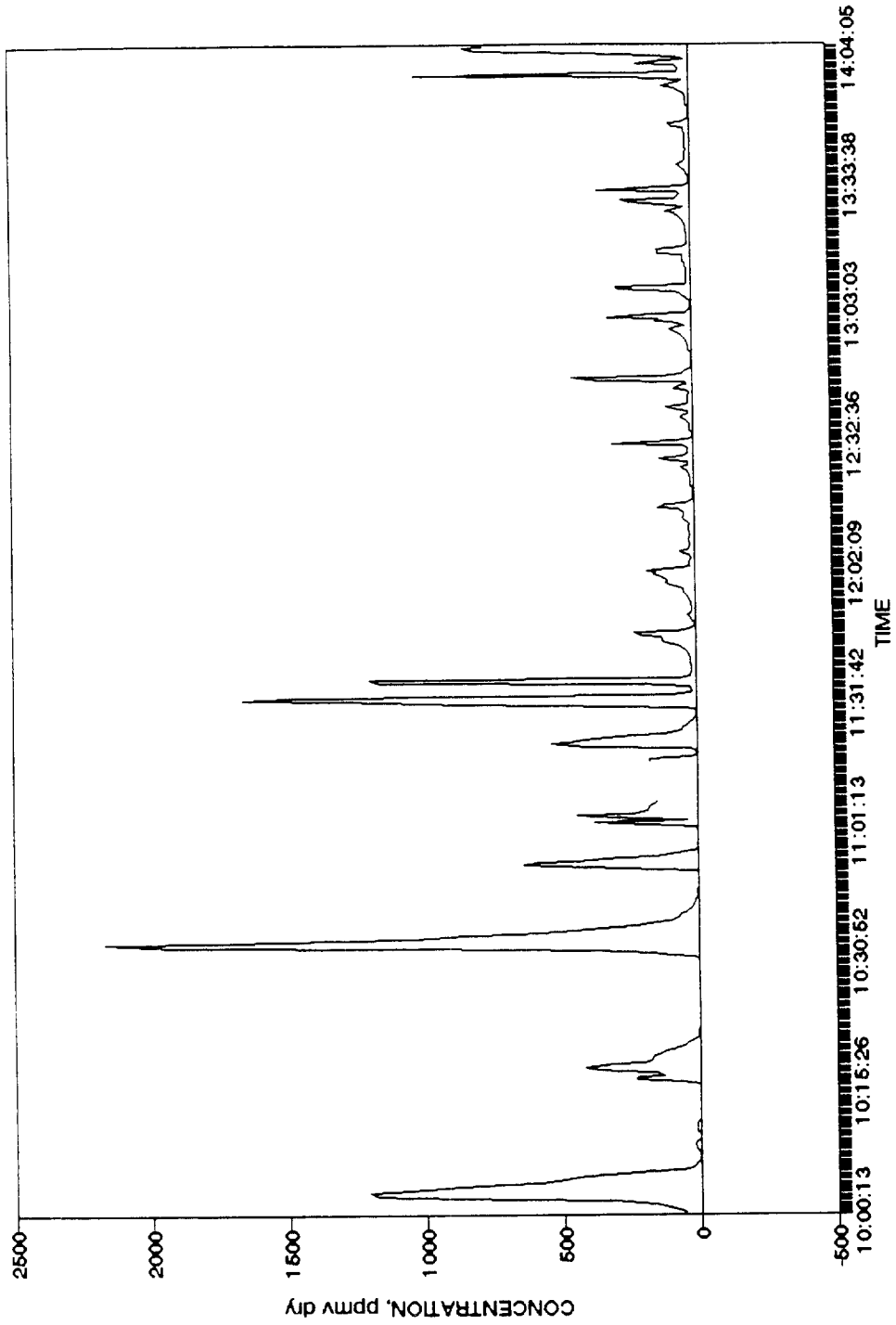


OXYGEN AND CARBON DIOXIDE CONCENTRATION
RUN 07, 09/26/90



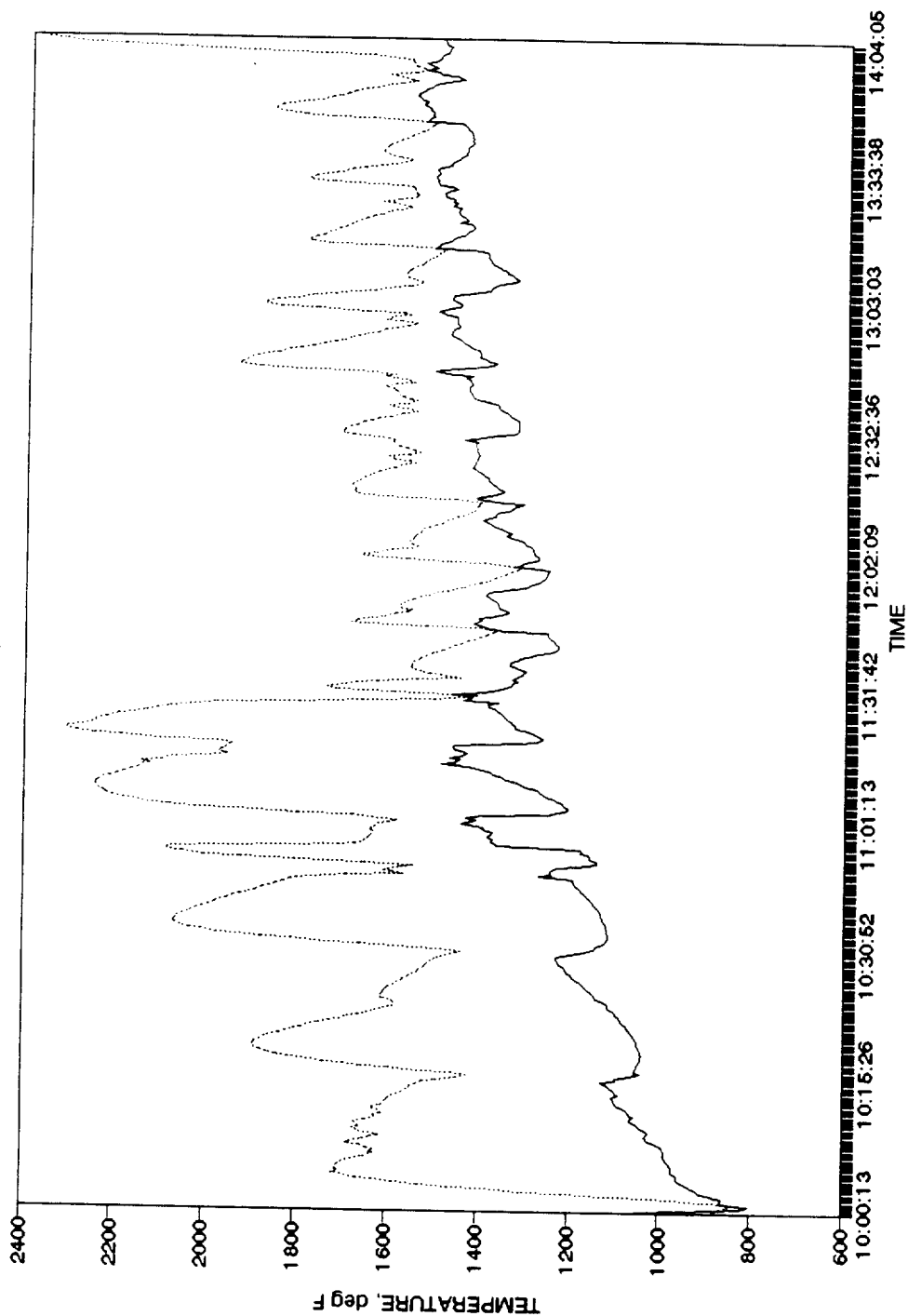
— OXYGEN — CARBON DIOXIDE

CARBON MONOXIDE CONCENTRATION
RUN 07, 09/26/90



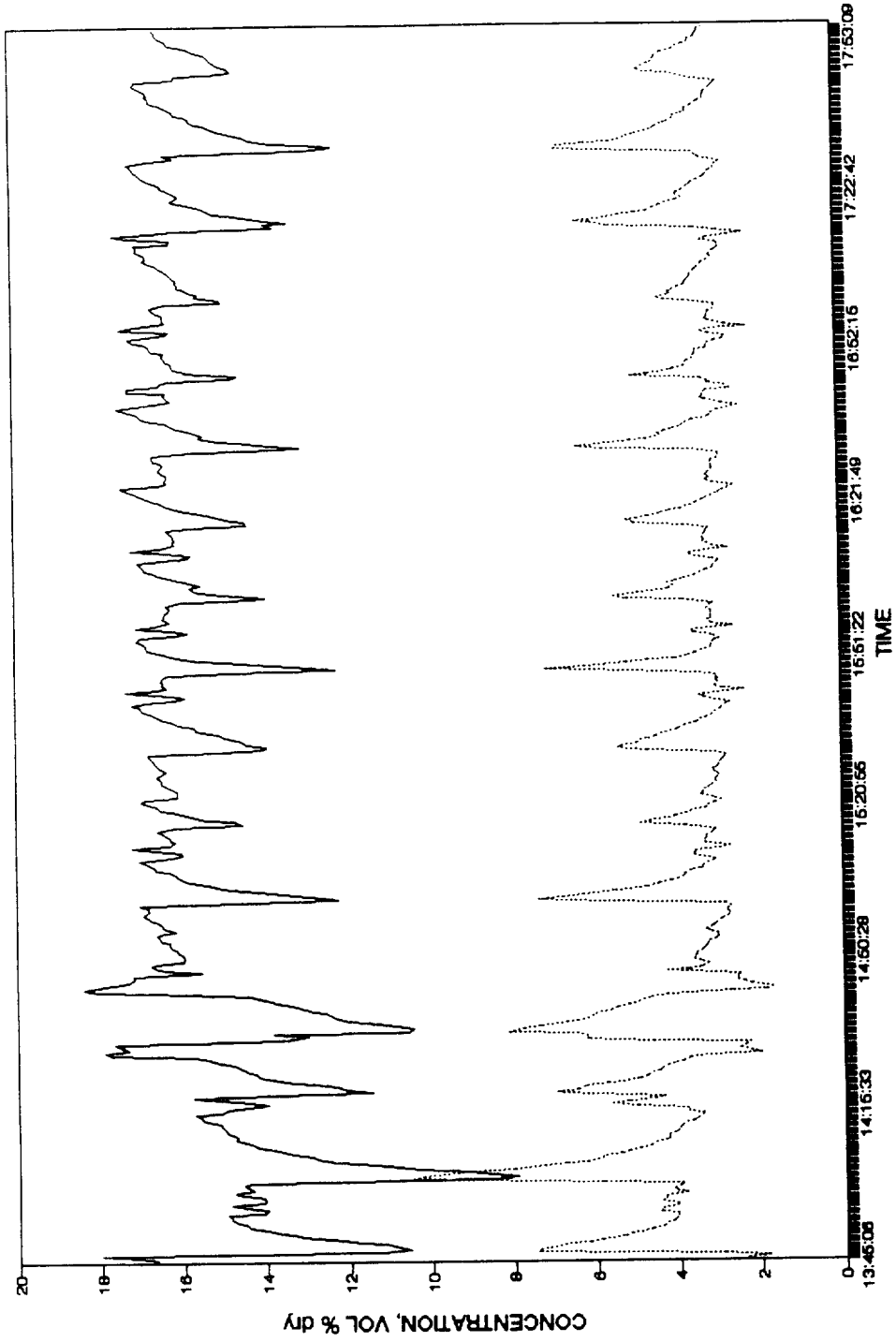
— CARBON MONOXIDE

INCINERATOR TEMPERATURES
RUN 07, 09/26/90



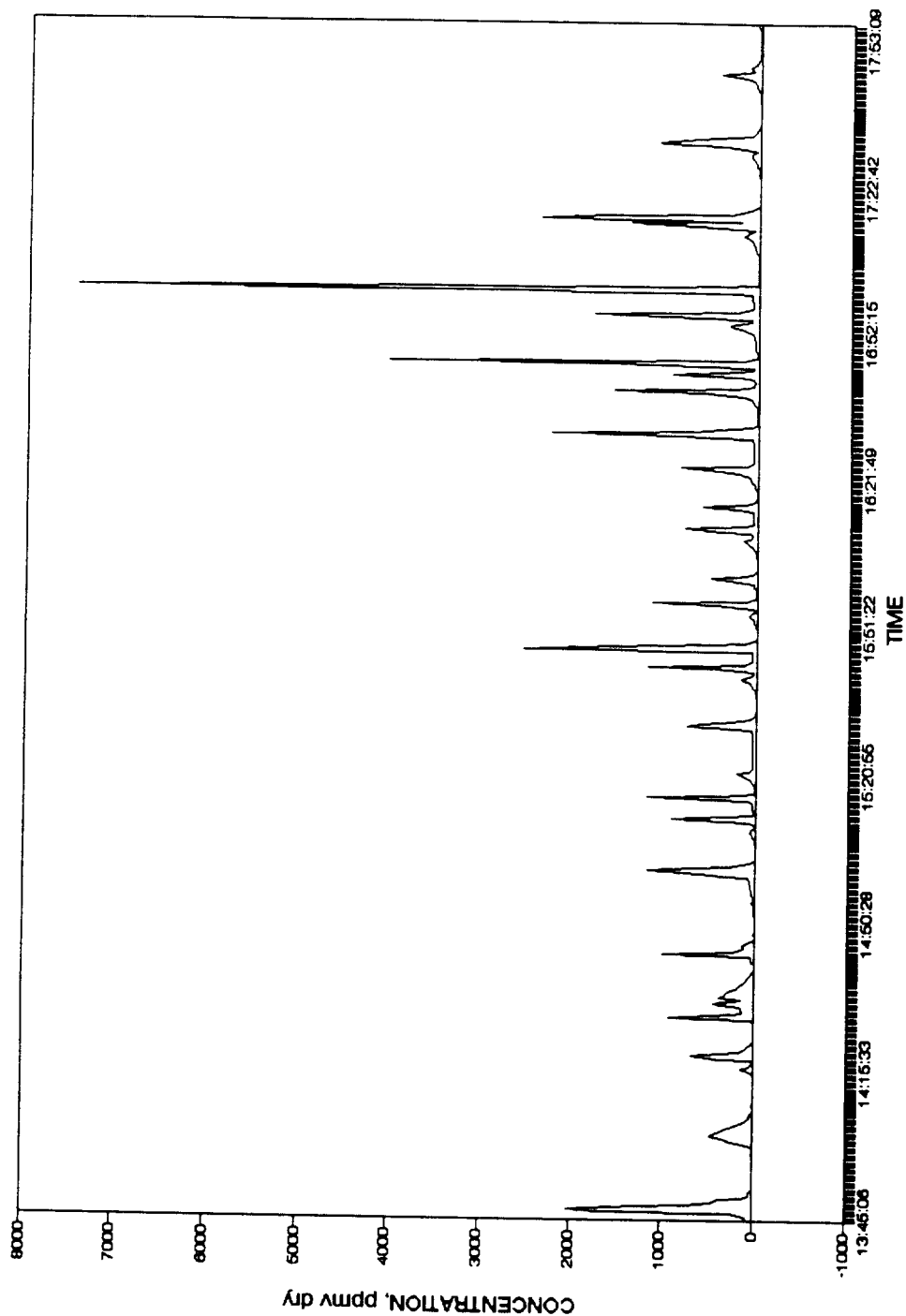
— LOWER CHAMBER ···· UPPER CHAMBER

OXYGEN AND CARBON DIOXIDE CONCENTRATION
RUN 08 09/27/90



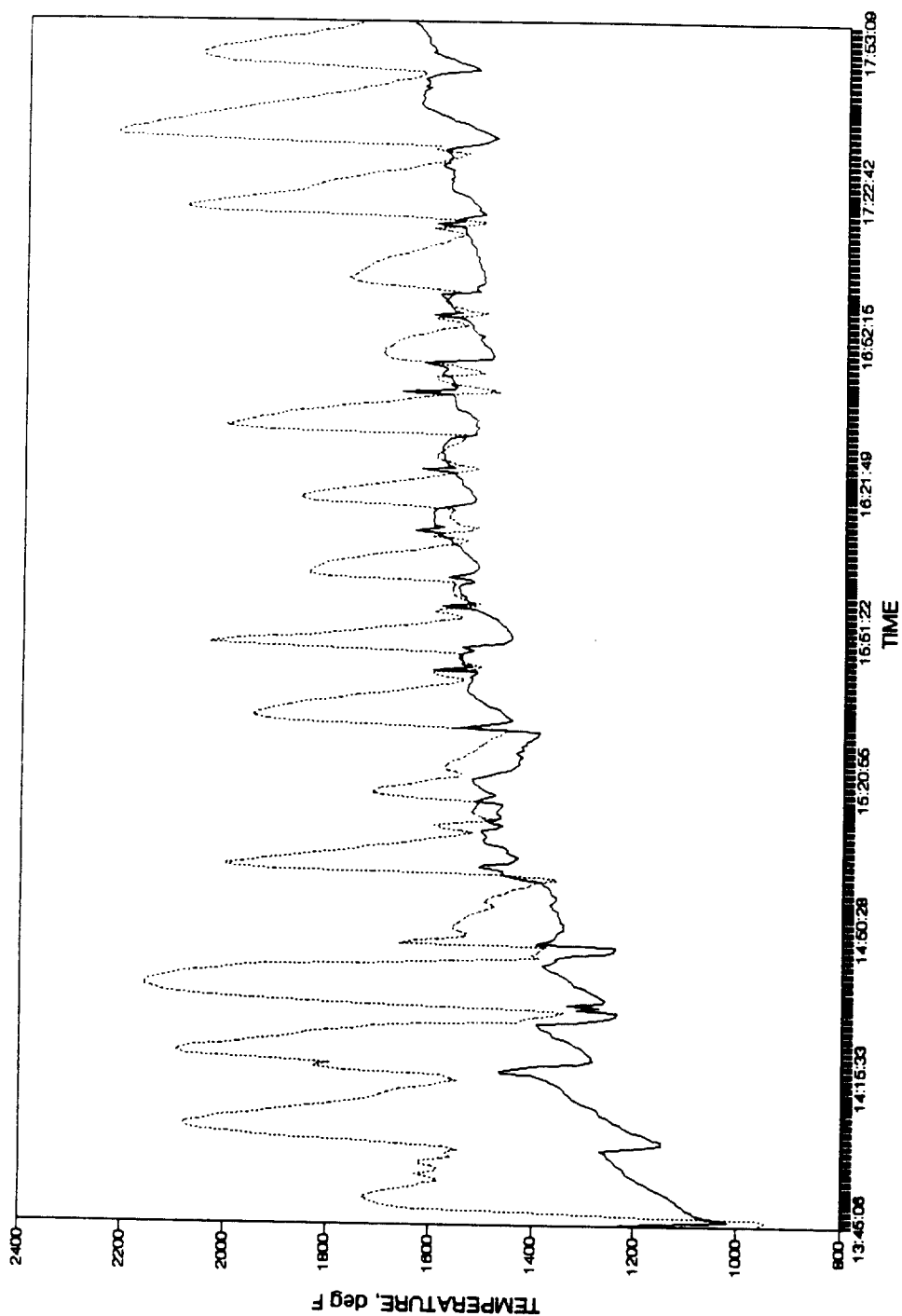
— OXYGEN
..... CARBON DIOXIDE

CARBON MONOXIDE CONCENTRATION
RUN 08 09/27/90



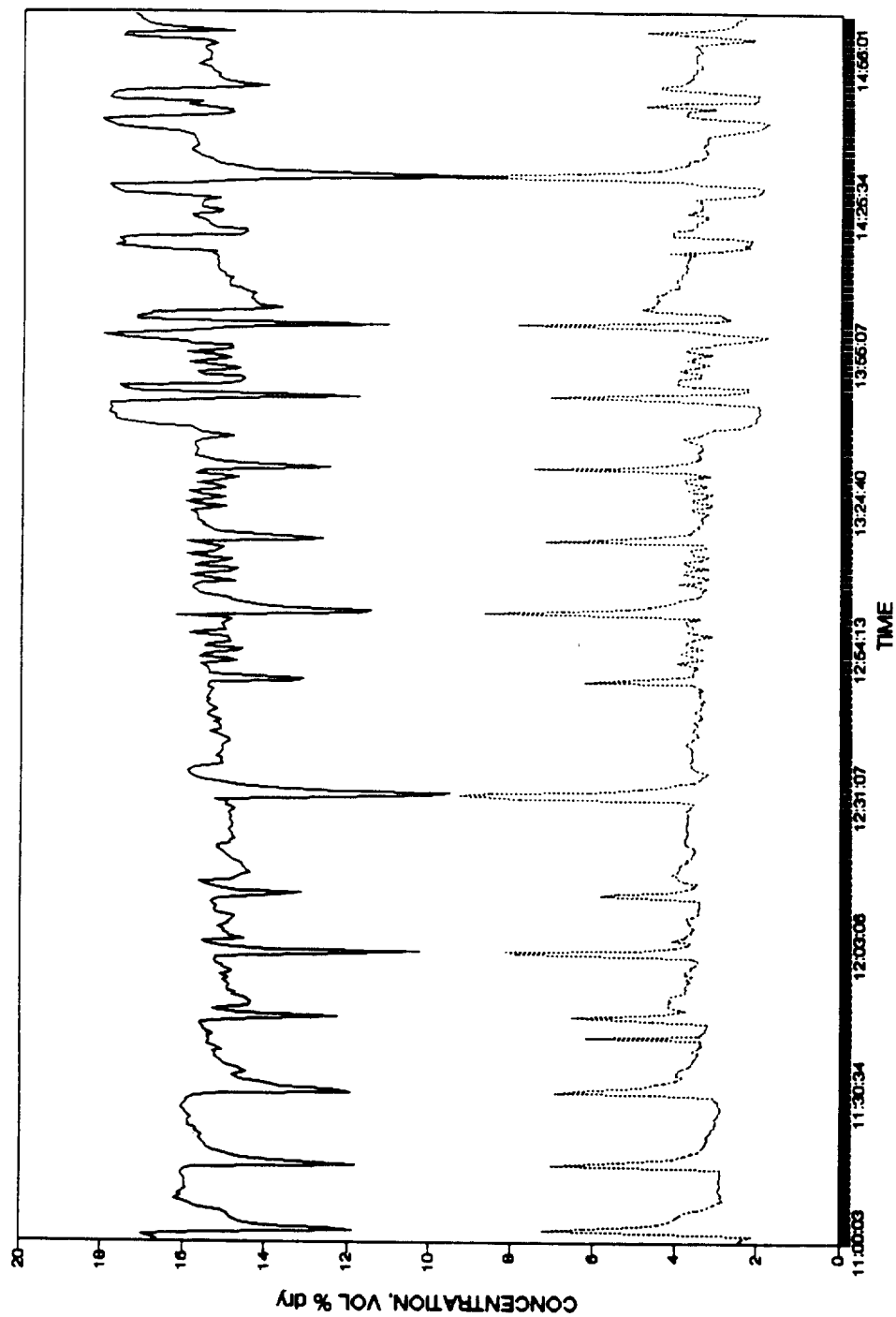
— CARBON MONOXIDE

INCINERATOR TEMPERATURES
RUN 08 09/27/90



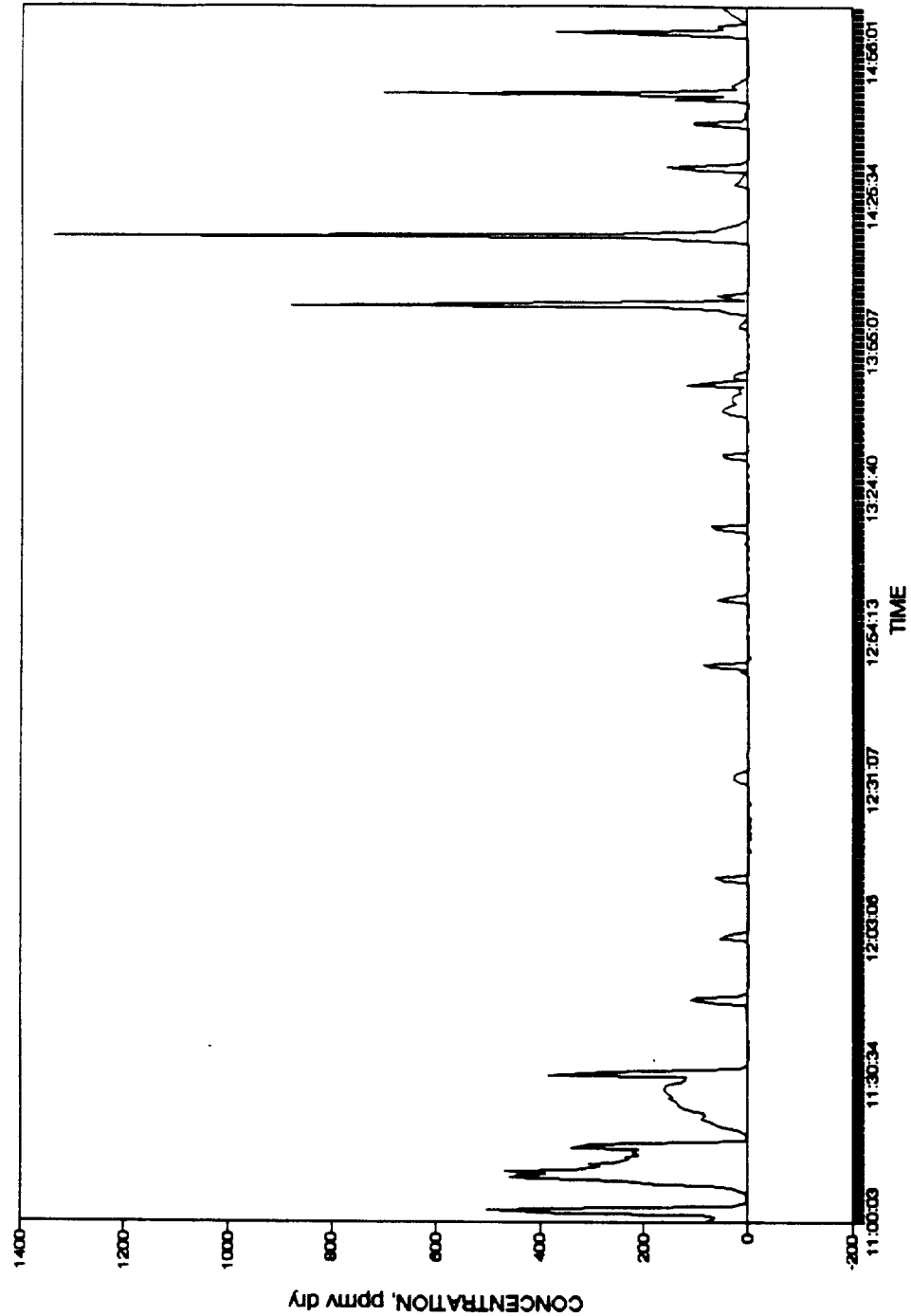
— LOWER CHAMBER UPPER CHAMBER

OXYGEN AND CARBON DIOXIDE CONCENTRATION
RUN 09 09/28/90

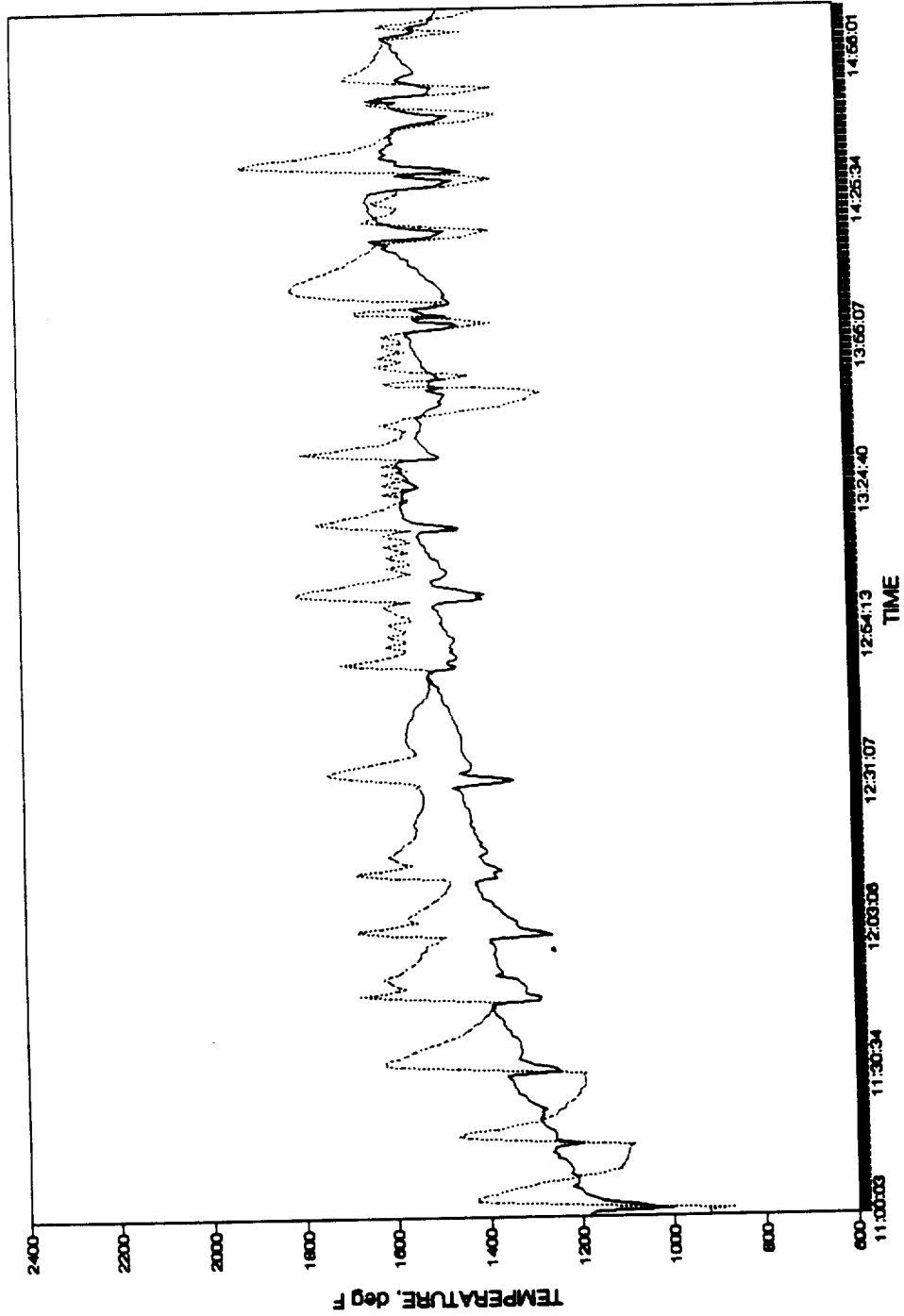


— OXYGEN CARBON DIOXIDE

CARBON MONOXIDE CONCENTRATION
RUN 09 09/28/90

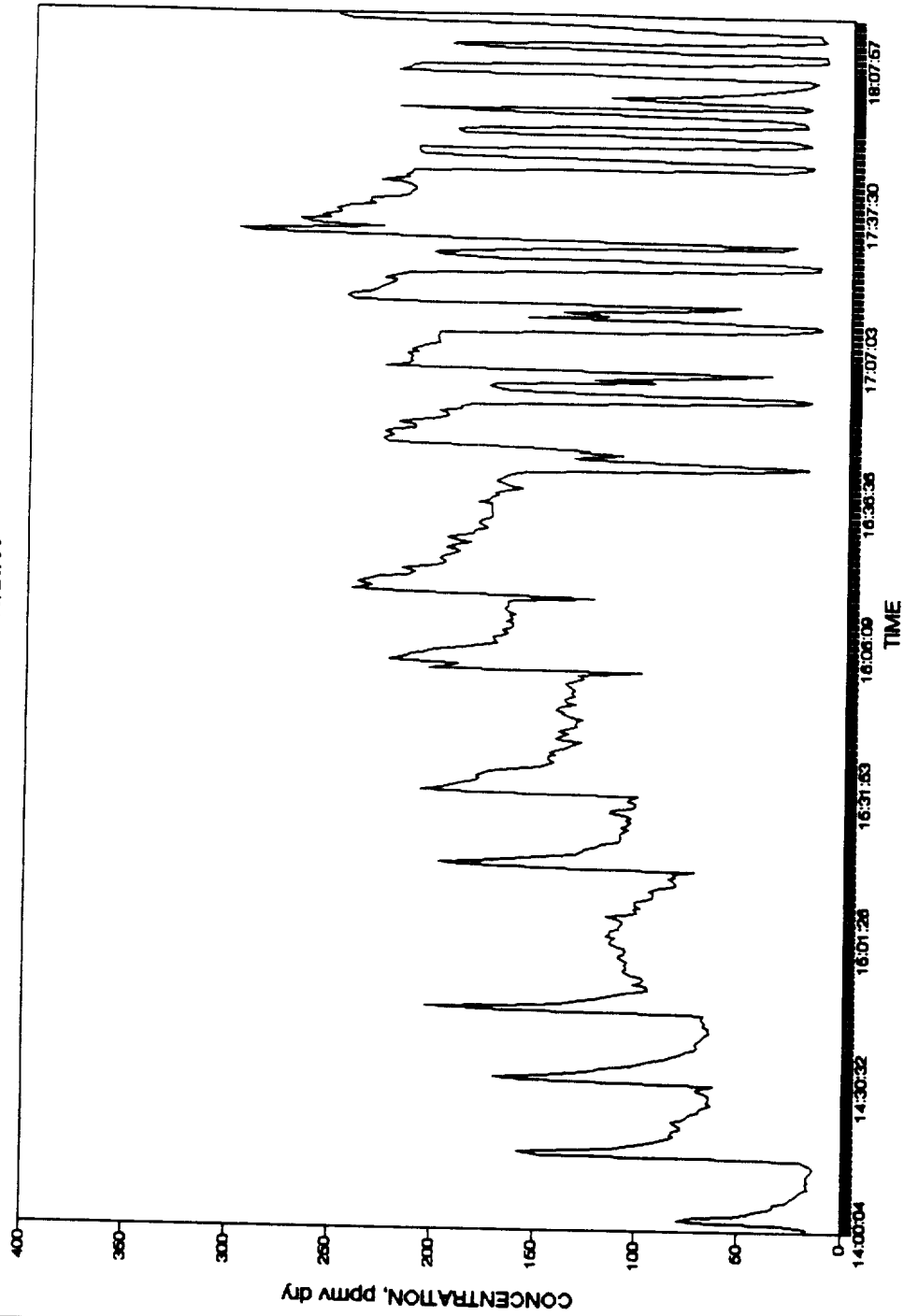


INCINERATOR TEMPERATURES
RUN 09 09/28/90



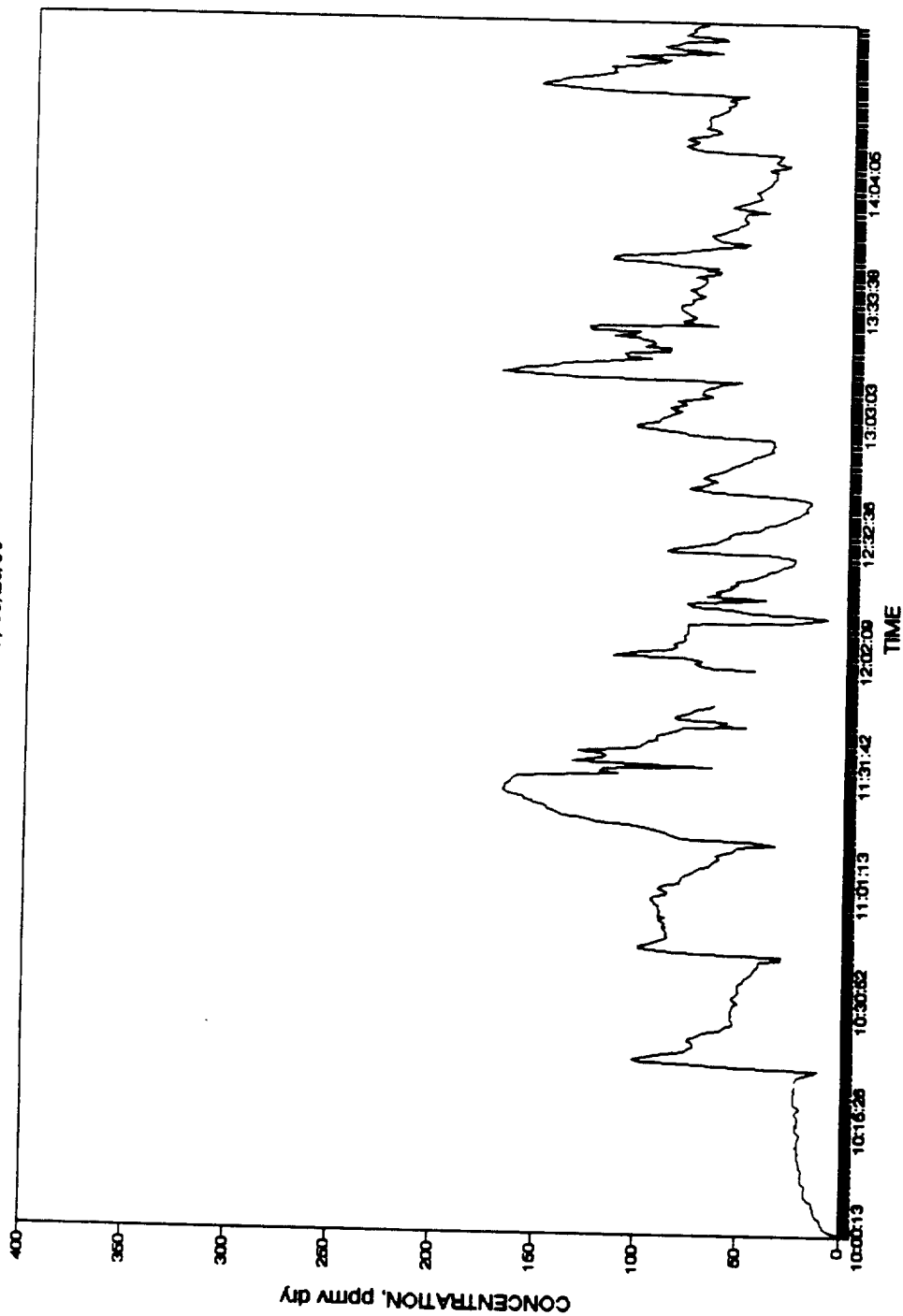
— LOWER CHAMBER UPPER CHAMBER

NITROGEN OXIDES CONCENTRATION
RUN 01 09/20/90



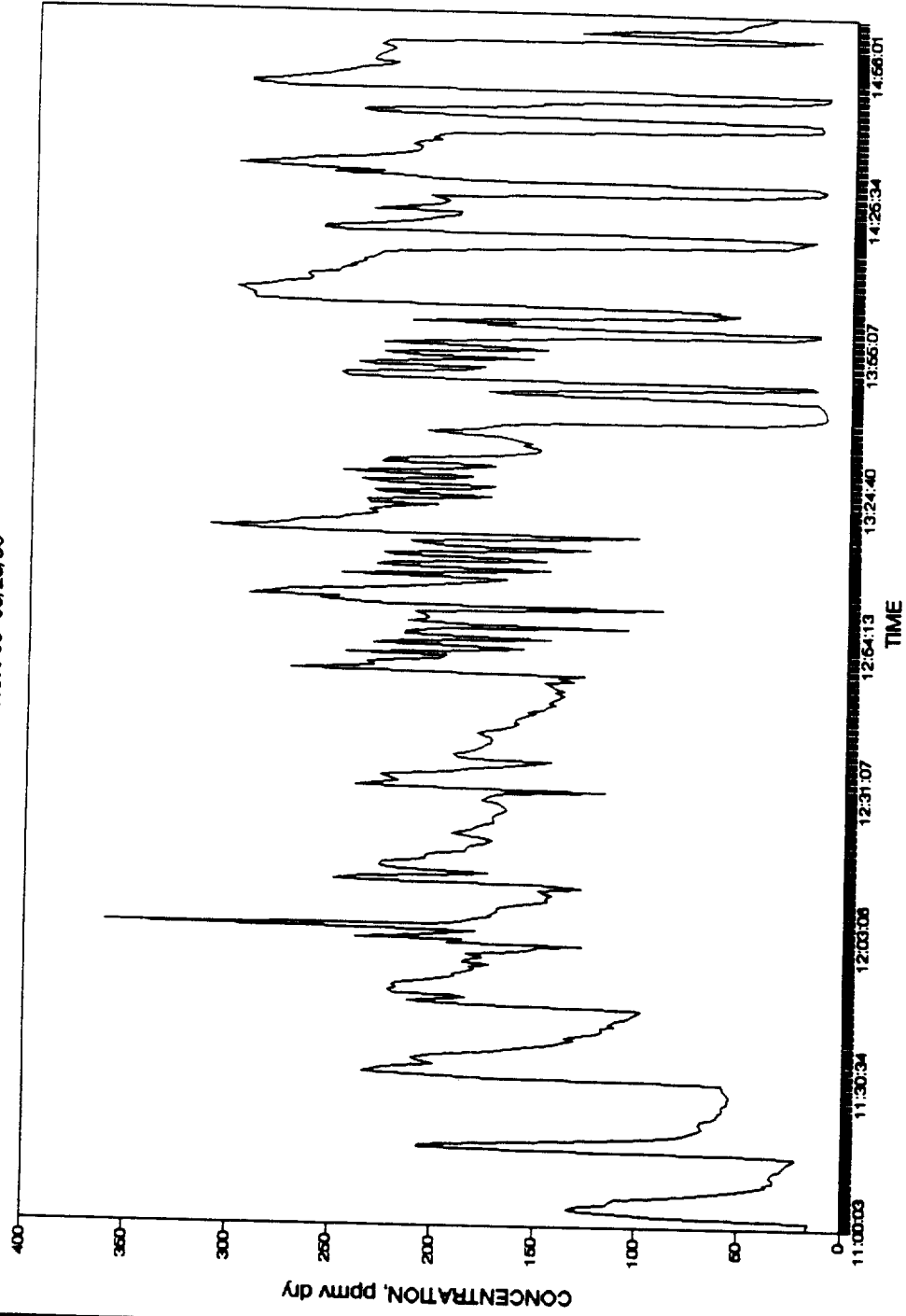
— NITROGEN OXIDES

NITROGEN OXIDES CONCENTRATION
RUN 07, 09/26/90

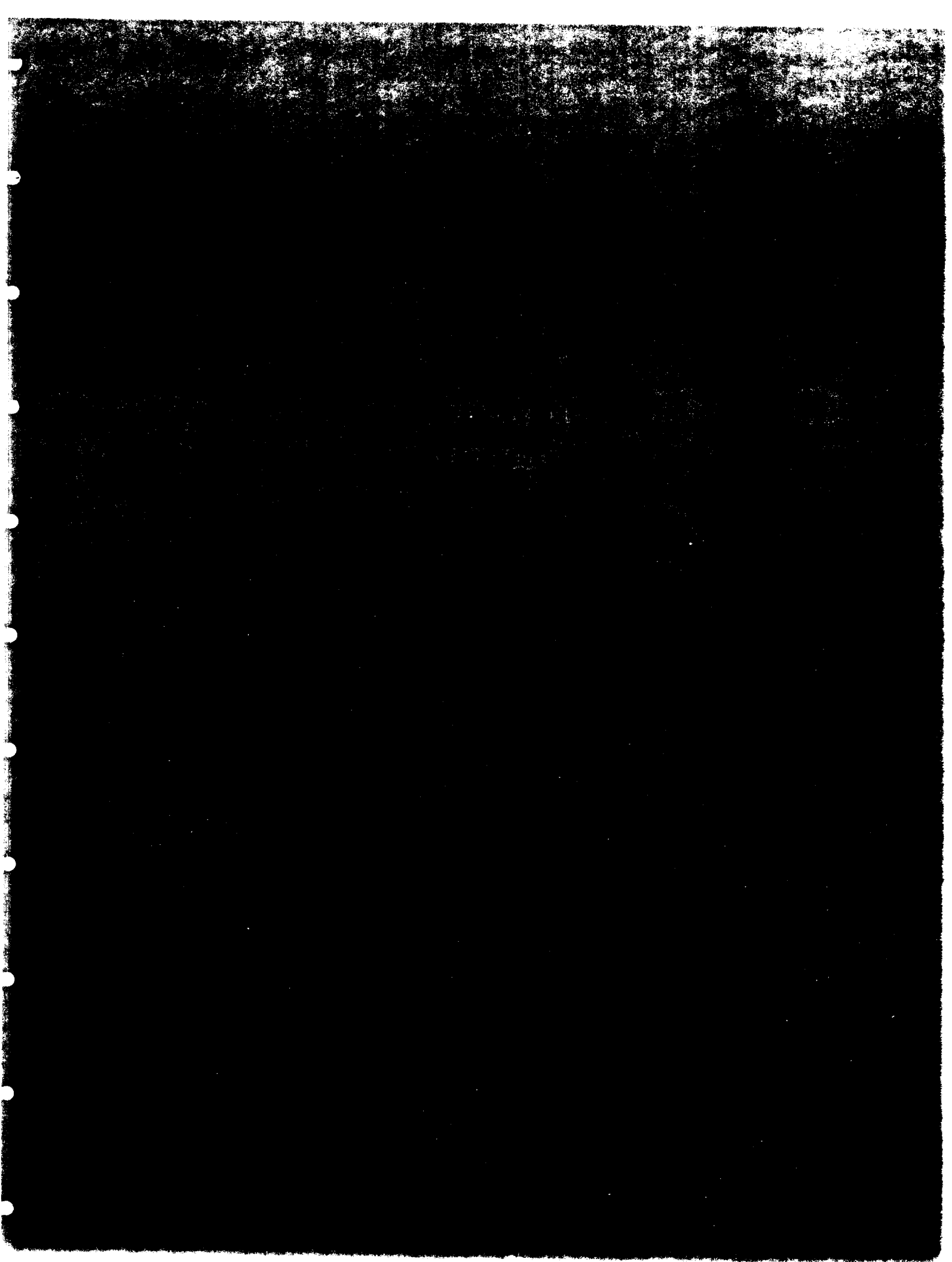


— NITROGEN OXIDES

NITROGEN OXIDES CONCENTRATION
RUN 09 09/28/90



— NITROGEN OXIDES



CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 01 09/20/90

09-20-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:00:04	16.68	2.31	87.00	17.93	0.00		21.27
14:00:34	16.64	2.32	122.70	17.38	0.00		34.70
14:01:04	17.74	1.66	150.03	16.61	0.00		82.13
14:01:34	17.26	2.54	260.67	29.48	0.00		44.54
14:02:04	15.36	3.73	129.28	62.71	0.00		8.09
14:02:34	14.86	4.01	4.76	79.39	0.32		6.61
14:03:04	15.09	3.72	25.43	70.84	0.68		6.14
14:03:34	15.52	3.27	357.89	53.08	0.83		13.66
14:04:04	15.65	3.05	498.50	46.07	1.06		24.50
14:04:34	15.85	2.89	594.55	39.82	1.14		39.18
14:05:04	15.95	2.79	617.62	34.93	1.08		61.89
14:05:34	15.95	2.77	594.20	32.35	1.02		65.66
14:06:04	15.93	2.78	555.62	32.13	0.98		66.41
14:06:34	15.89	2.78	500.91	26.77	0.86		78.96
14:07:04	15.90	2.79	498.38	25.13	0.94		74.45
14:07:34	16.11	2.68	498.24	22.61	0.88		61.12
14:08:04	16.17	2.64	498.44	21.31	0.73		61.74
14:08:34	16.24	2.61	498.46	20.25	0.78		60.36
14:09:04	16.25	2.61	498.48	17.75	0.75		52.78
14:09:34	16.54	2.50	498.39	15.41	0.94		42.06
14:10:04	16.31	2.61	498.43	16.50	0.93		46.94
14:10:34	16.27	2.63	498.44	16.81	0.98		74.86
14:11:04	16.37	2.57	498.35	15.90	1.00		82.89
14:11:34	16.29	2.60	559.87	16.40	0.94		43.41
14:12:03	16.28	2.62	1783.17	16.26	1.04		51.21
14:12:33	16.22	2.63	569.27	15.25	0.86		76.71
14:13:03	16.33	2.57	540.46	14.37	0.96		69.27
14:13:33	16.57	2.49	461.66	13.51	0.99		37.78
14:14:03	16.39	2.55	413.95	14.47	0.89		30.15
14:14:33	16.33	2.59	462.67	16.05	0.91		34.34
14:15:03	16.89	2.26	477.58	19.80	0.95		57.06
14:15:33	15.46	4.24	454.17	74.36	1.52		53.52
14:16:03	13.43	5.31	243.70	146.35	5.70		8.77
14:16:33	14.68	4.20	41.56	157.15	10.02		5.56
14:17:03	15.24	3.52	2.27	131.75	10.59		5.47
14:17:33	15.44	3.31	6.96	111.75	10.23		4.34
14:18:03	15.33	3.31	18.48	101.40	10.06		4.25
14:18:33	15.47	3.22	33.08	93.83	10.23		4.82
14:19:03	15.55	3.18	38.50	91.16	10.68		4.79
14:19:33	15.62	3.11	56.95	83.78	11.07		5.00
14:20:02	15.70	3.08	71.78	81.34	11.03		5.01
14:20:32	15.61	3.12	68.38	83.12	11.06		5.21

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 01 09/20/90

09-20-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:21:02	15.61	3.10	66.71	81.81	11.13		5.09
14:21:32	15.78	3.01	73.47	77.97	11.45		5.58
14:22:02	15.84	2.98	70.65	77.99	11.37		5.49
14:22:32	15.60	3.11	70.53	81.04	11.44		5.15
14:23:02	15.60	3.09	68.53	82.64	11.83		4.86
14:23:32	15.82	2.97	63.93	77.66	12.21		4.85
14:24:02	15.89	2.94	74.60	75.06	12.14		5.76
14:24:32	15.79	2.97	71.96	73.43	12.09		5.00
14:25:02	15.78	2.98	106.37	69.62	11.69		5.75
14:25:32	15.62	3.06	138.27	69.44	11.33		6.17
14:26:02	15.80	2.94	144.28	66.81	11.12		6.31
14:26:32	16.17	2.76	125.94	62.92	10.94		6.80
14:27:02	15.88	2.90	130.13	65.81	11.10		6.62
14:27:32	15.90	2.89	126.78	64.83	11.75		6.35
14:28:02	15.96	2.87	116.82	64.30	12.04		5.92
14:28:32	16.03	2.84	100.68	64.71	11.90		6.10
14:29:02	15.90	2.92	89.91	67.62	11.95		5.23
14:29:32	15.71	3.01	85.72	70.73	12.20		5.25
14:30:02	15.75	2.99	86.88	68.42	12.76		5.08
14:30:32	16.41	2.77	202.15	62.15	12.94		57.44
14:31:02	14.27	4.92	480.53	108.20	13.07		21.87
14:31:31	14.16	4.73	213.27	154.49	19.44		5.72
14:32:01	14.87	3.96	16.51	170.29	25.01		4.24
14:32:31	15.25	3.52	0.00	146.26	26.59		3.34
14:33:01	15.34	3.39	0.00	131.88	27.30		2.99
14:33:31	15.54	3.21	0.06	121.13	27.34		3.35
14:34:01	15.56	3.21	0.59	117.63	26.22		2.99
14:34:31	15.75	3.06	3.10	103.23	25.14		2.71
14:35:01	15.77	3.06	5.65	98.07	24.50		2.93
14:35:31	15.70	3.07	9.68	94.07	24.04		3.56
14:36:01	15.70	3.06	15.03	87.15	24.15		2.97
14:36:31	15.70	3.06	20.36	83.22	24.11		3.18
14:37:01	15.73	3.03	25.15	79.10	23.83		3.34
14:37:31	15.84	2.96	31.43	74.96	23.38		3.65
14:38:01	16.02	2.86	33.23	71.51	22.59		4.18
14:38:31	16.07	2.83	38.45	69.90	21.88		3.75
14:39:13	16.05	2.82	36.36	71.44	21.16		3.72
14:39:43	15.87	2.92	45.58	70.57	20.60		3.69
14:40:13	15.93	2.88	44.99	69.64	20.65		3.74
14:40:58	16.02	2.83	48.77	67.16	20.15		4.10
14:41:28	15.98	2.86	50.96	66.93	19.63		3.85
14:41:58	16.07	2.80	55.10	64.70	19.30		4.18

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 01 09/20/90

09-20-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:42:28	16.04	2.80	53.14	65.39	18.71		3.87
14:42:58	16.07	2.82	53.34	64.88	18.54		3.84
14:43:28	16.07	2.79	46.50	67.35	18.33		3.53
14:43:57	16.00	2.85	43.47	66.77	18.41		3.60
14:44:27	15.95	2.87	45.95	67.63	18.64		3.79
14:44:57	15.94	2.89	41.68	68.93	18.96		3.26
14:45:27	15.93	2.88	39.08	67.56	19.21		3.49
14:45:57	15.68	3.88	194.22	77.94	18.83		13.27
14:46:27	13.41	5.33	212.36	163.79	21.84		3.45
14:46:57	14.53	4.28	36.96	203.20	38.42		2.48
14:47:27	15.48	3.42	0.00	165.02	50.42		2.39
14:47:57	15.57	3.23	0.00	137.77	50.52		2.50
14:48:27	15.62	3.14	0.00	127.98	47.11		2.25
14:48:57	15.78	3.05	0.00	120.79	43.13		2.44
14:49:27	15.81	3.01	0.00	116.05	40.14		2.34
14:49:57	15.91	2.96	0.63	107.89	37.96		2.48
14:50:27	15.94	2.91	3.18	98.58	36.61		2.63
14:50:57	16.01	2.87	4.07	94.89	35.21		2.67
14:51:27	15.99	2.88	4.29	95.27	34.17		2.68
14:51:57	15.79	3.00	3.06	102.22	33.85		2.74
14:52:27	15.85	2.97	2.92	99.05	34.13		2.80
14:52:57	15.88	2.97	3.13	97.48	34.33		3.01
14:53:27	15.79	3.01	3.96	97.87	34.10		2.56
14:53:57	15.81	3.00	3.43	102.99	34.10		2.40
14:54:27	15.72	3.05	1.99	106.57	34.00		2.85
14:54:56	15.66	3.10	2.05	107.00	34.43		2.56
14:55:26	15.59	3.12	3.06	105.37	35.00		2.36
14:55:56	15.65	3.10	2.83	106.80	35.16		2.29
14:56:26	15.75	3.03	1.57	105.30	35.01		2.30
14:56:56	15.90	2.97	1.39	104.96	34.58		2.51
14:57:26	15.72	3.07	0.64	109.55	34.54		2.55
14:57:56	15.68	3.08	1.50	109.11	35.27		2.60
14:58:26	15.70	3.07	1.68	107.39	35.57		2.55
14:58:56	15.73	3.05	2.00	105.50	35.62		3.04
14:59:26	15.65	3.09	1.88	106.73	35.71		2.42
14:59:56	15.64	3.10	2.19	109.38	35.93		2.31
15:00:26	15.57	3.16	0.94	114.37	36.11		2.24
15:00:56	15.61	3.12	0.79	113.26	36.61		2.39
15:01:26	15.67	3.08	0.00	111.60	36.49		2.28
15:01:56	15.57	3.15	0.90	115.87	36.41		2.06
15:02:26	15.62	3.07	0.00	113.84	36.69		2.04
15:02:56	15.69	3.01	0.00	113.49	36.78		1.90

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 01 09/20/90

09-20-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
15:03:26	15.83	2.95	0.00	109.07	36.46		2.28
15:03:56	15.79	2.95	0.00	109.27	35.48		2.26
15:04:25	15.87	2.91	0.00	108.20	35.05		2.11
15:04:55	15.96	2.86	0.00	107.56	34.58		2.50
15:05:25	15.94	2.91	0.00	109.51	34.03		1.97
15:05:55	15.69	3.00	0.00	115.44	34.36		1.91
15:06:25	15.78	2.94	0.00	106.16	35.09		1.80
15:06:55	15.89	2.89	0.00	101.12	34.64		1.77
15:07:25	15.88	2.89	0.85	102.13	33.70		1.69
15:07:55	15.88	2.89	0.92	98.72	33.12		1.85
15:08:25	15.86	2.92	0.74	101.42	32.95		2.37
15:08:55	15.80	2.93	0.09	101.56	33.15		2.47
15:09:25	15.77	2.93	1.11	99.29	33.17		1.97
15:09:55	15.80	2.94	2.56	93.59	32.97		1.77
15:10:25	15.77	2.93	3.22	92.21	32.31		1.72
15:10:55	15.80	2.91	2.80	92.73	31.56		1.68
15:11:25	15.79	2.93	2.42	94.69	31.00		1.59
15:11:55	15.79	2.91	2.90	89.76	30.82		1.66
15:12:25	15.92	2.81	4.36	83.22	30.23		3.68
15:12:55	16.11	2.73	3.48	81.63	29.42		3.66
15:13:25	16.07	2.78	3.29	83.64	28.56		3.93
15:13:55	15.94	2.78	3.06	85.61	28.98		3.65
15:14:25	15.99	2.85	4.03	82.30	28.99		3.49
15:14:54	15.87	2.84	5.65	83.39	28.99		3.64
15:15:24	15.91	2.81	9.39	72.62	28.68		3.97
15:15:54	14.81	5.70	87.55	125.24	33.21		5.58
15:16:24	13.30	4.81	121.12	186.57	60.52		3.71
15:16:54	14.54	3.82	12.41	197.78	58.79		3.18
15:17:24	15.33	3.36	0.00	179.71	54.45		3.19
15:17:54	15.61	3.17	0.00	156.72	47.63		3.65
15:18:24	15.81	3.04	0.00	141.17	42.25		3.59
15:18:54	15.87	3.00	0.00	131.91	39.23		3.59
15:19:24	15.82	2.97	0.00	127.60	37.91		3.50
15:19:54	15.73	3.07	0.00	126.96	36.99		3.79
15:20:24	15.64	3.09	0.00	121.94	37.05		3.35
15:20:54	15.69	3.00	0.00	117.99	36.52		3.35
15:21:24	15.93	2.89	0.00	110.01	34.86		3.92
15:21:54	15.86	2.92	0.00	109.37	33.83		3.49
15:22:24	15.83	2.98	0.00	108.84	33.11		3.84
15:22:54	15.75	3.00	0.00	109.04	32.97		3.55
15:23:24	15.66	3.00	0.00	108.25	33.21		3.50
15:23:54	15.91	2.85	0.00	104.79	32.78		3.22

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 01 09/20/90

09-20-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
15:24:23	15.80	3.01	0.00	108.75	31.63		3.34
15:24:53	15.68	2.99	0.00	106.66	32.37		3.45
15:25:23	15.95	2.87	0.00	104.54	31.65		3.76
15:25:53	15.82	2.95	0.00	106.29	31.08		3.49
15:26:23	15.81	2.91	0.00	104.11	31.23		3.46
15:26:53	15.86	2.93	0.00	106.85	30.59		3.66
15:27:23	15.56	3.15	0.00	115.17	31.42		3.31
15:27:53	15.55	3.02	0.00	113.82	33.11		3.18
15:28:23	15.93	2.80	0.00	103.88	31.88		3.26
15:28:53	16.03	2.79	0.00	101.63	30.57		3.70
15:29:23	16.05	2.83	0.00	101.24	30.15		3.76
15:29:53	15.85	2.91	0.00	105.94	30.56		3.60
15:30:23	15.90	2.77	0.00	104.10	31.10		3.29
15:30:53	15.58	4.66	64.60	100.84	30.57		6.88
15:31:23	12.65	6.00	211.97	180.31	75.40		7.91
15:31:53	14.21	3.95	83.29	207.01	110.00		3.20
15:32:23	15.12	3.44	0.00	196.29	88.57		3.98
15:32:53	15.10	3.43	0.00	191.64	74.05		3.46
15:33:23	15.22	3.28	0.00	188.18	65.06		3.68
15:33:53	15.49	3.18	0.00	180.48	55.72		5.47
15:34:22	15.37	3.28	0.00	178.67	50.86		4.37
15:34:52	15.21	3.35	0.00	180.71	49.63		4.08
15:35:22	15.29	3.25	0.00	176.65	48.29		4.12
15:35:52	15.35	3.26	0.00	173.49	46.60		4.13
15:36:22	15.48	3.08	0.00	162.39	45.54		4.35
15:36:52	15.78	2.95	0.00	149.08	42.70		4.25
15:37:22	15.79	3.03	0.00	145.24	41.10		4.64
15:37:52	15.70	2.99	0.00	142.17	41.60		4.19
15:38:22	15.67	3.04	0.00	144.81	41.05		4.37
15:38:52	15.70	3.00	0.00	145.20	41.35		4.12
15:39:22	15.81	2.97	0.00	141.36	41.05		3.96
15:39:52	15.62	3.04	0.00	143.89	41.98		4.05
15:40:22	15.73	2.98	0.00	138.39	41.80		4.16
15:40:58	15.82	2.93	0.00	135.86	41.64		4.23
15:44:46	15.79	2.92	0.00	133.96	44.03		4.14
15:45:30	15.93	2.92	0.00	129.12	42.59		4.35
15:46:00	15.62	3.09	0.00	136.84	43.97		4.38
15:46:42	15.53	3.11	0.00	141.23	45.12		4.34
15:47:12	15.63	2.99	0.00	136.54	44.32		4.38
15:47:41	15.70	3.05	0.00	134.83	43.05		4.48
15:48:11	15.65	3.03	0.00	139.93	43.33		4.55
15:48:41	15.70	3.03	0.00	133.14	42.82		5.28

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 01 09/20/90

09-20-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
15:49:11	15.75	3.00	0.00	130.84	42.06		4.38
15:49:41	15.75	2.99	0.00	131.85	42.09		5.48
15:50:11	15.86	2.94	0.00	130.61	41.25		4.45
15:50:41	15.94	2.89	0.00	128.22	40.84	154.71	4.48
15:51:11	15.97	2.92	0.00	133.47	40.31	136.52	4.46
15:51:41	15.90	2.93	0.00	138.61	40.59	131.95	4.44
15:52:11	15.90	3.01	0.00	137.04	40.44	124.51	5.09
15:52:41	15.65	3.10	0.00	141.24	41.51	127.89	4.58
15:53:11	15.65	3.08	0.00	139.41	42.30	143.40	4.28
15:53:41	15.84	2.97	0.00	131.73	41.78	313.90	4.75
15:54:11	15.69	3.05	0.00	135.47	40.84	431.83	4.52
15:54:41	15.66	3.02	0.00	137.04	40.96	494.46	4.26
15:55:11	15.78	2.96	0.00	134.55	39.87	519.06	4.18
15:55:41	15.74	3.02	0.00	131.96	39.15	553.24	4.14
15:56:11	15.62	3.07	0.00	133.41	39.78	579.25	4.31
15:56:40	15.59	3.06	0.00	132.09	39.66	632.31	4.19
15:57:10	15.69	3.02	0.00	133.31	39.38	681.42	4.09
15:57:40	15.56	3.11	0.00	135.61	39.51	686.28	4.23
15:58:10	15.57	3.08	0.00	136.18	40.30	706.87	3.99
15:58:40	15.59	3.06	0.00	133.39	40.44	704.85	3.90
15:59:10	15.66	3.02	0.00	128.07	39.79	723.98	3.98
15:59:40	15.65	3.05	0.00	129.03	39.24	739.88	4.71
16:00:10	15.61	3.07	0.00	130.76	39.44	741.33	4.02
16:00:40	15.97	3.92	11.01	99.50	38.76	742.38	4.69
16:01:10	11.29	8.52	66.31	203.20	87.03	758.57	4.01
16:01:40	10.84	6.97	59.51	197.92	231.79	753.91	3.21
16:02:10	13.20	4.78	71.05	189.80	171.37	743.45	3.56
16:02:40	14.52	3.97	19.12	215.03	99.62	727.49	3.77
16:03:10	14.75	3.81	0.00	223.15	71.67	735.95	4.00
16:03:40	15.05	3.60	0.00	214.86	59.01	734.56	4.12
16:04:10	15.10	3.52	0.00	212.33	52.22	1020.61	4.41
16:04:40	15.24	3.40	0.00	207.30	49.46	887.25	4.34
16:05:10	15.31	3.35	0.00	201.63	47.91	691.46	4.69
16:05:39	15.50	3.19	0.00	188.01	46.24	542.23	4.50
16:06:09	15.66	3.12	0.00	174.94	44.31	447.44	4.59
16:06:39	15.66	3.13	0.00	170.85	43.37	382.76	10.88
16:07:09	15.63	3.22	0.00	171.21	42.87	355.71	4.57
16:07:39	15.42	3.27	0.00	173.03	44.38	325.29	4.63
16:08:09	15.41	3.34	0.00	168.25	44.76	298.27	4.50
16:08:39	15.41	3.25	0.00	165.14	45.45	180.75	4.55
16:09:09	15.46	3.31	0.00	167.95	44.34	172.73	4.74
16:09:39	15.36	3.32	0.00	164.29	45.37	212.94	4.62

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 01 09/20/90

09-20-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
16:10:09	15.37	3.32	0.00	163.06	45.21	193.61	4.43
16:10:39	15.38	3.29	0.00	162.92	45.10	192.65	4.51
16:11:09	15.30	3.34	0.00	166.70	44.95	181.89	4.50
16:11:39	15.35	3.30	0.00	163.03	44.86	175.44	4.60
16:12:09	15.31	3.35	0.00	164.47	44.83	149.23	5.72
16:12:39	15.22	3.37	0.00	161.71	45.66	140.88	4.59
16:13:09	15.14	3.44	0.00	165.20	45.94	124.91	4.57
16:13:39	15.11	3.42	0.00	167.46	45.90	115.69	4.27
16:14:09	15.15	3.40	0.00	165.51	45.34	104.48	4.36
16:14:38	15.14	3.42	0.00	165.12	44.70	103.84	4.37
16:15:08	15.12	3.43	0.00	165.09	44.65	92.45	4.18
16:15:38	15.11	3.39	0.00	160.80	44.11	88.37	4.52
16:16:08	15.44	5.64	4.58	122.96	44.92	82.75	4.07
16:16:38	11.13	7.60	38.41	186.95	112.74	91.36	3.83
16:17:08	12.42	5.23	40.66	215.64	127.00	91.33	3.54
16:17:38	13.96	4.04	4.87	241.98	94.36	73.93	4.04
16:18:08	14.74	3.72	0.00	232.37	75.17	80.35	4.44
16:18:38	14.76	3.75	0.00	236.50	66.51	70.98	4.27
16:19:08	14.74	3.72	0.00	238.93	61.40	73.63	4.46
16:19:38	14.86	3.62	0.00	232.37	56.83	68.56	4.78
16:20:08	14.94	3.55	0.00	228.39	53.31	73.51	4.48
16:20:38	15.21	3.36	0.00	215.12	50.46	59.22	4.60
16:21:08	15.36	3.32	0.00	211.22	48.43	66.72	4.55
16:21:38	15.38	3.41	0.00	213.81	48.04	57.92	4.53
16:22:08	15.07	3.47	0.00	217.47	49.34	58.96	4.53
16:22:38	15.40	3.21	0.00	200.38	48.82	56.02	4.51
16:23:08	15.58	3.17	0.00	196.30	47.80	56.81	4.53
16:23:37	15.60	3.20	0.00	196.04	47.80	49.22	4.59
16:24:07	15.54	3.21	0.00	198.33	47.43	56.20	4.81
16:24:37	15.53	3.27	0.00	197.53	46.93	51.18	5.08
16:25:07	15.47	3.21	0.00	194.30	46.96	56.61	4.79
16:25:37	15.61	3.16	0.00	188.84	46.37	53.04	4.87
16:26:07	15.50	3.31	0.00	191.40	46.60	47.73	5.30
16:26:37	15.24	3.45	0.00	195.89	48.46	52.63	4.84
16:27:07	15.18	3.28	0.00	189.93	49.59	47.16	4.75
16:27:37	15.56	3.19	0.00	183.81	47.52	48.85	4.98
16:28:07	15.48	3.30	0.00	188.85	47.18	44.45	4.70
16:28:37	15.28	3.34	0.00	195.22	48.92	47.56	4.64
16:29:07	15.35	3.31	0.00	188.93	49.07	43.59	4.58
16:29:37	15.44	3.23	0.00	182.42	48.57	48.45	4.50
16:30:07	15.43	3.22	0.00	182.08	47.77	48.18	4.77
16:30:37	15.56	3.19	0.00	175.78	46.97	48.31	4.75

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 01 09/20/90

09-20-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
16:31:07	15.48	3.27	0.00	178.72	46.51	40.57	4.59
16:31:37	15.36	3.22	0.00	180.42	47.29	48.52	4.53
16:32:07	15.51	3.20	0.00	179.68	46.41	43.32	4.50
16:32:36	15.63	3.10	0.00	174.30	45.80	47.76	4.42
16:33:06	15.64	3.14	0.00	173.40	45.14	43.67	4.36
16:33:36	15.65	3.13	0.00	173.70	44.99	44.58	4.64
16:34:06	15.62	3.13	0.00	174.12	44.88	39.04	4.50
16:34:36	15.65	3.13	0.00	174.12	44.72	41.62	4.45
16:35:06	15.63	3.12	0.00	174.20	44.60	43.00	4.29
16:35:36	15.67	3.15	0.00	174.28	44.22	38.85	4.34
16:36:06	15.50	3.21	0.00	180.93	45.02	42.63	4.40
16:36:36	15.62	3.15	0.00	175.05	44.88	41.78	4.58
16:37:06	15.60	3.14	0.00	173.79	44.47	42.98	4.48
16:37:36	15.67	3.10	0.00	170.62	43.71	42.31	4.65
16:38:06	15.62	3.19	0.00	172.05	43.26	44.09	4.57
16:38:36	15.60	3.06	0.00	163.02	43.35	41.99	4.58
16:39:06	15.77	3.03	0.00	158.63	41.86	45.72	4.60
16:39:36	15.70	3.18	0.00	165.26	41.77	35.39	4.40
16:40:06	15.46	3.25	0.00	170.01	43.64	45.07	4.49
16:40:36	15.40	3.28	0.00	171.68	44.41	40.21	4.48
16:41:06	15.47	3.12	0.00	169.50	44.77	40.25	4.58
16:41:35	15.70	3.05	0.00	166.20	43.92	40.12	4.44
16:42:05	15.75	3.04	0.00	161.16	42.66	40.26	4.41
16:42:35	15.76	3.02	0.00	155.74	42.21	39.23	4.45
16:43:05	16.41	2.02	0.89	48.28	38.92	37.42	4.35
16:43:35	17.82	1.63	5.61	18.90	25.92	32.80	4.57
16:44:05	18.17	1.68	1.71	19.03	17.71	33.92	4.47
16:44:35	17.07	2.97	7.46	83.68	23.48	41.17	4.89
16:45:05	15.97	3.10	0.00	129.51	45.33	37.10	4.51
16:45:35	15.75	3.05	0.00	133.62	49.25	42.31	4.47
16:46:05	14.92	5.05	22.06	110.28	48.89	41.18	4.59
16:46:35	15.42	4.06	32.73	131.34	62.41	42.28	4.13
16:47:05	16.19	3.35	0.00	125.89	52.52	36.03	4.21
16:47:35	14.96	4.40	4.99	159.69	49.21	37.96	4.23
16:48:05	13.88	4.56	28.44	205.77	63.40	38.01	4.04
16:48:35	14.08	4.35	11.94	224.14	64.06	47.59	4.63
16:49:05	14.36	4.04	3.76	227.13	60.38	45.95	4.73
16:49:35	14.83	3.74	0.00	223.72	55.38	48.46	4.91
16:50:05	15.04	3.58	0.00	222.48	52.03	42.07	4.72
16:50:35	15.08	3.58	0.00	226.64	51.23	46.88	4.87
16:51:05	15.13	3.48	0.00	221.82	52.00	41.97	5.02
16:51:35	15.35	3.35	0.00	212.07	50.82	49.00	4.93

CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 01 09/20/90

09-20-90 TIME	O2 %V	CO2 %V	CO ppmV	NOx ppmV	SO2 ppmV	HCl ppmVw	THC ppmCw
16:52:05	15.35	3.41	0.00	211.99	49.60	37.48	5.03
16:52:35	15.08	3.53	0.00	219.66	50.78	42.81	4.68
16:53:04	15.17	3.42	0.00	215.95	51.54	36.22	4.60
16:53:34	15.42	3.26	0.00	199.41	49.55	40.44	4.58
16:54:04	15.47	3.27	0.00	194.91	47.08	40.14	4.97
16:54:34	15.43	3.31	0.00	195.73	46.11	41.10	4.79
16:55:04	15.28	3.31	0.00	199.66	46.32	42.03	4.75
16:55:34	15.57	3.18	0.00	188.52	44.79	40.76	4.90
16:56:04	15.46	3.27	0.00	189.64	43.30	46.19	4.86
16:56:34	15.48	3.20	0.00	184.19	43.32	35.91	5.10
16:57:04	16.53	2.36	0.00	95.62	41.52	38.04	5.14
16:57:34	17.77	1.84	1.71	23.12	32.17	35.92	5.17
16:58:04	18.11	1.68	1.02	18.11	22.95	32.96	5.04
16:58:34	17.92	2.09	2.43	28.85	19.31	30.55	5.07
16:59:04	16.14	3.06	0.00	124.00	33.30	40.70	5.42
16:59:34	15.72	3.12	0.00	165.24	50.81	36.83	5.31
17:00:04	15.72	3.09	0.00	171.53	48.39	43.94	5.18
17:00:34	15.64	3.15	0.00	175.39	44.23	39.17	5.04
17:01:04	15.62	3.09	0.00	172.36	42.16	42.65	4.78
17:01:33	16.31	3.52	5.66	94.33	39.33	36.35	4.72
17:02:03	15.44	4.15	10.58	124.91	48.86	42.13	4.18
17:02:33	16.72	2.91	0.00	87.05	52.94	33.00	4.33
17:03:03	17.27	2.44	0.00	53.84	44.79	37.95	4.45
17:03:33	17.52	2.46	7.74	38.35	37.07	32.41	4.99
17:04:03	15.52	3.87	10.35	161.12	41.41	36.11	5.33
17:04:33	14.81	3.74	0.00	226.40	66.22	47.39	5.22
17:05:03	15.13	3.54	0.00	216.05	61.94	42.89	4.81
17:05:33	15.16	3.52	0.00	213.24	57.92	42.50	5.03
17:06:03	15.19	3.48	0.00	214.33	55.94	40.61	4.70
17:06:33	15.21	3.48	0.00	213.51	55.22	33.88	4.53
17:07:03	15.06	3.50	0.00	215.88	56.36	38.67	4.50
17:07:33	15.25	3.43	0.00	210.46	54.39	39.06	4.51
17:08:03	15.15	3.46	0.00	213.94	55.24	35.06	5.09
17:08:33	15.31	3.35	0.00	208.18	53.92	42.64	4.98
17:09:03	15.37	3.34	0.00	206.75	53.62	42.55	4.68
17:09:33	15.41	3.27	0.00	200.34	52.97	43.63	4.44
17:10:03	15.40	3.33	0.00	201.23	52.29	36.42	4.75
17:10:33	15.41	3.29	0.00	200.75	52.57	43.74	4.77
17:11:03	15.37	3.33	0.00	201.35	52.31	39.38	4.69
17:11:33	15.31	3.36	0.00	200.06	51.63	45.36	4.81
17:12:02	16.14	2.54	0.00	119.79	47.03	33.93	5.11
17:12:32	17.60	1.92	2.42	33.54	33.14	36.69	4.85

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 01 09/20/90

09-20-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
17:13:02	17.86	1.86	2.13	15.14	25.33	29.29	4.41
17:13:32	17.98	1.81	2.15	13.34	22.72	34.58	4.72
17:14:02	18.07	1.96	3.28	17.21	21.25	33.59	4.35
17:14:32	16.51	2.96	2.10	95.74	49.44	32.50	4.72
17:15:02	15.77	3.20	0.00	157.40	65.20	39.95	4.59
17:15:32	15.79	4.19	9.76	118.11	55.52	38.94	4.33
17:16:02	14.45	4.39	105.78	139.86	81.09	39.02	7.33
17:16:32	16.39	3.02	18.53	111.11	69.48	36.11	4.35
17:17:02	17.11	2.42	0.00	68.85	61.13	38.73	4.39
17:17:32	17.42	2.55	6.17	53.69	47.21	28.19	4.82
17:18:02	15.61	3.55	4.70	201.21	70.70	38.09	4.65
17:18:32	15.14	3.58	0.00	241.87	70.42	36.79	4.49
17:19:02	15.08	3.57	0.00	246.09	65.07	42.30	4.59
17:19:32	15.05	3.56	0.00	243.31	62.31	34.16	4.75
17:20:02	15.16	3.47	0.00	235.61	59.54	46.22	4.33
17:20:32	15.24	3.41	0.00	230.04	56.78	38.08	4.60
17:21:02	15.23	3.40	0.00	228.85	55.34	37.89	4.47
17:21:32	15.30	3.39	0.00	226.83	53.67	33.67	4.29
17:22:01	15.35	3.32	0.00	222.07	52.77	35.97	4.28
17:22:31	15.38	3.38	0.00	222.48	51.33	38.19	4.38
17:23:01	15.13	3.46	0.00	227.73	52.87	35.01	4.24
17:23:31	15.23	3.36	0.00	220.66	51.89	38.94	4.21
17:24:01	15.36	3.33	0.00	215.24	49.99	33.77	4.15
17:24:31	15.43	3.00	0.00	189.96	48.23	40.53	4.50
17:25:01	16.99	2.08	0.00	66.44	38.83	29.77	4.29
17:25:31	17.80	1.83	4.80	21.05	27.27	39.14	4.20
17:26:01	17.96	1.79	5.74	14.70	23.20	29.71	4.30
17:26:31	18.07	1.75	6.00	14.07	21.17	34.51	4.20
17:27:01	17.75	2.37	4.84	38.08	23.90	26.49	4.22
17:27:31	15.89	3.25	0.00	167.38	63.95	39.42	4.37
17:28:01	15.52	3.30	0.00	198.31	62.59	37.94	4.34
17:28:31	15.36	3.33	0.00	203.15	53.69	40.89	4.20
17:29:01	15.42	3.29	0.00	200.85	48.18	40.31	4.15
17:29:31	15.80	2.74	0.00	146.70	44.61	37.00	4.42
17:30:01	17.47	1.88	2.81	34.70	31.73	36.96	4.32
17:30:31	17.88	2.24	7.06	26.36	23.15	30.23	4.20
17:31:01	15.44	5.23	87.80	100.81	64.18	36.12	5.98
17:31:31	14.03	5.11	94.35	182.26	145.81	35.44	4.24
17:32:01	14.31	4.28	34.38	260.08	138.55	38.85	3.92
17:32:31	14.00	4.35	0.60	292.27	109.23	35.30	3.85
17:33:01	13.84	4.21	0.00	298.89	95.56	39.74	3.67
17:33:31	14.68	3.78	0.00	228.36	78.65	30.40	3.70

CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 01 09/20/90

09-20-90 TIME	O2 %V	CO2 %V	CO ppmV	NOx ppmV	SO2 ppmV	HC1 ppmVw	THC ppmCw
17:34:00	14.92	3.79	0.00	245.94	68.16	39.90	3.92
17:34:30	14.80	3.67	0.00	263.29	66.27	32.55	3.86
17:35:00	14.77	3.78	0.00	268.96	63.79	41.19	3.86
17:35:30	14.99	3.54	0.00	254.29	60.61	32.10	3.93
17:36:00	14.94	3.62	0.00	258.42	58.55	36.54	4.07
17:36:30	15.07	3.52	0.00	249.55	57.53	33.86	3.96
17:37:00	15.04	3.57	0.00	249.22	56.50	39.10	3.97
17:37:30	14.90	3.62	0.00	251.67	57.24	36.50	3.88
17:38:00	15.02	3.50	0.00	244.32	56.23	39.97	4.05
17:38:30	15.27	3.36	0.00	232.74	54.63	35.51	4.04
17:39:00	15.31	3.38	0.00	235.86	54.21	38.19	4.06
17:39:30	15.27	3.38	0.00	235.19	53.88	35.12	4.11
17:40:00	15.44	3.29	0.00	222.59	52.30	34.16	4.07
17:40:30	15.42	3.24	0.00	215.94	51.12	34.87	4.05
17:41:00	15.46	3.28	0.00	215.37	49.99	30.37	3.96
17:41:30	15.49	3.27	0.00	213.24	49.87	35.47	3.98
17:42:00	15.49	3.24	0.00	212.27	50.68	37.73	4.01
17:42:30	15.45	3.30	0.00	215.81	51.40	41.27	4.04
17:42:59	15.43	3.37	0.00	220.49	51.92	36.23	4.04
17:43:29	15.10	3.45	0.00	229.76	54.52	38.51	4.07
17:43:59	15.43	3.25	0.00	216.24	52.31	39.52	4.02
17:44:29	15.45	3.31	0.00	218.47	51.56	40.31	4.14
17:44:59	15.45	3.26	0.00	215.55	51.11	30.83	4.36
17:45:29	15.50	3.27	0.00	214.70	50.35	44.93	4.10
17:45:59	15.88	2.65	0.00	142.09	48.88	39.14	4.08
17:46:29	17.46	1.91	0.42	33.49	33.49	28.46	3.94
17:46:59	18.04	1.70	3.00	18.96	22.57	33.17	3.94
17:47:29	18.13	1.72	0.08	18.41	18.70	28.54	3.86
17:47:59	18.05	2.17	0.79	27.44	19.01	37.43	3.90
17:48:29	16.04	3.31	0.00	156.21	58.39	34.48	4.09
17:48:59	15.48	3.36	0.00	208.07	68.75	46.46	3.95
17:49:29	15.45	3.32	0.00	211.29	58.68	37.37	3.95
17:49:59	15.39	3.34	0.00	211.70	52.49	44.86	4.02
17:50:29	15.40	3.39	0.00	212.15	49.13	34.43	3.97
17:50:59	15.91	2.54	0.00	125.29	45.30	43.05	3.88
17:51:29	17.57	1.80	2.89	29.43	29.37	30.36	3.86
17:51:59	18.09	1.63	0.00	20.01	19.45	37.20	3.92
17:52:29	18.24	1.58	0.39	20.92	16.10	30.32	4.01
17:52:59	18.21	2.05	0.54	30.31	16.60	30.17	3.92
17:53:29	16.39	3.10	0.00	138.91	49.73	34.29	4.21
17:53:59	15.66	3.26	0.00	190.04	56.15	37.27	4.05
17:54:29	15.57	3.27	0.00	193.10	49.09	35.73	4.08

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 01 09/20/90

09-20-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
17:54:59	15.40	3.11	0.00	179.36	45.38	36.04	3.96
17:55:29	16.89	2.06	1.40	51.86	34.28	40.61	3.91
17:55:59	17.88	1.74	3.67	21.08	20.79	28.91	3.82
17:56:29	18.14	1.62	0.00	22.09	15.85	30.24	3.72
17:56:58	18.22	1.58	0.79	23.82	13.88	30.23	3.68
17:57:28	17.99	2.27	1.58	42.35	18.14	34.66	3.96
17:57:58	16.22	3.11	0.03	136.66	50.19	34.28	4.32
17:58:28	15.70	3.22	0.00	174.72	49.27	42.37	3.98
17:58:58	15.68	2.94	0.00	221.77	43.07	36.06	4.00
17:59:28	17.72	1.80	6.73	23.92	25.74	25.54	3.61
17:59:58	18.08	1.67	2.95	19.68	19.30	34.61	3.80
18:00:28	18.22	1.78	0.41	25.27	15.06	30.28	4.40
18:00:58	16.70	3.51	13.70	90.42	36.41	32.96	4.00
18:01:28	16.56	3.13	0.00	118.54	59.97	40.56	3.82
18:01:58	16.95	2.67	0.00	89.41	52.52	46.80	3.97
18:02:28	17.20	2.46	2.31	68.01	44.67	54.88	4.06
18:02:58	17.32	2.34	9.17	51.43	39.95	53.30	4.58
18:03:28	17.45	2.28	17.56	39.29	34.98	45.54	4.71
18:03:58	17.51	2.17	26.60	31.16	30.30	46.81	4.80
18:04:28	17.69	2.06	27.74	23.70	27.64	30.78	4.68
18:04:58	17.73	2.04	21.57	20.11	25.04	43.39	5.76
18:05:28	17.78	1.99	20.07	16.98	23.64	29.28	4.86
18:05:58	17.78	2.26	19.26	21.90	23.84	38.75	4.83
18:06:28	15.82	3.51	6.19	162.12	71.32	34.26	4.53
18:06:57	15.07	3.60	0.00	222.36	84.89	46.39	4.02
18:07:27	15.22	3.44	0.00	216.46	65.44	39.36	4.15
18:07:57	15.29	3.41	0.00	214.33	56.86	45.65	4.08
18:08:27	15.36	3.30	0.00	208.75	52.62	32.12	4.18
18:08:57	16.68	2.27	0.00	79.36	43.14	40.11	4.11
18:09:27	17.72	1.87	4.01	19.42	27.16	32.98	5.66
18:09:57	17.99	1.79	2.60	12.56	20.76	36.41	5.52
18:10:27	18.04	1.77	3.07	12.19	18.66	30.34	4.05
18:10:57	18.08	1.75	6.17	12.72	17.45	31.63	4.04
18:11:27	17.22	2.76	5.97	59.33	28.90	26.64	4.28
18:11:57	15.70	3.33	0.00	165.68	68.34	44.09	4.25
18:12:27	15.23	3.45	0.00	196.09	59.18	41.85	4.02
18:12:57	15.35	3.22	0.00	193.02	53.81	39.73	4.16
18:13:27	16.90	2.14	1.46	59.47	39.55	43.10	4.02
18:13:57	17.81	1.84	12.53	15.61	23.92	30.01	4.00
18:14:27	18.03	1.74	8.52	13.02	18.85	30.62	3.92
18:14:56	18.12	1.68	3.06	14.83	17.28	34.74	4.30
18:15:26	18.15	1.67	1.52	15.27	16.59	28.05	4.71

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 01 09/20/90

09-20-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
18:15:56	17.36	2.65	4.42	57.51	27.63	30.78	8.00
18:16:26	16.46	3.20	3.91	97.95	58.93	34.48	4.35
18:16:56	13.33	6.82	173.72	160.25	91.77	34.80	9.36
18:17:26	13.10	5.08	194.27	197.38	141.89	43.24	4.69
18:17:56	14.53	3.84	25.86	244.15	119.79	31.48	4.05
18:18:26	14.92	3.62	0.00	251.82	99.34	44.12	4.42
AVERAGE	15.76	3.14	42.06	131.84	40.24	106.84	7.15
MINIMUM	10.84	1.58	0.00	12.19	0.00	25.54	1.59
MAXIMUM	18.24	8.52	1783.17	298.89	231.79	1020.61	82.89

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
09:45:57	19.09	1.14	211.43	10.81	0.00		220.53
09:46:27	17.07	3.25	502.44	26.13	3.37		62.84
09:46:57	15.31	3.78	215.70	47.99	8.33		24.82
09:47:27	15.18	3.89	5.32	66.42	9.70		21.58
09:47:57	14.86	3.98	0.15	88.19	11.33		22.38
09:48:27	15.00	3.88	0.00	101.58	11.90		19.53
09:48:57	14.70	4.28	0.63	120.27	12.57		16.99
09:49:27	14.49	4.08	0.00	122.22	12.52		14.86
09:49:57	14.84	4.02	0.00	118.18	10.69		13.30
09:50:27	14.80	3.88	0.00	118.66	9.72		12.00
09:50:57	15.12	3.75	0.00	116.95	8.61		10.87
09:51:27	15.09	3.80	0.00	120.35	8.11		9.78
09:51:57	15.08	3.81	0.00	120.90	8.07		8.96
09:52:27	15.07	3.86	0.00	122.30	7.72		8.13
09:52:57	15.06	3.79	0.00	123.16	7.50		7.60
09:53:27	14.82	4.07	0.00	131.27	7.31		6.99
09:53:57	14.74	3.97	0.00	128.02	7.57		6.64
09:54:27	14.45	4.20	0.00	132.12	8.10		6.33
09:54:56	14.47	4.14	0.00	126.72	8.44		7.02
09:55:26	14.52	4.15	0.00	119.64	8.63		12.51
09:55:56	14.48	4.12	0.00	116.36	8.80		12.15
09:56:26	14.83	3.72	0.00	105.84	8.69		11.53
09:56:56	15.27	3.53	0.00	96.45	8.39		10.69
09:57:26	15.41	3.52	0.00	93.79	7.82		10.43
09:57:56	15.36	3.55	0.00	93.83	7.73		9.76
09:58:26	15.36	3.52	0.00	95.23	7.87		9.42
09:58:56	15.41	3.48	0.00	93.82	8.03		9.10
09:59:26	15.18	3.71	0.00	98.59	8.18		8.76
09:59:56	15.19	3.61	0.00	91.97	9.24		8.38
10:00:26	15.16	3.19	20.30	75.93	10.37		7.90
10:00:56	16.59	3.58	285.01	45.47	13.20		22.66
10:01:26	13.98	4.94	378.11	70.98	31.64		26.76
10:01:56	13.52	4.98	510.07	94.94	34.82		33.15
10:02:26	14.13	4.59	323.40	131.86	30.49		20.09
10:02:56	14.24	4.81	64.00	166.66	23.09		8.74
10:03:26	13.82	4.88	51.99	187.31	21.25		15.28
10:03:55	14.02	4.60	33.56	193.75	18.29		15.69
10:04:25	14.49	4.43	12.86	194.78	14.97		13.51
10:04:55	14.49	4.53	3.26	196.38	12.89		15.26
10:05:25	14.62	4.22	0.00	180.47	11.32		13.34
10:05:55	14.69	4.25	0.00	169.80	10.37		12.73
10:06:25	14.81	4.01	0.00	154.78	9.95		12.40

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:06:55	15.22	3.81	0.00	136.91	9.08		12.31
10:07:25	15.37	3.67	0.00	128.62	8.48		11.96
10:11:21	15.54	3.74	0.00	107.03	8.39		10.53
10:11:51	14.87	3.82	0.00	109.36	8.49		10.77
10:12:21	14.97	3.70	0.00	105.47	8.35		10.23
10:12:51	15.33	3.33	0.00	95.08	8.10		9.98
10:13:21	15.95	3.34	0.00	89.80	8.03		9.74
10:13:51	15.41	3.62	0.00	101.56	8.05		9.49
10:14:21	15.13	3.73	0.00	105.76	7.98		9.77
10:14:51	15.32	3.41	0.00	99.59	8.32		10.22
10:15:21	15.75	3.34	0.00	91.84	8.47		10.80
10:15:51	15.60	3.31	85.91	70.79	10.29	1935.37	9.71
10:16:21	15.47	4.17	214.43	72.17	18.70	2101.25	11.89
10:16:51	14.55	4.10	115.15	117.74	23.45	2182.97	13.16
10:17:21	15.12	3.76	22.22	153.70	18.61	2089.29	13.00
10:17:51	15.35	3.83	0.00	171.05	15.14	2077.62	13.46
10:18:21	15.10	3.83	0.00	179.15	13.32	1932.23	13.44
10:18:51	15.39	3.67	0.00	174.44	11.01	1908.14	13.40
10:19:21	15.44	3.62	0.00	173.06	9.85	1891.57	13.24
10:19:51	15.45	3.69	0.00	174.62	9.02	1934.38	13.04
10:20:21	15.41	3.55	0.00	168.80	8.53	1904.06	13.60
10:20:51	15.52	3.61	0.00	154.93	8.32	1902.80	13.10
10:21:21	15.50	3.49	0.00	142.68	8.90	1837.57	11.20
10:21:50	15.51	3.65	0.00	141.70	8.91	1821.06	9.95
10:26:02	15.70	3.39	0.00	122.32	7.30	1877.19	8.56
10:26:32	15.69	3.39	0.00	122.08	7.55	1817.59	8.09
10:27:01	15.68	3.49	0.00	123.47	7.51	1230.55	7.93
10:27:31	15.61	3.44	0.00	119.39	7.60	803.45	7.80
10:28:01	15.54	3.63	0.00	124.15	7.82	451.58	7.77
10:28:31	15.39	3.65	0.00	124.85	7.94	109.16	7.86
10:29:01	15.18	3.82	0.00	121.73	7.45	65.52	8.19
10:29:31	15.20	3.49	0.00	117.45	6.99	123.75	8.09
10:30:01	15.73	3.48	0.00	115.23	6.75	369.24	8.19
10:30:31	15.63	3.31	0.00	110.28	6.81	406.94	7.60
10:31:01	16.32	3.20	168.81	63.77	7.24	371.20	7.11
10:31:31	15.60	5.06	261.46	66.83	13.88	333.87	15.28
10:32:01	12.26	7.03	808.61	140.58	53.73	497.86	23.53
10:32:31	11.70	6.32	864.12	141.76	78.64	477.05	20.23
10:33:01	12.63	5.79	723.96	128.98	72.53	439.62	17.61
10:33:31	12.88	6.14	497.69	125.63	69.33	395.80	15.83
10:34:01	12.30	6.02	397.08	119.43	77.33	369.42	12.04
10:34:31	12.66	5.68	332.63	109.91	76.49	341.36	11.53

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:35:01	13.28	5.30	228.88	100.59	64.59	302.38	10.95
10:35:31	13.34	5.27	164.19	97.43	56.07	264.73	11.52
10:36:01	13.72	4.99	135.66	91.44	47.88	242.19	12.95
10:36:30	13.93	4.86	96.74	90.18	40.51	213.92	13.80
10:37:00	13.96	5.07	71.51	90.75	34.60	205.63	13.90
10:37:30	13.48	5.12	62.75	92.99	32.03	193.25	13.01
10:38:00	14.02	4.66	47.89	84.16	27.23	184.14	12.90
10:38:30	14.11	4.90	42.97	84.60	24.44	172.60	13.56
10:39:00	13.74	4.93	33.79	86.08	23.22	168.90	12.24
10:39:30	14.19	4.56	16.60	80.59	20.18	161.86	10.39
10:40:00	14.05	4.78	2.07	84.63	18.62	150.72	9.63
10:40:30	14.18	4.52	0.00	82.24	16.77	147.51	9.24
10:41:00	14.64	4.26	0.00	78.56	14.62	137.53	9.02
10:41:30	14.81	3.97	0.00	77.31	13.36	130.03	9.03
10:42:00	15.25	3.87	0.00	76.47	11.97	119.96	9.34
10:42:30	15.18	3.86	0.00	79.94	11.78	123.25	9.56
10:43:00	15.42	3.81	0.00	79.52	11.11	112.31	9.91
10:43:30	15.29	3.82	0.00	82.47	10.92	118.62	10.25
10:44:00	15.36	3.66	0.00	80.91	10.61	109.46	9.95
10:44:30	15.61	3.55	0.00	80.37	9.78	109.86	9.67
10:45:00	15.78	3.45	0.00	78.36	9.30	101.16	9.31
10:45:30	15.84	3.50	0.00	80.13	9.10	105.48	9.46
10:45:59	16.22	3.43	122.67	49.37	9.31	103.72	9.66
10:46:29	15.10	5.36	402.59	63.27	22.07	156.31	13.66
10:46:59	13.47	5.39	552.08	88.48	35.33	353.24	24.50
10:47:29	13.46	5.19	378.31	95.87	32.24	549.34	15.89
10:47:59	13.78	4.75	154.92	104.19	28.69	611.85	11.30
10:48:29	14.32	4.40	54.54	113.47	24.07	594.81	11.31
10:48:59	14.69	4.40	15.15	123.13	20.76	588.73	11.18
10:49:29	14.19	4.65	0.48	140.73	20.46	624.37	10.62
10:49:59	14.22	4.49	0.00	140.54	18.94	603.62	10.51
10:50:29	14.64	3.87	0.00	124.05	16.48	538.96	10.66
10:50:59	15.21	3.79	0.00	117.19	14.38	495.99	10.43
10:51:29	15.07	4.09	0.00	120.95	13.73	467.58	9.68
10:51:59	14.91	4.04	0.00	118.97	13.86	469.97	9.35
10:52:29	15.10	3.68	0.00	105.82	12.62	429.07	10.06
10:52:59	15.42	3.75	0.00	101.17	11.52	401.57	10.65
10:53:29	15.36	3.69	0.00	100.53	11.28	384.33	10.94
10:53:59	15.52	3.54	0.00	94.84	10.46	373.68	11.62
10:54:29	15.54	3.57	0.00	94.49	10.38	349.55	11.72
10:54:59	15.61	3.48	0.00	92.06	10.16	342.38	12.23
10:55:29	15.68	3.52	0.00	90.91	9.88	323.39	11.22

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:55:58	15.38	3.75	0.00	96.31	10.17	324.49	9.58
10:56:28	15.38	3.55	0.00	92.40	10.30	310.38	8.89
10:56:58	15.57	3.62	0.00	94.61	9.87	301.20	8.57
10:57:28	15.29	3.79	0.00	98.95	10.09	265.39	8.38
10:57:58	15.25	3.67	0.00	97.13	10.14	249.34	8.20
10:58:28	15.44	3.62	0.00	94.45	9.84	237.63	8.23
10:58:58	15.53	3.50	0.00	89.20	9.48	213.67	8.45
10:59:28	15.64	3.42	0.00	86.41	9.28	190.96	8.57
10:59:58	15.75	3.44	0.00	84.00	9.33	176.52	8.79
11:00:28	15.63	3.42	0.22	80.81	9.55	176.25	8.99
11:00:58	15.79	4.81	107.48	66.30	13.34	178.12	8.82
11:01:28	12.84	8.73	426.17	121.56	41.62	275.39	9.97
11:01:58	10.02	9.51	533.02	162.33	102.04	354.07	16.32
11:02:28	8.87	9.31	405.27	164.04	188.29	322.92	13.08
11:02:58	9.63	8.09	563.36	156.67	213.40	331.12	14.90
11:03:28	10.36	7.32	494.33	153.44	184.44	373.44	15.24
11:03:58	11.07	7.09	429.04	153.21	135.93	407.46	13.49
11:04:28	11.15	7.04	360.58	149.90	100.53	428.27	11.59
11:04:57	11.59	6.51	303.37	136.34	70.54	418.79	10.83
11:05:27	12.08	6.11	271.30	128.45	50.73	398.23	10.58
11:05:57	12.54	5.94	222.08	124.77	37.72	375.53	10.55
11:06:27	12.60	5.78	171.09	130.75	28.77	361.82	10.75
11:06:57	13.04	5.42	122.64	138.76	21.58	348.51	10.71
11:07:27	13.31	5.23	68.15	156.65	16.10	314.89	10.49
11:07:57	13.59	4.99	37.04	160.71	12.35	311.65	10.01
11:08:27	13.72	4.87	24.44	157.94	9.90	285.32	9.54
11:08:57	13.99	4.77	19.99	151.25	8.31	268.25	9.26
11:09:27	13.91	4.66	14.52	151.70	7.45	249.34	8.74
11:09:57	14.28	4.43	5.32	146.76	6.44	248.48	8.41
11:10:27	14.45	4.30	0.00	145.26	5.93	220.43	8.60
11:10:57	14.61	4.19	0.00	139.82	5.56	210.93	9.71
11:11:27	14.78	4.15	0.00	136.95	5.35	204.28	10.48
11:11:57	14.71	4.12	0.00	139.90	5.25	200.65	10.48
11:12:27	14.92	3.93	0.00	133.84	4.91	195.45	10.84
11:12:57	15.09	3.95	0.00	131.51	4.72	190.09	10.77
11:13:26	14.97	3.88	0.00	128.44	4.46	185.02	9.73
11:13:56	15.22	3.67	0.00	118.37	4.22	180.14	9.17
11:14:26	15.35	3.71	0.00	115.06	4.24	161.35	8.56
11:14:56	15.40	3.50	0.00	103.49	3.91	164.81	8.08
11:15:26	15.65	3.48	0.00	98.89	3.97	157.46	7.89
11:15:56	15.83	3.80	109.15	66.41	4.81	157.78	7.39
11:16:26	14.38	7.86	320.39	114.08	20.96	247.25	11.86

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:16:56	10.78	7.97	289.28	125.86	32.86	461.42	9.45
11:17:26	10.43	7.30	316.12	126.89	31.63	618.86	9.40
11:17:56	11.20	6.69	324.08	124.55	28.89	661.04	9.08
11:18:26	11.61	6.28	291.08	122.06	25.63	626.45	8.51
11:18:56	12.16	6.12	258.78	122.15	21.61	541.50	8.58
11:19:26	12.16	6.15	217.52	127.14	19.23	514.63	8.78
11:19:56	12.25	5.83	174.19	132.47	16.81	487.65	8.73
11:20:26	12.80	5.30	130.99	130.86	13.32	446.75	8.37
11:20:56	13.32	5.08	86.16	137.67	10.49	402.55	8.03
11:21:26	13.72	4.95	48.58	141.12	8.27	390.60	7.85
11:21:56	13.60	5.30	25.75	150.56	7.31	394.68	7.63
11:22:26	13.46	4.93	18.20	146.27	6.61	400.46	7.56
11:22:55	13.88	4.69	4.36	139.67	5.77	378.40	7.47
11:23:25	14.19	4.38	0.88	130.12	5.52	370.45	7.53
11:23:55	14.55	4.21	0.00	127.49	5.21	350.02	7.57
11:24:25	14.79	4.16	0.00	126.74	4.97	347.71	7.71
11:24:55	14.79	4.16	0.00	126.65	5.03	353.25	7.74
11:25:25	14.67	4.18	0.00	130.31	5.12	363.40	7.54
11:25:55	14.81	4.05	0.00	126.61	4.99	371.44	7.42
11:26:25	14.97	3.90	0.00	119.05	4.91	351.76	7.34
11:26:55	15.06	4.05	0.00	120.51	4.73	358.24	7.24
11:27:25	14.92	3.90	0.00	115.51	4.81	368.56	7.13
11:27:55	15.10	3.96	0.00	112.91	4.79	383.71	7.12
11:28:25	14.96	3.97	0.00	114.35	4.98	388.93	7.57
11:28:55	15.12	3.81	0.00	109.31	5.37	394.57	8.32
11:29:25	15.12	3.86	0.00	111.87	5.79	393.05	8.78
11:29:55	15.22	3.67	0.00	104.89	5.86	397.74	8.99
11:30:25	15.30	3.65	0.25	103.18	6.11	406.11	9.19
11:30:55	15.36	3.13	91.23	70.91	6.37	404.54	9.54
11:31:25	16.56	4.30	264.87	68.74	9.68	429.15	12.09
11:31:55	15.43	4.52	29.62	96.42	12.92	558.37	10.94
11:32:24	15.39	4.08	0.00	102.47	11.22	603.73	8.25
11:32:54	15.84	3.76	0.00	100.19	9.95	537.06	7.45
11:33:24	16.13	3.60	0.00	95.32	9.36	483.66	6.95
11:33:54	16.32	3.52	3.13	93.33	9.64	464.82	6.65
11:34:24	16.59	3.15	7.23	83.66	9.59	427.43	6.13
11:34:54	16.92	3.04	15.22	81.27	9.28	385.23	6.02
11:35:24	17.12	2.86	29.21	74.95	8.85	387.05	6.01
11:35:54	17.29	2.75	48.48	66.37	8.61	379.82	6.04
11:36:24	17.42	2.73	62.10	55.77	8.05	400.52	6.05
11:36:54	17.43	2.67	81.52	58.96	7.97	394.88	5.95
11:37:24	17.54	2.20	612.23	46.56	8.11	401.52	7.17

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:37:54	17.63	2.83	1933.23	51.27	10.49	369.63	141.46
11:38:24	16.72	3.19	242.31	67.80	11.30	369.90	380.83
11:38:54	16.53	3.18	12.53	66.75	10.78	359.86	34.13
11:39:24	16.50	3.14	7.76	65.66	9.53	366.40	16.71
11:39:54	16.57	2.79	50.02	59.22	8.64	364.70	11.28
11:40:24	17.29	2.18	1567.10	33.65	9.66	377.13	8.54
11:40:54	17.20	2.99	1010.31	57.80	10.82	380.47	272.12
11:41:24	16.67	3.12	43.44	63.59	11.49	383.33	164.63
11:41:54	16.60	2.99	17.16	63.34	10.33	373.34	23.74
11:42:24	16.75	2.90	17.15	60.14	8.89	350.68	13.78
11:42:54	16.80	2.84	21.12	57.55	8.00	349.79	10.35
11:43:24	16.86	2.81	25.42	56.63	7.63	336.35	8.71
11:43:54	16.92	2.72	29.06	51.84	7.37	347.87	7.70
11:44:24	17.01	2.70	37.35	49.10	6.81	326.10	7.03
11:44:54	17.01	2.67	47.12	49.89	6.63	324.62	6.66
11:45:23	17.11	2.67	53.23	48.86	6.32	314.63	6.43
11:45:53	16.84	3.34	96.97	45.26	7.18	345.67	5.89
11:46:23	16.31	3.96	137.53	54.61	12.76	520.66	5.58
11:46:53	15.19	4.54	59.32	73.08	22.70	884.46	5.90
11:47:23	14.88	5.22	59.59	102.15	22.41	1139.44	6.04
11:47:53	12.92	7.61	926.44	187.85	32.08	1448.38	5.87
11:48:23	10.53	7.55	885.31	209.26	33.03	1272.84	15.22
11:48:53	10.29	7.54	512.74	216.01	31.09	1032.43	18.99
11:49:23	10.09	7.44	412.58	212.76	32.40	959.08	16.76
11:49:53	10.62	7.10	343.25	190.09	30.96	812.53	15.04
11:50:23	10.55	7.12	300.50	181.25	30.02	717.19	15.19
11:50:53	10.46	7.10	253.80	170.32	32.44	643.75	14.34
11:51:23	10.94	6.65	218.26	155.48	33.49	583.04	13.10
11:51:53	11.44	6.29	202.65	139.92	30.68	501.73	12.14
11:52:23	11.84	6.03	181.85	127.54	26.64	454.73	11.65
11:52:53	12.01	5.93	161.24	121.56	22.26	411.65	11.06
11:53:23	12.13	5.91	146.91	118.71	18.81	396.90	8.42
11:53:53	12.25	5.72	133.80	114.87	15.86	374.35	7.73
11:54:23	12.65	5.42	124.34	109.10	13.10	365.39	7.56
11:54:53	12.82	5.46	116.87	111.18	11.31	355.40	7.14
11:55:23	14.60	2.48	98.96	68.61	8.99	353.04	6.91
11:55:53	19.84	0.16	16.24	7.16	2.31	336.56	6.38
11:56:22	20.21	2.17	0.71	32.01	0.68	330.34	7.75
11:56:52	15.59	3.49	40.61	100.49	3.93	305.36	5.41
11:57:22	16.68	2.86	4.02	84.62	4.00	265.77	5.07
11:57:52	17.10	2.66	4.00	73.72	3.38	239.33	4.83
11:58:22	17.27	2.62	8.26	69.88	3.17	227.02	6.23

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:58:52	17.29	2.56	14.75	67.76	3.20	220.16	6.50
11:59:22	13.70	1.01	94.48	38.54	3.39	208.54	18.36
11:59:52							
12:00:22							
12:00:52							
12:01:22							
12:01:52							
12:02:22	15.15	1.57	865.35	23.88	2.37	166.52	162.95
12:02:52	17.07	2.34	2063.46	39.98	4.63	170.06	637.75
12:03:22	16.72	2.74	278.95	60.60	5.45	165.36	198.28
12:03:52	16.72	2.78	21.04	61.38	5.46	169.34	35.63
12:04:22	16.84	2.77	16.93	59.30	5.00	163.79	24.77
12:04:52	16.00	3.85	42.56	50.06	8.22	177.66	16.59
12:05:22	15.82	3.93	44.94	67.31	19.96	279.02	14.64
12:05:52	15.88	3.85	7.53	89.73	23.55	405.61	14.29
12:06:22	16.19	3.49	0.00	94.49	21.70	470.68	14.40
12:06:52	16.77	3.04	2.88	93.27	18.42	472.51	15.32
12:07:21	17.09	2.89	7.30	89.76	16.03	460.13	15.42
12:07:51	17.17	2.86	22.18	84.46	15.25	447.76	14.66
12:08:21	17.28	2.65	27.79	67.84	14.54	424.60	14.20
12:08:51	17.65	2.08	306.18	46.52	14.17	381.24	13.28
12:09:21	17.41	2.58	2103.41	54.13	19.22	353.75	230.60
12:09:51	16.65	3.02	402.54	79.81	18.06	333.42	421.18
12:10:21	16.50	3.04	8.65	86.06	17.14	333.51	44.54
12:10:51	16.73	2.86	2.08	77.87	14.94	324.37	28.09
12:11:21	16.89	2.80	4.10	73.00	13.39	292.71	18.82
12:11:51	16.94	2.72	2.59	69.19	12.58	254.49	15.74
12:12:21	17.03	2.66	2.77	66.78	11.61	257.44	14.76
12:12:51	17.13	2.62	2.47	59.62	10.62	237.39	14.12
12:13:21	17.16	2.58	5.91	51.91	9.66	229.81	13.64
12:13:51	17.25	2.50	6.69	46.31	8.73	212.68	13.36
12:14:21	17.28	2.51	12.85	46.28	8.44	208.61	12.65
12:14:51	17.27	2.46	15.10	44.36	8.33	191.59	12.19
12:15:21	17.40	2.38	17.98	40.22	8.07	185.81	11.58
12:15:51	17.47	2.38	22.18	40.34	7.82	171.60	11.21
12:16:20	17.42	2.39	19.29	42.44	7.83	237.35	11.02
12:16:50	17.39	2.52	26.25	41.63	7.78	218.32	10.77
12:17:20	17.25	2.98	75.28	41.30	8.84	184.04	10.58
12:17:50	15.96	4.13	15.01	70.43	20.73	223.83	10.03
12:18:20	15.21	4.18	15.94	82.76	27.50	367.73	9.94
12:18:50	15.88	3.78	4.58	96.96	22.56	507.20	9.67
12:19:20	16.39	3.37	0.00	96.38	18.44	546.74	9.55

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:19:50	16.67	3.30	0.00	96.88	15.98	558.16	9.83
12:20:20	16.59	3.32	0.33	100.73	14.84	574.50	10.43
12:20:50	16.90	3.00	2.90	93.55	13.64	540.31	10.94
12:21:20	17.07	2.93	7.55	92.62	12.70	500.72	10.85
12:21:50	17.14	2.89	15.15	91.88	12.21	518.27	10.68
12:22:20	17.18	2.78	25.61	89.50	11.96	517.23	10.42
12:22:50	17.36	2.79	48.97	84.57	11.31	508.50	10.36
12:23:20	16.66	3.25	32.47	96.78	10.87	489.83	10.48
12:23:50	16.31	3.25	1.92	96.40	10.34	484.76	10.32
12:24:20	16.47	2.78	14.00	78.79	9.78	453.39	9.80
12:24:50	17.58	2.14	980.94	45.44	9.74	424.53	8.85
12:25:20	17.06	2.91	1260.16	72.73	10.48	400.28	230.01
12:25:50	16.70	2.98	73.97	77.32	10.12	397.86	130.80
12:26:19	16.69	2.92	9.03	74.87	9.36	382.70	23.38
12:26:49	16.72	2.89	8.01	73.70	8.49	372.77	17.14
12:27:19	16.76	2.85	8.44	71.20	7.95	365.71	14.38
12:27:49	16.78	2.84	10.40	67.04	7.50	361.52	13.94
12:28:19	16.86	2.78	14.58	61.27	6.97	360.18	13.54
12:28:49	16.81	2.73	16.01	59.59	6.96	361.71	13.44
12:29:19	16.96	2.65	18.04	54.44	6.33	362.09	13.09
12:29:49	16.98	2.71	22.01	52.29	6.09	350.55	12.17
12:30:19	16.98	2.61	24.77	49.31	5.81	357.48	11.30
12:30:49	16.91	3.40	33.52	49.79	6.02	355.85	10.45
12:31:19	15.02	6.07	202.76	65.99	14.73	385.45	9.26
12:31:49	13.17	6.58	851.52	69.37	27.94	428.28	9.78
12:32:19	13.60	5.79	426.35	65.05	26.83	505.41	17.43
12:32:49	14.27	5.22	144.05	71.23	23.02	535.39	10.77
12:33:19	14.82	4.90	35.15	72.51	19.34	540.55	13.59
12:33:49	14.93	4.87	9.93	75.71	17.67	526.64	17.09
12:34:19	15.26	4.53	3.76	75.02	16.25	518.70	20.16
12:34:49	15.60	4.23	0.00	76.65	14.65	484.94	20.94
12:35:19	15.76	4.11	0.00	80.44	13.99	481.88	19.49
12:35:49	15.94	3.89	0.00	82.50	13.57	483.61	17.43
12:36:18	16.30	3.59	0.00	79.76	12.60	472.36	16.83
12:36:48	16.49	3.45	0.00	77.18	12.05	462.88	15.96
12:37:18	16.57	3.39	0.00	76.25	11.52	458.75	15.34
12:37:48	16.68	3.31	0.00	75.46	11.34	470.64	14.77
12:38:24	16.74	3.26	0.00	75.55	11.10	457.20	14.37
12:38:54	16.93	3.07	1.47	71.64	10.22	444.95	14.83
12:39:24	17.08	2.93	2.63	68.31	9.85	435.35	15.35
12:39:54	17.24	2.82	9.60	64.19	9.71	435.35	15.48
12:40:23	17.37	2.72	22.86	59.61	9.80	418.51	15.84

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:40:53	17.50	2.67	43.94	55.88	9.33	428.58	15.70
12:41:23	17.51	2.67	74.66	50.86	9.25	420.25	14.77
12:41:53	17.54	2.54	169.95	43.79	9.04	422.12	14.35
12:42:23	17.01	3.06	617.20	56.02	8.74	415.17	150.40
12:42:53	16.49	3.16	94.95	61.80	8.14	402.25	23.68
12:43:23	16.40	3.23	4.50	63.89	7.45	392.96	16.58
12:43:53	16.46	3.10	4.11	62.42	7.26	392.36	15.00
12:44:23	16.44	3.14	3.79	63.89	7.10	390.28	14.97
12:44:53	16.58	3.00	3.74	62.57	6.90	382.11	14.73
12:45:23	16.65	2.95	4.72	62.43	6.87	378.43	13.24
12:45:53	16.61	3.77	375.05	49.91	9.91	380.27	19.57
12:46:23	15.75	4.53	305.08	82.24	19.85	425.17	45.17
12:46:53	15.19	4.70	21.25	96.97	25.21	560.67	12.08
12:47:23	15.31	4.41	6.71	91.80	24.84	549.95	11.18
12:47:53	15.72	4.07	0.00	84.73	20.44	545.88	11.19
12:48:23	15.98	3.81	0.00	77.68	17.03	525.38	11.45
12:48:53	16.40	3.46	0.00	69.23	14.76	449.60	12.23
12:49:23	16.70	3.29	1.27	63.21	12.88	412.60	12.62
12:49:52	16.86	3.16	2.76	59.26	11.75	386.06	12.92
12:50:22	17.09	2.94	6.43	53.60	11.15	385.42	12.98
12:50:52	17.30	2.80	17.19	49.05	10.54	363.40	13.29
12:51:22	17.44	2.73	37.33	46.72	10.43	357.82	13.43
12:51:52	17.56	2.62	74.03	39.46	9.93	330.66	12.42
12:52:22	17.64	2.57	585.86	36.04	9.66	322.71	20.86
12:52:52	16.83	3.04	638.46	48.58	9.28	352.33	256.48
12:53:22	16.70	3.03	23.13	48.30	8.53	381.37	26.54
12:53:52	16.75	2.92	5.55	45.06	7.63	319.59	17.33
12:54:22	16.78	2.89	5.93	44.29	7.08	310.08	14.74
12:54:52	16.91	2.78	7.42	41.81	6.36	297.81	14.07
12:55:22	16.95	2.80	7.63	41.05	5.94	296.81	13.43
12:55:52	17.00	2.71	10.32	38.33	5.80	278.32	12.91
12:56:22	17.05	2.70	12.91	37.38	5.58	257.31	12.60
12:56:52	17.07	2.72	16.15	37.01	5.58	250.97	12.43
12:57:22	16.90	2.88	20.21	38.19	5.52	281.34	11.99
12:57:52	16.86	2.75	23.61	35.99	5.78	284.06	11.54
12:58:22	16.89	2.74	28.88	35.58	5.63	270.26	11.07
12:58:52	17.04	2.66	36.61	32.50	5.25	265.49	10.81
12:59:21	17.09	2.56	49.23	30.93	5.11	253.83	10.56
12:59:51	17.27	2.53	51.39	28.93	4.75	238.57	10.61
13:00:21	17.17	2.52	59.72	28.80	4.68	232.07	10.93
13:00:51	17.35	2.48	64.29	26.03	4.46	220.63	11.27
13:01:21	17.30	2.39	85.93	24.23	4.40	216.78	11.47

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:01:51	17.47	2.46	93.55	22.98	3.97	203.82	11.79
13:02:21	16.53	4.26	142.91	41.22	7.15	237.38	12.19
13:02:51	14.97	4.90	62.01	74.21	16.78	521.47	12.74
13:03:21	15.39	3.88	28.60	74.96	16.17	595.84	11.84
13:03:51	16.28	3.42	4.70	68.03	12.88	483.77	11.49
13:04:21	16.92	3.00	8.76	58.46	10.04	363.77	10.92
13:04:51	17.22	2.86	21.05	51.26	8.34	331.26	10.14
13:05:21	17.39	2.56	211.65	39.59	8.05	306.33	9.24
13:05:51	17.22	2.91	1090.87	45.14	9.21	269.51	150.94
13:06:21	16.81	2.94	122.69	47.17	7.95	234.87	89.05
13:06:51	16.83	2.94	11.15	46.88	6.99	219.71	18.38
13:07:21	16.90	2.82	9.16	45.08	6.15	235.42	12.75
13:07:51	16.97	2.78	9.97	42.23	5.66	248.50	11.10
13:08:21	17.00	2.73	8.32	41.46	5.37	208.15	10.77
13:08:51	17.15	2.66	8.87	39.44	5.18	183.48	10.52
13:09:20	17.09	2.74	6.68	39.92	4.95	167.62	10.32
13:09:50	17.15	2.59	7.79	37.57	4.87	157.53	10.16
13:10:20	17.30	2.56	10.28	35.89	4.57	150.17	10.15
13:10:50	17.27	2.57	12.29	36.48	4.61	142.92	10.16
13:11:20	17.31	2.52	14.96	35.26	4.51	140.12	10.22
13:11:50	17.32	2.53	14.39	34.98	4.42	133.72	10.32
13:12:20	17.30	2.48	17.34	33.62	4.21	129.16	10.31
13:12:50	17.38	2.45	21.90	32.02	4.00	124.38	10.17
13:13:20	17.41	2.44	27.07	30.95	3.93	120.63	9.99
13:13:50	17.45	2.44	31.19	30.08	4.03	113.64	9.89
13:14:20	17.39	2.43	35.55	30.55	4.04	110.20	9.78
13:14:50	17.48	2.36	35.97	28.90	3.86	107.76	9.80
13:15:12	17.53	2.38	42.11	28.73	3.89	103.48	9.84
13:15:27	17.50	2.42	46.50	29.39	3.95	109.37	9.82
13:15:42	17.46	3.10	51.53	32.97	4.15	115.39	9.60
13:15:57	16.87	5.63	98.70	60.88	6.98	117.18	9.20
13:16:12	14.26	6.81	286.53	79.07	17.22	139.07	8.67
13:16:26	13.19	7.78	692.83	102.22	30.21	183.49	11.82
13:16:41	11.79	7.39	919.11	103.44	37.39	212.77	16.84
13:16:56	12.13	7.09	892.84	101.44	36.82	253.75	18.33
13:17:11	12.29	6.52	775.86	85.64	34.76	325.91	14.15
13:17:26	12.75	5.91	643.28	68.77	31.47	378.37	14.51
13:17:41	13.46	5.52	465.73	63.06	27.52	401.42	13.85
13:17:56	13.93	5.15	251.66	61.22	24.40	432.29	14.76
13:18:11	14.40	4.93	118.77	61.07	21.53	464.70	16.82
13:18:26	14.65	4.65	50.18	60.29	19.82	472.79	18.34
13:18:41	15.02	4.55	22.56	58.85	17.99	477.27	18.86

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:18:56	15.16	4.38	9.69	58.77	17.23	490.04	18.55
13:19:11	15.39	4.40	4.64	61.31	16.26	492.59	17.95
13:19:26	15.31	4.31	2.69	63.03	15.97	468.80	17.25
13:19:41	15.45	4.15	1.11	62.15	15.23	449.46	16.96
13:19:56	15.64	4.08	0.00	61.16	14.59	441.93	16.99
13:20:11	15.69	4.05	0.00	61.96	14.23	434.58	16.97
13:20:26	15.79	3.92	0.00	61.97	14.07	428.03	17.18
13:20:41	15.93	3.83	0.00	62.20	13.83	427.21	17.27
13:20:56	16.02	3.73	0.00	60.85	13.83	418.42	17.06
13:21:11	16.17	3.56	0.00	58.90	13.59	404.66	16.95
13:21:26	16.37	3.50	0.00	57.07	13.27	387.90	16.85
13:21:40	16.49	3.42	0.01	55.53	12.90	377.06	16.61
13:21:55	16.59	3.39	0.34	54.23	12.78	373.40	16.67
13:22:10	16.65	3.44	0.98	54.83	12.79	376.95	16.51
13:22:25	16.59	3.23	2.37	53.55	12.75	362.16	16.00
13:22:40	16.82	3.16	3.56	51.35	12.12	341.25	15.23
13:22:55	16.90	3.09	5.00	49.64	11.83	331.03	14.54
13:23:10	17.02	3.05	6.39	48.29	11.56	313.61	14.30
13:23:25	17.06	3.04	8.69	47.98	11.42	292.71	13.83
13:23:40	17.11	2.98	11.25	48.73	11.21	287.98	13.42
13:23:58	17.09	2.95	13.80	47.77	11.09	282.23	13.23
13:24:08	17.18	2.84	20.30	45.97	10.76	280.51	12.87
13:24:17	17.30	2.78	24.06	44.86	10.61	271.97	12.71
13:24:27	17.36	2.77	28.68	43.95	10.43	262.23	12.55
13:24:37	17.45	2.72	34.68	42.95	10.21	264.16	12.30
13:24:47	17.45	2.71	42.05	41.96	10.06	269.26	12.03
13:24:57	17.52	2.71	48.78	41.65	10.03	268.66	11.75
13:25:07	17.53	2.64	57.04	39.84	9.83	260.68	11.46
13:25:17	17.54	2.59	68.02	38.03	9.65	257.71	11.08
13:25:27	17.66	2.54	82.15	35.52	9.49	255.69	10.64
13:25:37	17.68	2.49	105.38	32.71	9.33	248.52	10.22
13:25:47	17.79	2.27	190.43	30.48	9.14	241.88	9.71
13:25:57	17.80	2.09	561.23	23.95	9.04	235.52	9.46
13:26:07	17.94	2.62	1187.39	28.93	9.51	222.14	10.70
13:26:17	17.70	2.92	1399.58	37.50	9.72	220.71	65.77
13:26:27	17.15	2.99	980.30	41.45	9.68	218.94	498.24
13:26:37	16.99	2.99	425.43	42.20	9.92	217.50	350.06
13:26:47	16.88	2.98	131.25	41.64	9.81	208.53	40.79
13:26:57	16.89	3.01	32.29	42.32	9.69	210.38	29.88
13:27:07	16.86	3.04	11.57	43.09	9.69	202.49	25.16
13:27:17	16.80	2.97	8.43	42.04	9.48	194.12	20.84
13:27:27	16.79	2.99	8.17	40.85	9.41	200.45	17.59

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:27:37	16.86	3.00	8.16	40.38	9.17	198.48	15.64
13:27:47	16.81	2.98	8.81	39.94	9.22	201.75	14.56
13:27:56	16.81	2.94	10.12	39.19	9.20	200.57	12.85
13:31:09	16.62	5.31	77.92	50.95	12.31	225.94	8.01
13:31:39	13.48	6.38	407.05	74.93	28.54	408.51	7.99
13:32:09	13.16	5.89	717.50	68.71	35.05	516.13	8.24
13:32:51	13.72	5.38	519.75	64.13	33.15	492.10	6.20
13:33:21	14.26	4.96	109.62	65.39	32.32	499.93	5.92
13:33:51	14.64	4.71	53.20	61.29	28.07	518.30	6.64
13:34:21	14.88	4.44	20.32	62.50	24.36	563.87	7.89
13:34:35	14.74	4.35	12.66	61.88	23.37	574.04	8.30
13:34:45	15.28	4.08	6.86	61.25	21.03	552.24	9.09
13:34:55	15.40	3.94	5.59	61.19	19.90	538.93	9.40
13:35:05	15.61	3.88	3.43	61.23	19.10	532.44	9.64
13:35:15	15.78	3.84	3.01	61.85	18.36	520.93	9.93
13:35:25	15.85	3.85	3.74	62.34	17.83	502.11	10.17
13:35:35	15.91	3.78	3.23	63.23	17.55	502.11	10.44
13:35:45	15.91	3.63	1.63	61.67	17.14	501.54	10.74
13:35:55	16.03	3.59	0.89	60.60	16.59	496.97	11.09
13:36:05	16.23	3.49	0.87	59.24	16.17	488.77	11.39
13:36:15	16.19	3.42	0.76	57.86	15.50	466.86	11.67
13:36:25	16.39	3.44	0.65	57.99	14.99	462.61	11.89
13:36:35	16.43	3.47	1.48	59.53	14.79	469.93	12.11
13:36:45	16.43	3.38	2.29	58.82	14.88	491.17	12.21
13:36:55	16.43	3.28	3.46	57.31	14.58	486.22	12.34
13:37:05	16.52	3.42	2.83	57.50	14.23	476.48	12.44
13:37:15	16.60	3.48	3.22	59.61	14.03	466.19	12.43
13:37:25	16.40	3.46	3.58	59.28	14.20	451.99	12.36
13:37:35	16.41	3.42	5.21	57.97	14.19	457.78	12.28
13:37:45	16.45	3.49	7.26	59.05	14.18	462.34	12.47
13:37:55	16.43	3.39	8.63	59.13	14.27	466.88	12.28
13:38:05	16.37	3.29	7.93	56.30	14.20	456.88	12.05
13:38:15	16.53	3.17	8.57	54.45	14.07	446.12	11.96
13:38:24	16.57	3.07	9.78	50.48	13.81	426.66	11.94
13:38:34	16.78	3.05	12.99	48.60	13.40	417.36	11.91
13:38:44	16.85	2.93	17.06	45.47	13.12	421.51	11.85
13:38:54	16.97	2.89	20.77	43.51	12.73	416.51	11.60
13:39:04	17.11	2.78	25.84	41.10	12.44	396.47	11.51
13:39:14	17.12	2.73	33.01	39.01	12.06	386.83	11.33
13:39:24	17.28	2.69	41.33	37.77	11.74	376.79	11.20
13:39:34	17.33	2.70	53.52	36.64	11.50	361.29	10.96
13:39:44	17.41	2.64	62.70	34.80	11.51	371.36	10.66

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:39:54	17.34	2.56	80.17	31.05	11.59	401.29	10.34
13:40:04	17.52	2.51	96.26	29.11	11.42	406.69	10.02
13:40:14	17.57	2.44	118.87	28.03	11.08	396.76	9.76
13:40:24	17.67	2.36	151.92	27.33	11.04	377.03	9.30
13:40:34	17.75	2.33	250.02	26.95	10.61	377.03	8.70
13:40:44	17.82	2.25	558.24	25.55	10.40	391.49	8.18
13:40:54	17.75	2.13	1234.61	23.50	10.67	406.69	9.58
13:41:04	17.69	1.87	2144.52	18.86	11.17	411.23	18.91
13:41:14	17.71	2.19	2930.80	17.44	11.76	421.69	73.28
13:41:24	17.87	2.85	2867.57	28.54	11.83	417.16	178.53
13:41:34	17.43	3.08	1847.98	34.80	11.87	417.07	338.14
13:41:44	16.89	3.14	834.34	36.78	12.45	421.60	531.91
13:41:54	16.72	3.21	289.59	38.75	12.92	427.01	404.95
13:42:03	16.57	3.16	92.70	38.33	12.95	417.22	61.95
13:42:13	16.48	3.00	49.36	36.88	12.91	386.96	39.29
13:42:23	16.51	2.93	38.90	35.38	12.39	381.63	31.75
13:42:33	16.70	2.90	33.81	33.65	11.86	366.96	25.18
13:42:43	16.75	2.92	32.72	34.19	11.46	370.97	20.03
13:42:53	16.80	2.90	31.82	33.53	11.09	357.13	16.39
13:43:03	16.78	3.03	31.85	34.02	10.79	361.05	13.98
13:43:13	16.80	3.07	32.47	34.53	10.67	352.93	12.37
13:43:23	16.64	3.00	35.27	34.24	10.80	343.10	11.36
13:43:33	16.62	2.93	34.30	33.67	10.25	347.91	10.63
13:43:43	16.70	2.82	33.75	33.25	9.82	348.12	10.13
13:43:53	16.74	2.77	31.76	31.58	9.52	333.03	9.77
13:44:03	16.92	2.73	30.72	31.31	9.21	332.27	9.44
13:44:13	16.93	2.77	30.72	30.72	9.10	323.02	9.20
13:44:23	17.05	2.77	30.21	30.89	8.97	331.56	8.97
13:44:33	16.95	2.72	30.18	30.18	8.55	328.10	8.75
13:44:43	17.03	2.70	28.11	30.24	8.42	318.57	8.60
13:44:53	17.04	2.71	26.09	29.43	8.44	308.77	8.50
13:45:03	17.09	2.70	26.09	28.59	8.05	303.00	8.49
13:45:13	17.06	2.64	26.63	29.33	7.73	296.00	8.34
13:45:23	17.13	2.61	27.69	27.91	7.74	302.24	8.18
13:45:33	17.15	3.18	28.77	29.26	7.62	316.47	8.10
13:45:43	17.17	4.20	41.84	35.24	8.67	328.23	8.04
13:45:53	16.51	5.39	63.18	52.04	11.36	363.34	7.80
13:46:03	15.52	5.23	109.60	58.92	15.79	415.61	7.63
13:46:13	14.25	4.87	128.85	74.95	19.76	489.20	7.53
13:46:22	14.65	4.73	103.51	88.63	21.63	564.93	7.81
13:46:32	14.86	4.68	59.78	93.71	22.14	635.65	9.71
13:46:42	14.97	4.92	27.91	94.30	22.55	678.20	10.37

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 02 09/21/90

09-21-199	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:46:52	15.00	5.14	28.90	95.63	24.15	726.37	8.48
13:47:02	14.72	5.07	40.45	95.24	26.07	751.10	8.05
13:47:12	14.51	4.88	43.17	91.78	26.35	736.37	8.02
13:47:22	14.58	4.76	34.56	89.81	25.40	699.36	8.06
13:47:32	14.70	4.64	24.88	88.44	24.22	631.88	8.25
13:47:42	14.78	4.44	18.26	85.66	22.84	553.04	8.38
13:47:52	14.95	4.27	14.67	82.95	21.70	495.90	8.46
13:48:02	15.18	4.22	12.03	81.74	20.28	449.82	8.44
13:52:08	16.51	3.47	6.15	89.17	12.04	249.58	10.31
13:52:38	16.58	3.20	7.98	85.50	11.78	250.58	10.48
13:53:08	16.82	3.03	9.90	81.20	11.13	233.42	10.73
13:53:38	17.00	2.93	14.53	76.46	10.89	239.45	10.19
13:54:08	17.13	2.88	24.70	71.82	10.86	231.28	9.70
13:54:38	17.21	2.75	38.52	66.47	10.43	230.91	9.50
13:55:08	17.35	2.67	58.54	60.93	9.99	240.89	9.15
13:55:38	17.45	2.58	99.52	53.38	9.94	242.78	8.70
13:56:08	17.56	2.45	171.93	42.13	9.69	227.74	8.24
13:56:38	17.68	2.68	594.47	44.17	9.41	221.89	8.26
13:57:08	16.94	3.05	214.82	55.02	9.21	215.61	40.54
AVERAGE	15.69	3.76	133.27	79.94	15.16	413.20	23.01
MINIMUM	8.87	0.16	0.00	7.16	0.00	65.52	4.83
MAXIMUM	20.21	9.51	2930.80	216.01	213.40	2182.97	637.75

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
09:47:07	14.25	4.60	99.50	78.48	1.25		14.14
09:47:37	14.87	3.87	12.58	83.27	10.77		16.80
09:48:07	15.41	3.47	12.10	73.48	19.27		18.86
09:48:37	15.64	3.33	36.10	70.48	22.62		18.76
09:49:06	15.73	3.32	41.03	77.32	25.10		18.96
09:49:36	15.51	3.52	24.98	88.92	29.07		16.79
09:50:06	15.25	3.63	15.09	98.65	28.05		12.93
09:50:36	15.08	3.69	11.70	100.01	26.00		11.20
09:51:06	15.16	3.58	14.18	94.22	24.38		10.50
09:51:36	15.24	3.53	20.85	88.67	22.58		10.60
09:52:06	15.33	3.49	29.09	83.36	21.29		10.87
09:52:36	15.48	3.39	48.14	76.48	19.74		9.67
09:53:06	15.43	3.46	46.75	79.01	18.86		8.31
09:53:36	15.32	3.46	39.66	82.77	17.95		7.10
09:54:06	15.56	3.31	30.74	81.10	16.97		5.27
09:54:36	15.51	3.38	23.87	84.93	16.57		4.82
09:55:06	15.49	3.42	23.25	86.19	16.47		4.86
09:55:36	15.41	3.40	25.58	85.18	16.68		4.15
09:56:06	15.49	3.39	28.43	82.75	16.79		4.96
09:56:36	15.47	3.36	32.92	79.33	16.81		4.36
09:57:06	15.61	3.25	41.29	73.78	16.47		3.70
09:57:36	15.74	3.17	47.94	68.68	15.73		3.76
09:58:06	15.78	3.18	54.61	66.67	15.17		3.53
09:58:36	15.65	3.25	57.65	67.58	15.05		3.63
09:59:06	15.62	3.29	52.33	69.75	15.20		3.85
09:59:35	15.58	3.30	41.65	71.84	15.80		6.03
10:00:05	15.56	3.29	44.13	70.22	16.14		11.84
10:00:35	15.57	3.30	59.65	67.39	16.00		11.42
10:01:05	15.68	3.20	70.22	63.90	15.71		10.64
10:01:35	15.68	3.18	71.33	63.02	15.48		10.67
10:02:05	15.75	3.18	81.32	60.99	15.15		10.00
10:02:35	15.80	3.10	77.33	59.43	15.14		9.56
10:03:05	15.99	2.98	65.42	56.54	14.67		8.97
10:03:35	16.06	2.92	72.42	50.77	13.77		8.71
10:04:05	16.08	2.98	77.96	47.38	13.18		9.53
10:04:35	15.99	2.96	82.06	45.86	13.25		8.55
10:05:05	15.97	3.02	85.91	45.23	13.46		9.09
10:05:35	16.03	2.93	84.64	42.02	13.54		7.27
10:06:05	16.69	2.34	127.69	36.50	11.92		13.02
10:06:35	16.30	4.71	280.52	57.93	12.08		25.30
10:07:05	13.81	5.42	285.25	103.48	28.47		12.80
10:07:35	14.16	4.49	140.75	120.57	35.15		5.97

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:08:05	14.84	3.85	11.83	114.64	31.23		6.18
10:08:35	15.30	3.56	0.70	105.52	26.61		6.52
10:09:05	15.51	3.40	1.01	102.91	25.53		6.89
10:09:34	15.63	3.33	3.62	97.11	24.32		6.63
10:10:04	15.65	3.26	7.08	87.09	23.38		6.85
10:10:34	15.77	3.10	9.61	79.94	22.12		7.02
10:11:04	16.09	2.92	22.83	54.34	19.32		6.91
10:11:34	16.14	2.84	40.76	45.56	16.96		6.62
10:12:04	16.23	2.81	50.80	42.22	15.42		6.71
10:12:34	16.20	2.83	46.70	43.42	14.93		6.46
10:13:04	16.21	2.84	47.09	43.60	15.04		7.19
10:13:34	16.16	2.90	57.67	42.26	15.30		7.39
10:14:04	16.11	2.85	60.37	41.85	15.28		6.58
10:14:34	16.23	2.77	61.05	39.11	14.86		6.35
10:15:04	16.25	2.86	66.61	40.03	15.00		6.55
10:15:34	16.19	2.80	67.04	40.54	15.36		6.08
10:16:04	16.25	2.79	65.55	39.88	15.19		5.97
10:16:34	16.18	2.89	63.63	42.22	15.32		6.98
10:17:04	16.14	2.86	54.72	40.98	15.68		6.52
10:17:34	16.13	2.86	54.90	41.40	15.61		5.98
10:18:04	16.17	2.83	56.17	40.34	15.76		5.13
10:18:34	16.21	2.82	55.49	39.89	15.21		5.11
10:19:04	16.17	2.84	52.23	42.31	15.48		4.78
10:19:33	16.20	2.85	51.45	42.95	15.66		4.91
10:20:03	16.05	2.95	55.55	41.48	15.89		5.01
10:20:33	16.02	2.92	59.50	38.35	15.82		5.88
10:21:03	16.11	2.84	57.83	37.73	15.54		5.07
10:21:33	16.18	2.82	56.99	36.65	15.16		4.43
10:22:03	16.22	2.82	55.44	34.48	14.85		4.33
10:22:33	16.16	2.85	56.38	34.43	14.78		4.59
10:23:03	16.09	2.89	56.99	34.29	15.01		4.88
10:23:33	16.07	2.89	57.84	32.78	14.63		4.22
10:24:03	16.11	2.86	54.77	30.24	14.48		3.97
10:29:02	16.24	2.84	43.86	20.88	12.79		2.51
10:29:34	16.22	2.77	37.93	19.63	12.71		1.77
10:30:04	16.12	2.87	35.80	20.24	12.75		1.89
10:30:34	16.09	2.83	43.03	21.53	12.88		2.36
10:31:04	16.19	2.76	45.74	19.91	12.72		2.12
10:31:33	16.27	2.79	43.09	19.00	12.39		2.03
10:32:03	16.11	2.85	38.43	20.59	12.55		2.20
10:32:33	16.10	2.81	42.74	19.17	12.80		2.21
10:33:03	16.09	2.84	41.70	19.87	12.39		2.67

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:33:33	16.05	2.82	45.28	20.86	12.83		1.98
10:34:03	16.25	2.71	42.57	17.91	12.40		1.51
10:34:33	16.21	2.72	37.68	17.27	11.69		7.90
10:35:03	16.20	2.74	37.48	17.22	11.58		8.98
10:35:33	16.16	2.76	36.82	17.32	11.50		8.62
10:36:03	17.21	2.51	75.13	29.26	10.74		19.76
10:36:33	12.88	6.25	222.03	189.21	71.25		11.79
10:37:03	11.69	6.71	146.99	246.88	177.77		10.90
10:37:33	14.17	4.64	52.73	239.33	135.24		7.55
10:38:08	14.70	4.01	0.04	229.76	94.22		53.19
10:38:38	14.96	3.79	0.00	209.43	68.74		14.62
10:39:08	15.23	3.60	0.00	192.33	57.60		13.72
10:39:38	15.24	3.54	0.00	186.37	49.92		13.67
10:40:08	15.38	3.46	0.00	177.29	44.65		12.83
10:40:38	15.40	3.42	0.00	169.90	41.78		12.62
10:41:08	15.60	3.29	0.00	149.25	38.65		12.64
10:41:38	15.60	3.29	0.00	138.20	36.54		12.98
10:42:08	15.59	3.26	0.00	130.02	36.07		13.00
10:42:38	15.66	3.23	0.00	124.49	35.60		13.77
10:43:08	15.59	3.27	0.00	118.72	35.85		14.52
10:43:38	15.49	3.31	0.00	117.86	36.09		14.05
10:44:08	15.48	3.32	0.00	117.56	36.47		14.21
10:44:38	15.44	3.37	0.00	119.87	37.39		14.10
10:45:08	15.56	3.29	0.00	119.67	38.76		14.49
10:45:38	15.80	3.17	0.00	110.22	38.37		13.55
10:46:08	15.75	3.17	0.00	112.41	37.77		13.57
10:46:38	15.83	3.12	0.59	101.59	36.27		13.71
10:47:08	15.65	3.24	1.63	100.71	35.88		13.40
10:47:37	15.49	3.29	2.22	100.50	36.79		13.97
10:48:07	15.75	3.15	2.91	92.14	35.83		14.04
10:48:37	15.83	3.08	3.98	85.93	34.54		12.99
10:49:07	15.94	3.03	4.21	82.83	33.75		12.89
10:49:37	15.98	3.00	4.83	80.20	33.37		12.67
10:50:07	15.82	3.12	4.97	85.22	33.41		12.62
10:50:37	15.72	3.13	6.33	81.90	34.45		13.29
10:51:07	15.87	3.04	6.53	76.89	33.19		12.72
10:51:37	15.99	2.98	7.73	74.27	32.02		12.60
10:52:07	15.97	2.99	6.17	75.56	31.29		14.03
10:52:37	15.98	2.99	8.10	73.57	30.73		14.94
10:53:07	15.80	3.09	8.49	76.84	30.78		14.65
10:53:37	15.75	3.10	8.43	74.86	31.16		14.44
10:54:07	15.83	3.07	9.96	70.56	30.64		13.63

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:54:37	15.82	3.03	10.97	69.59	30.36		13.79
10:55:07	15.96	2.95	10.92	66.37	29.36		13.33
10:55:37	15.94	3.00	11.15	66.40	28.72		14.09
10:56:07	15.84	3.03	12.32	66.74	28.92		12.88
10:56:37	15.86	3.01	12.94	65.80	28.64		15.36
10:57:07	15.98	2.93	12.89	63.46	27.77		15.60
10:57:36	15.92	3.02	12.64	64.49	27.36		15.21
10:58:06	15.82	3.03	15.42	64.10	27.93		15.09
10:58:36	16.52	2.39	16.53	35.68	25.72		13.75
10:59:06	17.97	1.93	12.56	23.89	17.55		13.11
11:04:07	15.48	3.50	0.00	138.55	43.68		144.79
11:04:37	15.45	3.39	0.00	130.88	40.43		142.12
11:05:06	15.58	3.33	0.00	121.45	37.52		148.91
11:05:36	15.57	3.32	0.00	116.69	35.96		139.79
11:06:06	15.62	3.30	0.00	113.59	34.93		152.21
11:06:36	15.66	3.23	0.00	109.39	34.82		160.43
11:07:06	15.76	3.20	2.19	104.99	34.09		154.91
11:07:36	15.82	3.12	0.00	101.46	33.72		152.53
11:08:06	15.90	3.10	1.02	97.51	32.52		158.29
11:08:36	15.85	3.15	1.81	97.73	32.48	142.35	149.96
11:09:06	15.78	3.15	2.01	95.01	32.65	127.19	15.78
11:09:36	15.78	3.16	2.05	98.19	32.58	124.71	16.09
11:10:06	15.78	3.16	2.32	93.95	32.78	120.20	16.02
11:10:39	15.77	3.01	2.38	81.44	32.28	105.20	16.97
11:11:09	17.61	1.98	9.37	19.67	21.60	83.91	14.78
11:11:39	17.57	2.45	13.61	35.98	18.08	77.30	16.24
11:12:09	16.22	2.98	12.39	73.28	32.65	101.33	18.05
11:12:39	15.98	3.05	6.98	71.64	34.28	91.89	17.01
11:13:11	15.86	3.07	8.36	69.05	32.11	93.70	17.38
11:13:41	16.00	2.75	8.24	55.86	30.04	79.63	17.04
11:14:11	17.58	1.87	9.10	22.81	21.31	65.59	15.19
11:14:41	17.86	2.25	12.01	31.69	15.69	67.72	15.88
11:15:17	16.39	2.87	17.84	59.17	26.16	80.25	17.24
11:15:47	16.07	2.95	14.11	57.35	29.14	81.23	17.67
11:16:17	16.54	3.21	54.43	64.89	26.64	81.52	20.19
11:16:47	14.68	4.64	104.42	158.79	46.17	113.91	20.26
11:17:17	14.70	4.10	20.77	180.21	65.80	99.03	17.98
11:17:47	15.16	3.68	0.00	168.14	64.66	95.02	17.15
11:18:17	15.36	3.53	0.00	161.54	60.13	85.50	16.81
11:18:47	15.49	3.48	0.00	154.73	56.81	92.82	16.54
11:19:17	15.28	3.55	0.00	156.25	54.82	89.07	15.79
11:19:46	15.44	3.39	0.00	140.85	52.30	85.40	16.32

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:20:16	15.58	3.34	0.00	134.18	49.01	84.16	15.78
11:20:46	15.48	3.39	0.00	137.09	48.07	89.48	15.44
11:21:16	15.57	3.28	0.00	131.96	46.71	85.80	15.30
11:21:46	15.67	3.29	0.00	129.88	44.99	80.02	15.00
11:22:16	15.59	3.27	0.00	123.42	44.42	73.22	15.66
11:22:46	15.75	3.21	0.00	116.89	43.05	81.69	15.12
11:23:16	15.65	3.26	0.00	116.13	42.62	70.69	15.53
11:23:46	15.62	3.31	0.00	117.56	42.21	77.66	15.40
11:24:16	15.56	3.30	0.00	121.66	42.77	73.83	15.68
11:24:46	15.53	3.33	0.00	123.92	42.74	78.09	18.77
11:25:16	15.51	3.34	0.00	120.75	42.25	67.30	17.83
11:25:46	15.55	3.29	0.00	116.20	41.43	78.90	17.48
11:26:16	15.96	2.62	5.19	62.26	38.38	62.71	16.86
11:26:46	17.53	1.87	10.01	27.93	26.07	57.50	16.07
11:27:16	18.18	1.96	7.84	29.52	18.48	50.17	16.36
11:27:45	16.80	2.95	17.73	74.79	29.77	63.69	17.94
11:28:15	15.83	3.24	4.23	102.88	42.91	64.27	17.68
11:28:45	15.61	3.30	1.36	103.91	41.07	62.95	16.99
11:29:15	15.51	3.31	1.58	105.29	39.79	59.98	16.74
11:29:45	15.53	3.17	2.10	90.51	38.91	59.70	17.03
11:30:15	16.63	2.39	11.04	37.14	34.92	51.82	15.36
11:30:45	17.96	1.86	6.75	28.24	24.68	37.14	15.40
11:31:15	18.35	2.05	57.94	50.87	17.92	72.35	16.02
11:31:45	15.11	4.99	264.19	165.51	39.54	132.95	20.27
11:32:15	12.84	5.61	344.92	190.12	94.58	139.38	21.62
11:32:45	13.38	5.13	177.44	205.98	102.99	111.99	16.49
11:33:15	13.93	4.76	70.84	214.82	85.63	113.99	16.87
11:33:45	13.96	4.66	65.01	213.90	72.24	100.74	16.92
11:34:15	13.96	4.60	63.92	215.28	63.21	107.59	16.24
11:34:45	13.99	4.54	48.58	222.39	57.36	103.12	15.61
11:35:15	14.10	4.47	34.92	222.40	53.58	108.77	15.17
11:35:45	14.23	4.36	30.99	221.45	50.66	98.63	15.21
11:36:14	14.31	4.30	19.41	229.92	48.97	111.47	15.06
11:36:44	14.33	4.28	9.71	239.12	48.05	105.12	14.77
11:37:14	14.41	4.18	4.80	235.81	47.59	113.06	14.73
11:37:44	14.55	4.03	1.29	228.20	46.41	104.89	13.53
11:38:14	14.68	4.00	0.72	165.19	45.47	94.57	11.27
11:38:44	14.69	3.86	0.00	52.38	44.54	96.82	11.98
11:39:14	15.44	3.44	0.00	34.21	39.39	102.26	12.17
11:39:44	16.36	3.08	0.00	33.33	32.44	92.71	12.59
11:40:14	16.86	2.90	0.00	36.67	27.24	94.47	12.24
11:40:44	17.06	2.77	0.00	38.36	23.75	88.77	11.66

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:41:14	17.22	2.73	0.00	39.44	21.28	94.47	11.82
11:41:44	17.22	2.71	0.00	45.70	19.10	90.22	12.00
11:42:14	17.26	2.66	0.00	51.07	17.79	95.58	11.62
11:42:44	17.36	2.59	0.00	53.65	16.43	85.84	11.56
11:43:14	17.49	2.49	0.00	51.95	15.41	92.46	11.79
11:43:44	17.61	2.42	0.00	51.20	14.64	84.21	11.45
11:44:14	17.68	2.38	0.00	52.17	14.00	87.62	11.45
11:44:44	17.72	2.33	0.00	51.71	13.69	83.71	10.68
11:45:14	17.79	2.29	0.00	50.41	13.19	81.02	12.35
11:45:44	17.83	2.25	0.00	50.41	12.91	70.64	13.46
11:46:14	17.91	2.22	0.00	50.06	12.64	62.49	12.95
11:46:44	18.08	2.13	0.00	41.29	12.63	57.40	13.22
11:47:14						69.39	13.65
11:47:43						81.67	13.14
11:48:13						77.38	5.90
11:48:43						80.12	17.21
11:49:13						72.73	47.91
11:49:43						73.54	19.03
11:50:13						72.33	15.00
11:50:43						80.83	13.78
11:51:13						69.58	24.84
11:51:43						68.28	8.83
11:52:13						45.25	6.26
11:52:43						46.52	4.71
11:53:13						40.56	3.94
11:53:43						62.28	3.36
11:54:13						66.70	4.92
11:54:43						74.16	5.64
11:55:13						65.93	2.31
11:55:43						62.81	2.10
11:56:13						44.63	2.04
11:56:43						50.07	2.06
11:57:13						50.65	2.11
11:57:43						59.66	2.15
11:58:13						57.19	8.53
11:58:42						61.43	10.64
11:59:12	17.15	1.81	7.38	31.08	25.75	59.36	7.80
11:59:42	18.27	1.53	4.85	26.53	15.25	52.55	7.18
12:00:12	18.22	1.95	5.46	31.03	13.53	42.07	8.23
12:00:42	16.68	2.65	14.49	53.91	34.11	50.97	8.65
12:01:12	15.85	4.80	83.90	95.08	42.80	61.42	22.18
12:01:42	13.56	5.74	279.56	168.29	69.48	86.75	9.98

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:02:12	13.73	5.02	105.81	195.57	61.62	89.02	8.06
12:02:42	13.99	4.62	38.37	197.87	52.90	82.79	7.90
12:03:12	14.46	4.26	26.15	206.94	50.24	74.02	8.04
12:03:42	14.79	4.03	3.15	219.25	49.39	68.14	7.97
12:04:12	14.81	3.94	0.00	225.11	49.74	58.35	7.55
12:04:42	15.10	3.72	0.00	209.52	45.64	17.89	7.99
12:05:12	15.20	3.60	0.00	199.33	42.77	9.69	7.71
12:05:42	15.45	3.45	0.00	179.39	40.23	4.91	8.07
12:06:12	15.73	3.27	0.00	163.31	37.88	25.94	7.43
12:06:42	15.60	3.36	0.00	161.65	37.42	41.78	7.75
12:07:11	15.56	3.37	0.00	162.18	38.74	52.38	7.23
12:07:41	15.52	3.39	0.00	167.66	39.08	47.46	7.63
12:08:11	16.02	2.85	0.00	122.40	37.36	45.89	7.04
12:08:41	17.60	1.99	5.64	30.23	23.97	39.25	6.26
12:09:11	18.21	1.70	6.11	20.82	15.84	39.99	6.56
12:09:26	18.35	2.08	4.62	24.26	14.24	36.31	7.06
12:09:41	16.69	2.98	6.36	73.56	27.75	38.17	7.24
12:09:56	16.13	3.23	5.22	119.05	46.00	40.47	6.90
12:10:11	15.79	3.31	0.00	140.85	51.89	46.39	7.20
12:10:26	15.66	3.32	0.00	148.95	48.05	43.25	6.94
12:10:41	15.67	3.28	0.00	148.77	45.18	49.59	7.48
12:10:56	15.71	3.25	0.00	144.88	43.13	54.10	7.77
12:11:11	15.73	3.27	0.00	143.55	41.80	51.93	8.11
12:11:26	15.66	3.32	0.00	146.91	41.49	41.05	7.57
12:11:41	15.59	3.24	0.00	146.53	41.65	45.83	7.03
12:11:56	15.83	3.14	0.00	136.56	40.56	56.59	6.93
12:12:11	16.15	2.52	0.00	76.53	38.23	40.57	6.25
12:12:26	17.34	2.03	4.94	34.84	29.25	36.04	6.04
12:12:41	17.86	1.80	7.00	24.51	21.47	34.93	5.90
12:12:56	18.07	1.72	6.00	22.66	17.68	41.68	5.91
12:13:11	18.21	1.65	5.03	22.69	15.71	30.35	5.90
12:13:25	18.36	1.99	4.72	26.51	14.90	31.58	7.12
12:13:40	17.21	2.79	6.70	49.77	23.51	41.22	7.09
12:13:55	16.25	3.24	6.63	94.24	44.86	39.55	7.12
12:14:10	15.71	3.28	2.06	120.15	53.89	37.25	7.09
12:14:25	15.86	3.21	0.00	125.69	50.37	44.34	7.29
12:14:40	15.76	3.24	0.00	130.21	46.34	46.06	6.85
12:14:55	15.70	3.30	0.00	132.50	44.28	49.06	7.98
12:15:10	15.65	3.32	0.00	132.60	43.23	39.34	7.77
12:15:25	15.52	3.24	0.00	132.47	42.52	38.53	6.77
12:15:40	15.88	2.67	0.71	91.69	40.14	39.45	6.68
12:15:55	17.15	2.72	13.76	64.79	32.94	41.40	7.41

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:16:10	16.51	4.40	34.17	82.11	49.07	43.61	6.42
12:16:25	15.54	4.96	47.96	113.82	93.42	46.59	6.17
12:16:40	15.42	4.26	35.03	117.60	111.86	45.89	6.27
12:16:55	15.92	4.04	12.47	112.08	107.77	49.34	6.34
12:17:10	15.83	4.41	0.64	157.80	107.07	40.32	6.64
12:17:25	14.83	4.34	7.76	224.96	120.48	46.50	6.67
12:17:40	14.68	4.12	13.04	245.40	113.97	56.27	7.55
12:17:55	14.77	4.06	9.37	250.87	99.13	51.64	7.73
12:18:10	14.68	4.11	4.43	260.70	89.02	45.68	6.56
12:18:24	14.53	4.19	0.64	270.61	82.95	53.24	6.36
12:18:39	14.41	4.16	1.33	266.88	78.42	57.96	6.34
12:18:54	14.41	4.02	0.00	261.69	73.86	49.53	6.67
12:19:09	14.68	3.91	0.23	251.01	69.04	48.35	6.78
12:19:24	14.78	3.98	0.88	250.87	65.51	54.02	6.61
12:19:39	14.63	4.03	0.66	256.87	63.87	53.47	6.54
12:19:54	14.63	3.94	0.14	248.94	61.58	46.70	6.90
12:20:09	14.63	3.96	0.00	252.29	59.64	45.28	6.73
12:20:24	14.69	4.02	0.00	257.65	58.51	54.01	6.67
12:20:39	14.60	3.93	0.00	251.20	57.64	57.10	6.76
12:21:05	14.69	3.92	0.00	150.12	56.31	50.01	6.70
12:21:20	14.68	3.85	0.00	254.69	56.50	49.50	7.13
12:21:35	14.84	3.85	0.00	252.49	55.75	51.56	6.75
12:21:50	14.81	3.77	0.00	250.93	55.53	56.26	6.75
12:22:05	15.03	3.74	0.00	245.09	53.91	48.78	7.42
12:22:20	14.89	3.83	0.00	247.13	53.42	49.66	6.87
12:22:35	15.02	3.69	0.00	239.57	53.48	49.16	6.88
12:22:50	15.15	3.66	0.00	236.16	52.21	52.64	7.35
12:23:05	15.10	3.69	0.00	237.26	51.73	44.13	7.04
12:23:20	15.17	3.61	0.00	233.70	52.03	43.34	7.02
12:23:35	15.13	3.61	0.00	231.23	51.99	53.63	6.87
12:23:50	15.22	3.71	0.00	231.28	52.15	49.69	6.51
12:24:05	14.89	3.72	0.00	239.13	53.48	39.31	6.83
12:24:20	15.30	3.53	0.00	222.37	52.94	47.00	7.05
12:24:35	15.35	3.48	0.00	215.73	51.14	56.22	6.98
12:24:50	15.48	3.43	0.00	212.15	50.48	51.19	7.17
12:25:05	15.47	3.43	0.00	210.48	49.95	49.45	7.42
12:25:20	15.44	3.48	0.00	208.57	49.71	47.95	6.78
12:25:35	15.29	3.60	0.00	214.81	50.38	46.67	6.80
12:25:50	15.32	3.50	0.00	211.10	51.33	42.38	6.88
12:26:04	15.18	3.63	0.00	217.18	50.71	38.06	6.90
12:26:19	15.36	3.50	0.00	209.31	51.36	53.57	7.49
12:26:34	15.29	3.55	0.00	211.08	50.11	54.05	7.78

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:26:49	15.30	3.55	0.00	214.37	50.34	40.51	7.28
12:27:04	15.32	3.47	0.00	210.20	49.96	45.48	7.57
12:27:19	15.45	3.51	0.00	205.37	48.81	54.07	6.67
12:27:34	15.23	3.55	0.00	214.11	49.50	49.75	6.89
12:27:49	15.39	3.47	0.00	211.53	49.86	40.68	7.19
12:28:04	15.37	3.52	0.00	212.04	49.67	48.75	6.99
12:28:19	15.30	3.52	0.00	213.31	50.25	48.76	7.43
12:28:34	15.37	3.47	0.00	206.80	50.24	46.83	7.56
12:28:49	15.41	3.24	0.00	188.89	50.00	40.29	7.13
12:29:04	16.50	2.50	0.00	81.15	45.79	44.30	6.44
12:29:19	17.32	2.14	4.80	33.21	35.53	44.29	6.24
12:29:34	17.76	1.95	6.56	20.33	27.05	41.89	6.20
12:29:49	18.00	1.88	4.74	17.43	22.15	31.38	6.11
12:30:04	18.07	1.76	3.64	18.38	20.02	34.01	6.15
12:30:19	18.13	1.81	2.69	19.87	18.88	30.22	6.00
12:30:34	18.06	2.26	2.53	26.52	19.06	31.90	6.67
12:30:48	16.76	3.16	2.74	99.03	35.79	28.97	6.70
12:31:03	15.64	3.63	0.75	175.56	65.81	38.13	6.34
12:31:18	15.30	3.53	0.00	195.48	73.31	50.83	6.35
12:31:33	15.49	3.44	0.00	191.84	65.76	38.49	7.03
12:31:48	15.43	3.59	0.00	194.85	59.24	42.75	6.31
12:32:03	15.22	3.48	0.00	195.65	57.80	46.02	6.59
12:32:18	15.48	3.45	0.00	191.35	54.38	52.32	6.69
12:32:33	15.48	3.34	0.00	184.52	52.12	40.48	6.98
12:32:48	15.59	3.05	0.00	144.92	50.05	37.38	6.37
12:33:03	16.67	2.36	2.31	55.56	43.72	42.14	5.87
12:33:18	17.50	1.99	8.26	28.38	32.30	38.49	6.13
12:33:33	17.90	1.78	7.39	21.19	24.54	31.88	5.95
12:33:48	18.10	1.78	5.12	21.43	20.72	23.14	5.84
12:34:03	18.15	1.72	3.98	22.68	19.23	30.60	5.87
12:34:18	18.36	1.75	4.40	23.81	18.08	41.08	6.55
12:34:33	17.84	2.66	4.57	43.56	22.48	25.79	7.06
12:34:48	16.35	3.38	4.21	121.29	49.13	32.39	6.18
12:35:03	15.33	3.68	0.02	178.83	72.70	42.03	6.07
12:35:18	15.44	3.57	0.00	184.06	72.47	52.44	6.27
12:35:33	15.21	3.59	0.00	192.83	67.71	42.37	6.08
12:35:48	15.26	3.57	0.00	190.07	65.20	42.48	5.93
12:36:02	15.29	3.69	0.00	191.42	62.83	48.78	6.04
12:36:17	15.08	3.65	0.00	190.56	62.14	48.79	6.08
12:36:32	15.04	3.58	0.00	190.88	60.72	45.78	6.23
12:36:47	15.32	3.47	0.00	188.65	58.86	45.83	6.83
12:37:02	15.46	3.42	0.00	178.79	56.47	51.83	7.04

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:37:17	15.40	3.19	0.00	163.90	55.07	52.17	6.63
12:37:32	16.30	2.35	0.00	74.50	49.95	42.53	5.71
12:37:47	17.39	1.98	6.58	33.84	37.00	38.51	5.62
12:38:02	17.84	1.82	4.91	23.69	26.43	40.24	5.44
12:38:17	18.05	1.74	5.72	22.61	21.10	40.55	5.43
12:38:32	18.13	1.73	3.39	23.30	18.59	30.39	5.74
12:38:47	17.92	1.68	3.00	24.22	17.38	30.65	5.56
12:39:02	18.24	1.86	5.49	26.96	16.67	37.02	5.91
12:39:17	17.70	2.67	3.64	45.24	22.78	36.88	6.07
12:39:32	16.36	3.33	4.24	116.24	49.30	28.94	6.52
12:39:47	15.70	3.46	0.52	157.92	67.65	34.90	6.63
12:40:02	15.51	3.50	0.00	166.87	64.61	45.66	6.22
12:40:17	15.47	3.39	0.85	159.93	58.86	38.53	6.90
12:40:32	15.53	3.42	0.00	160.03	55.54	37.06	7.36
12:40:47	15.51	3.38	0.00	155.94	53.80	44.34	6.35
12:41:02	15.51	3.28	0.00	156.09	52.55	48.63	6.68
12:41:17	15.98	2.54	0.00	78.91	48.98	39.76	5.68
12:41:32	17.09	2.00	6.65	34.29	37.44	35.23	5.82
12:41:46	17.82	1.76	7.79	23.65	26.46	42.04	5.70
12:42:01	18.07	1.64	6.78	21.97	20.69	38.80	5.46
12:42:16	18.34	1.57	2.12	22.84	17.85	29.92	5.45
12:42:31	18.37	1.59	3.47	23.91	16.30	26.76	5.45
12:42:46	18.39	1.59	3.52	24.52	15.65	31.91	5.56
12:43:01	18.27	2.34	4.24	32.03	17.41	30.37	6.93
12:43:16	16.85	2.99	7.23	71.16	36.04	34.07	6.48
12:43:31	16.21	3.17	4.76	111.39	58.39	32.93	6.52
12:43:46	15.94	3.25	0.00	127.90	58.78	46.98	6.14
12:44:01	15.73	3.35	0.00	140.71	54.40	44.64	5.95
12:44:16	15.56	3.44	0.00	153.75	52.98	38.23	5.85
12:44:31	15.42	3.33	0.00	153.69	52.77	35.10	5.96
12:44:46	15.85	2.52	2.53	79.30	48.99	44.43	5.71
12:45:01	17.04	2.03	7.05	35.04	37.12	43.50	6.19
12:45:16	17.69	1.80	9.00	24.78	26.47	30.41	5.61
12:45:31	17.99	1.76	7.72	23.85	20.70	26.43	6.15
12:45:46	18.01	2.56	8.75	35.10	19.76	39.90	6.37
12:46:01	16.87	4.16	35.28	73.78	32.41	22.53	5.57
12:46:16	15.87	4.75	36.83	108.54	55.84	14.84	5.68
12:46:31	15.38	4.48	12.64	121.28	66.13	6.51	5.47
12:46:46	15.74	3.66	2.21	96.84	61.45	2.84	5.74
12:47:01	16.41	3.19	0.44	63.76	52.63	4.27	5.89
12:47:16	16.74	2.91	7.92	41.78	46.59	0.25	5.98
12:47:31	17.01	2.61	17.43	27.00	43.38	0.24	5.84

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:47:46	17.28	2.41	26.93	17.67	38.14	3.42	6.06
12:48:01	17.47	2.28	21.13	12.20	32.38	4.90	5.60
12:48:15	17.63	2.16	17.22	10.06	28.01	0.00	6.39
12:48:30	17.57	2.03	11.77	11.28	25.11	2.12	6.14
12:48:45	17.88	2.10	8.22	14.13	23.32	3.56	5.59
12:49:00	17.68	3.09	8.50	74.12	30.66	3.81	5.81
12:49:15	16.07	3.45	1.21	154.98	64.30	0.00	5.81
12:49:30	15.79	3.55	0.00	179.14	75.73	0.00	5.71
12:49:45	15.45	3.59	0.00	191.22	71.95	3.26	6.38
12:50:00	15.38	3.69	0.00	199.30	68.32	0.31	6.30
12:50:15	15.18	3.64	0.00	200.90	66.89	0.00	5.95
12:50:30	15.19	3.73	0.00	206.83	65.64	0.00	5.45
12:50:45	15.07	3.75	0.00	212.31	66.52	3.20	5.48
12:51:00	15.00	3.67	0.00	212.52	66.66	0.00	5.61
12:51:15	15.15	3.71	0.00	212.01	65.53	0.00	5.63
12:51:30	15.03	3.52	0.00	202.67	64.78	0.00	5.93
12:51:45	15.34	3.54	0.00	197.03	62.80	0.00	5.87
12:52:00	15.31	3.52	0.00	195.02	62.97	0.00	5.81
12:52:15	15.32	3.43	0.00	190.72	62.31	0.00	6.36
12:52:30	15.48	3.54	0.00	194.30	61.47	0.00	5.51
12:52:44	15.28	3.55	0.00	196.33	62.61	1.21	5.44
12:52:59	15.26	3.49	0.00	189.30	62.43	0.00	5.49
12:53:14	15.35	3.54	0.00	190.00	61.83	0.00	5.57
12:53:29	15.27	3.53	0.00	187.71	61.81	4.09	5.63
12:53:44	15.24	3.57	0.00	192.07	61.25	3.40	5.75
12:53:59	15.23	2.97	0.00	143.73	60.47	0.00	5.78
12:54:14	16.38	2.21	0.00	56.24	50.07	0.00	5.23
12:54:29	17.34	1.89	8.86	29.38	34.84	0.00	5.14
12:54:44	17.78	1.77	5.95	22.66	26.33	0.00	5.17
12:54:59	18.06	1.64	2.89	20.95	22.54	0.00	5.12
12:55:14	18.29	1.63	3.06	20.04	20.00	0.00	5.07
12:55:29	18.34	1.70	4.23	20.96	18.94	0.00	5.31
12:55:44	18.21	2.70	3.28	40.83	23.28	0.00	5.91
12:55:59	16.57	3.39	6.78	115.19	54.21	0.00	5.57
12:56:14	15.81	3.50	1.10	147.25	77.64	0.00	5.60
12:56:29	15.48	3.57	0.00	162.86	73.76	3.90	5.47
12:56:44	15.34	3.48	0.00	161.49	66.76	0.00	5.87
12:56:59	15.41	3.50	0.00	160.54	62.35	0.00	5.95
12:57:14	15.35	3.43	0.00	157.32	60.76	0.00	5.83
12:57:29	15.44	2.67	0.00	99.34	56.68	0.48	5.06
12:57:43	16.73	2.05	5.02	43.43	43.41	0.00	4.98
12:57:58	17.52	1.80	7.04	28.27	30.57	0.00	5.15

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:58:13	17.94	1.73	6.29	24.11	24.00	0.00	5.09
12:58:28	18.09	1.68	4.36	23.39	21.23	0.00	5.26
12:58:43	18.21	1.61	3.18	23.32	19.54	0.00	4.97
12:58:58	18.38	1.60	6.38	24.20	18.36	0.00	5.15
12:59:13	18.41	2.12	2.97	29.41	18.88	0.00	6.35
12:59:28	17.55	2.96	5.17	59.95	33.35	0.10	5.99
12:59:43	16.38	3.24	5.65	101.04	61.76	0.00	5.72
12:59:58	15.93	3.31	0.62	115.94	69.10	0.00	6.41
13:00:13	15.72	3.40	0.00	126.32	62.10	0.00	5.32
13:00:28	15.55	3.41	0.00	132.54	57.04	1.35	5.67
13:00:43	15.47	2.81	0.00	94.91	52.97	0.00	5.66
13:00:58	16.47	2.37	18.21	60.77	43.65	0.00	8.32
13:01:13	17.28	4.13	61.83	73.75	45.44	2.31	4.94
13:01:28	15.72	4.90	51.33	112.56	87.22	1.95	5.13
13:01:43	15.28	4.60	20.36	124.21	111.60	0.00	5.24
13:01:58	15.45	3.94	5.63	114.28	111.84	0.00	5.42
13:02:12	15.92	4.01	0.25	105.44	102.52	0.00	6.19
13:02:27	15.54	4.83	14.98	190.48	110.94	0.00	6.29
13:02:42	14.23	4.89	50.20	224.89	124.86	0.00	6.34
13:02:57	13.91	4.78	69.97	231.69	117.45	0.00	5.96
13:03:12	13.92	4.63	71.93	234.99	106.52	0.00	6.00
13:03:27	14.05	4.68	61.98	244.55	96.54	0.00	5.21
13:03:42	13.85	4.50	43.26	252.29	90.30	0.00	5.43
13:03:57	14.11	4.25	28.56	247.68	83.12	0.00	5.27
13:04:12	14.39	4.20	17.74	248.13	76.70	0.28	5.25
13:04:27	14.43	4.21	10.99	254.93	73.58	0.28	5.30
13:04:42	14.44	4.15	6.07	256.27	72.06	0.00	5.52
13:04:57	14.49	4.06	3.48	251.90	70.11	0.00	5.28
13:05:12	14.58	4.07	1.65	254.16	67.70	0.00	4.97
13:05:27	14.59	4.02	0.00	256.19	66.25	0.00	5.36
13:05:42	14.63	3.99	0.00	254.48	64.96	0.00	5.33
13:05:57	14.69	3.92	0.00	249.81	63.88	0.00	5.41
13:06:12	14.75	3.91	0.00	247.98	62.59	0.00	5.70
13:06:27	14.79	4.01	0.00	254.22	62.56	0.00	5.02
13:06:42	14.64	4.01	0.00	256.45	63.12	0.00	5.12
13:06:57	14.62	3.90	0.00	249.03	62.49	6.65	5.45
13:07:12	14.78	3.89	0.00	246.98	61.20	5.05	5.45
13:07:26	14.77	3.88	0.00	246.98	60.72	0.00	5.74
13:07:41	14.82	3.84	0.00	244.78	60.18	3.92	5.25
13:07:56	14.87	3.83	0.00	245.77	59.51	6.58	5.29
13:08:11	14.86	3.80	0.00	242.63	58.95	0.00	5.49
13:08:26	14.91	3.80	0.00	240.17	58.80	0.00	6.02

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:08:41	14.97	3.84	0.00	241.40	58.56	0.00	6.17
13:08:56	14.87	3.90	0.00	244.81	58.95	0.00	5.18
13:09:11	14.78	3.84	0.00	247.20	59.68	0.00	5.39
13:09:26	14.84	3.77	0.00	241.33	59.11	0.00	5.34
13:09:41	14.94	3.77	0.00	238.81	57.85	0.00	5.42
13:09:56	14.95	3.80	0.00	239.78	57.85	0.00	5.19
13:10:11	14.93	3.76	0.00	237.43	57.99	0.00	5.66
13:10:26	14.99	3.72	0.00	232.12	57.44	0.00	6.03
13:10:41	15.02	3.71	0.00	228.51	56.72	0.00	5.97
13:10:56	15.00	3.70	0.00	227.82	56.28	2.69	6.54
13:11:11	15.03	3.07	0.00	148.90	55.55	0.00	5.47
13:11:26	15.98	2.51	0.00	58.97	47.32	0.00	5.15
13:11:41	16.81	2.28	3.34	28.36	37.10	0.00	5.06
13:11:56	17.27	2.17	5.88	18.10	30.27	0.00	4.98
13:12:11	17.54	2.12	7.66	14.71	26.49	0.00	5.00
13:12:25	17.62	2.06	8.28	13.91	24.78	0.00	5.10
13:12:40	17.78	2.03	8.04	13.67	23.66	0.00	5.11
13:12:55	17.82	2.00	7.38	13.90	23.10	3.37	5.16
13:13:10	17.91	1.98	5.23	13.37	22.75	0.00	5.17
13:13:25	17.80	1.96	4.51	12.83	22.35	0.00	5.04
13:13:40	17.98	1.95	4.20	13.23	22.38	0.00	5.32
13:13:55	18.00	2.68	4.56	35.91	23.83	2.90	5.51
13:14:10	17.17	3.47	2.48	141.76	49.00	0.00	5.36
13:14:25	15.94	3.58	0.00	189.94	83.26	0.00	5.27
13:14:40	15.56	3.56	0.00	200.44	86.09	0.00	5.34
13:14:55	15.46	3.59	0.00	204.30	76.92	0.22	5.67
13:15:10	15.34	3.61	0.00	208.38	70.15	0.00	5.74
13:15:25	15.18	3.57	0.00	204.63	65.38	0.00	5.98
13:15:40	15.28	3.43	0.00	195.08	61.62	0.00	6.23
13:15:55	15.31	2.60	0.00	94.11	56.22	0.00	5.72
13:16:10	16.58	2.13	4.11	38.57	43.28	0.00	5.16
13:16:25	17.28	1.96	6.09	22.02	32.35	0.00	5.29
13:16:40	17.66	1.92	4.29	17.55	26.50	0.00	4.93
13:16:55	17.89	1.90	2.94	16.97	23.88	0.00	4.78
13:17:10	17.93	1.88	3.62	17.57	22.76	0.00	4.83
13:17:25	18.03	1.84	4.33	17.26	22.13	0.00	5.01
13:17:39	18.08	1.82	5.95	16.77	21.07	0.00	5.06
13:17:54	18.03	1.83	6.01	15.33	20.95	0.00	4.90
13:18:09	18.12	2.09	7.43	15.19	21.21	0.00	5.52
13:18:24	18.00	2.98	9.03	65.51	29.08	0.00	5.27
13:18:39	16.69	3.48	4.40	145.03	58.81	2.46	5.29
13:18:54	15.84	3.59	0.00	175.41	77.42	0.00	5.40

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:19:09	15.52	3.66	0.00	189.25	74.15	0.00	5.18
13:19:24	15.29	3.65	0.00	197.48	67.54	0.00	5.13
13:19:39	15.19	3.37	0.00	180.22	62.21	0.00	5.57
13:19:54	15.28	2.51	0.00	75.75	54.44	0.00	4.96
13:20:09	16.62	2.06	6.84	31.94	41.29	0.00	5.07
13:20:24	17.30	1.89	9.62	20.34	31.12	0.00	4.92
13:20:39	17.73	1.84	8.27	18.86	25.30	3.78	4.99
13:20:54	17.95	1.82	6.26	17.96	22.94	0.00	5.07
13:21:09	18.03	1.78	4.58	18.06	21.45	0.00	5.23
13:21:24	18.07	1.76	3.84	18.22	20.09	0.00	5.11
13:21:39	18.13	1.73	3.59	19.20	19.53	3.86	5.01
13:21:54	18.25	1.72	3.39	19.14	18.91	0.00	5.14
13:22:09	18.29	2.13	3.77	24.16	19.00	0.00	5.68
13:22:24	18.01	3.06	3.91	81.20	30.38	0.00	5.78
13:22:39	16.61	3.46	2.07	141.61	60.91	0.00	5.37
13:22:53	15.87	3.53	0.00	163.38	75.26	0.00	5.20
13:23:08	15.58	3.52	0.00	172.44	71.12	0.00	5.26
13:23:23	15.40	3.45	0.00	169.15	63.24	0.00	5.72
13:23:38	15.44	2.81	0.00	111.16	56.57	0.00	4.99
13:23:53	16.08	2.19	2.29	42.28	45.72	0.00	5.24
13:24:08	17.01	1.89	4.59	22.99	33.55	0.00	4.99
13:24:23	17.66	1.79	4.80	17.95	25.96	0.00	4.85
13:24:38	17.96	1.72	4.51	17.70	22.01	0.00	5.11
13:24:53	18.08	1.65	4.51	18.96	19.94	0.00	5.10
13:25:08	18.26	1.64	3.81	19.59	18.35	0.00	4.80
13:25:23	18.35	1.64	3.67	20.36	17.36	2.07	4.71
13:25:38	18.26	1.62	3.59	20.76	16.76	0.00	4.62
13:25:53	18.38	1.74	3.67	22.99	16.66	0.00	5.36
13:26:08	18.40	2.69	4.50	43.52	20.11	0.00	6.67
13:26:23	17.25	3.21	4.48	89.07	40.21	0.00	5.37
13:26:38	16.29	3.35	1.19	117.09	59.83	0.00	5.24
13:26:53	15.85	3.38	0.00	130.93	64.88	0.00	5.41
13:27:08	15.62	3.05	0.00	115.22	60.62	0.00	5.60
13:27:23	15.77	2.25	1.26	49.67	50.44	0.00	5.22
13:27:38	16.89	1.89	5.32	26.37	35.86	0.00	4.71
13:27:53	17.56	1.72	5.81	21.34	26.44	0.00	4.69
13:28:08	17.96	1.68	5.05	21.11	21.41	0.00	4.67
13:28:23	18.18	1.60	4.30	21.71	18.85	0.00	4.79
13:28:38	18.42	1.54	3.70	22.47	17.10	0.00	4.90
13:28:53	18.26	1.53	3.61	23.08	16.03	2.38	4.81
13:29:07	18.33	1.97	4.52	28.03	15.61	0.00	5.38
13:29:22	16.81	2.87	6.82	51.75	23.02	0.00	5.60

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:29:37	15.95	3.24	6.66	91.75	42.27	0.00	5.34
13:29:52	15.66	3.29	1.57	112.80	55.04	0.00	5.46
13:30:07	15.64	3.21	0.00	115.24	55.82	1.23	5.47
13:30:22	16.32	2.42	0.89	61.34	49.73	0.00	4.79
13:30:37	17.44	1.98	6.18	31.92	37.45	0.00	7.38
13:30:52	17.98	2.43	39.98	38.94	28.43	0.25	7.71
13:31:07	16.21	5.37	90.18	75.12	45.62	0.28	10.56
13:31:22	13.72	6.68	177.80	105.60	102.91	0.00	5.81
13:31:37	13.70	5.89	209.63	111.24	131.78	0.00	4.55
13:31:52	14.60	5.25	122.31	126.32	116.86	0.00	5.73
13:32:07	14.13	5.10	61.65	174.42	104.80	0.00	4.92
13:32:22	14.13	4.83	58.05	201.35	105.15	0.00	5.06
13:32:37	14.04	4.67	53.66	217.81	98.95	4.06	5.36
13:32:52	14.12	4.51	35.35	230.53	91.36	13.40	4.94
13:33:07	14.22	4.39	20.61	235.10	84.18	25.70	5.09
13:33:22	14.33	4.40	10.30	234.45	78.67	20.51	5.08
13:33:36	14.27	4.31	9.01	238.03	75.76	22.83	5.02
13:33:51	14.38	4.28	6.30	242.50	74.08	36.92	4.96
13:34:06	14.39	4.27	2.71	248.93	73.55	36.86	4.94
13:34:21	14.43	4.11	0.55	245.20	73.01	25.96	4.99
13:34:36	14.62	3.97	0.00	239.73	70.20	28.76	5.54
13:34:51	14.78	3.92	0.00	236.74	67.23	35.03	5.26
13:35:06	14.81	3.93	0.00	239.72	65.34	38.54	5.39
13:35:21	14.80	3.83	0.00	236.26	63.75	32.94	5.15
13:35:36	14.90	3.83	0.00	237.23	61.50	31.95	5.06
13:35:51	14.88	3.85	0.00	236.96	59.95	39.72	5.08
13:36:06	14.80	3.77	0.00	235.22	59.01	38.28	5.10
13:36:21	15.00	3.70	0.00	224.77	57.49	29.08	5.30
13:36:36	15.01	3.70	0.00	221.92	55.77	28.74	5.22
13:36:51	15.01	3.64	0.00	219.24	55.39	37.86	5.41
13:37:06	15.12	3.66	0.00	216.37	54.65	38.52	6.02
13:37:21	15.08	3.66	0.00	213.30	54.04	37.50	5.20
13:37:36	15.03	3.66	0.00	214.75	53.42	34.05	5.08
13:37:51	15.08	3.57	0.00	207.60	53.20	38.12	5.08
13:38:06	15.22	2.89	0.00	134.37	51.65	35.99	5.01
13:38:20	16.47	2.28	0.91	50.62	44.77	30.33	4.93
13:38:35	17.25	2.01	4.12	25.35	34.61	34.03	4.84
13:38:50	17.68	1.85	4.70	17.69	27.50	38.07	4.82
13:39:05	17.94	1.81	4.38	16.72	23.26	38.48	5.03
13:39:20	18.07	1.78	4.04	17.69	21.31	29.66	5.10
13:39:35	18.01	1.76	3.83	18.58	20.64	34.09	4.88
13:39:50	18.11	2.11	2.90	24.22	20.46	41.64	5.29

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:40:05	17.48	3.11	2.93	96.95	30.14	36.92	5.36
13:40:20	16.28	3.38	0.39	147.51	54.68	29.82	5.50
13:40:35	15.79	3.52	0.00	172.59	67.29	33.87	5.16
13:40:50	15.47	3.53	0.00	182.60	65.31	39.53	5.24
13:41:05	15.36	3.40	0.00	177.60	60.96	33.70	5.83
13:41:20	15.49	2.83	0.00	124.43	56.74	29.05	5.49
13:41:35	16.34	2.15	0.00	48.53	48.44	34.00	5.18
13:41:50	17.26	1.85	2.38	26.39	36.31	38.86	5.03
13:42:05	17.82	1.73	3.05	22.27	27.77	41.30	4.92
13:42:20	18.08	1.65	2.99	23.12	23.16	33.79	4.87
13:42:35	18.25	1.63	3.36	24.55	20.76	33.34	4.82
13:42:50	18.32	1.77	3.33	26.41	19.68	30.19	5.77
13:43:05	18.27	2.72	3.95	51.91	22.33	26.44	5.69
13:43:19	16.85	3.14	2.51	104.96	40.83	28.79	5.65
13:43:34	16.27	3.33	0.00	136.71	56.96	34.01	5.72
13:43:49	15.84	3.40	0.00	151.74	60.11	29.56	5.43
13:44:04	15.61	3.29	0.00	152.83	57.15	28.69	5.63
13:44:19	15.58	2.45	0.00	73.60	52.32	33.78	5.25
13:44:34	16.78	1.94	0.84	33.11	41.34	38.45	4.80
13:44:49	17.53	1.73	6.73	24.41	30.78	29.79	4.96
13:45:04	17.96	1.65	2.09	23.51	24.09	22.31	5.02
13:45:19	18.15	1.56	1.16	23.39	20.77	28.50	4.98
13:45:34	18.35	1.59	3.27	23.96	18.80	38.45	5.10
13:45:49	18.38	2.24	2.16	32.30	18.46	36.19	5.86
13:46:04	17.79	3.06	2.12	78.71	28.28	24.22	6.41
13:46:19	16.51	3.39	0.71	127.32	49.94	33.54	5.42
13:46:34	15.86	3.41	0.00	150.17	60.94	33.93	5.37
13:46:49	15.62	3.36	0.00	155.29	58.74	22.89	5.46
13:47:04	15.51	2.54	0.00	84.82	53.54	28.67	4.85
13:47:19	16.48	1.97	3.77	36.31	42.85	31.88	4.87
13:47:34	17.32	1.71	4.09	25.71	31.72	26.20	5.15
13:47:49	17.90	1.61	2.79	24.15	24.53	22.02	4.98
13:48:04	18.11	1.58	1.91	24.19	20.45	21.99	4.94
13:48:19	18.32	1.55	3.89	24.04	18.93	27.69	5.27
13:48:34	18.40	2.10	3.69	29.79	18.10	30.99	5.91
13:48:48	18.04	2.92	4.17	62.89	25.14	22.93	5.60
13:49:03	16.77	3.32	2.08	106.87	44.52	19.45	5.32
13:49:18	16.05	3.43	0.00	134.30	57.23	34.44	5.22
13:49:33	15.67	3.25	0.00	140.03	57.39	26.83	5.60
13:49:48	15.62	2.44	0.24	68.75	51.53	21.49	4.91
13:50:03	16.61	1.93	4.71	32.08	40.62	26.04	4.78
13:50:18	17.33	1.71	8.05	24.33	30.57	32.68	4.82

CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 03 09/22/90

09-22-90 TIME	O2 %V	CO2 %V	CO ppmV	NOx ppmV	SO2 ppmV	HCl ppmVw	THC ppmCw
13:50:33	17.91	1.62	3.87	23.24	24.14	30.03	4.86
13:50:48	18.14	1.59	3.25	23.66	20.36	21.50	4.96
13:51:03	18.31	1.56	1.93	24.16	18.64	25.99	4.92
13:51:18	18.39	2.03	2.51	29.18	17.63	25.58	5.47
13:51:33	18.14	2.87	2.50	54.63	23.24	25.35	5.58
13:51:48	16.87	3.27	3.32	95.08	40.38	23.18	5.46
13:52:03	16.19	3.38	0.20	123.87	54.28	28.05	5.25
13:52:18	15.70	3.08	0.00	120.95	55.96	26.89	5.41
13:52:33	15.71	2.28	0.45	54.34	49.29	24.25	4.93
13:52:48	16.80	1.83	4.36	28.88	38.02	24.25	4.82
13:53:03	17.51	1.66	6.56	23.76	28.80	22.75	4.65
13:53:18	17.97	1.57	5.46	23.23	22.75	26.22	4.63
13:53:33	18.24	1.52	3.91	23.25	19.66	21.13	4.71
13:53:48	18.37	1.50	3.16	23.32	18.01	22.01	4.95
13:54:03	18.44	2.04	4.30	29.16	17.22	30.38	6.24
13:54:17	18.21	2.78	5.26	50.83	22.81	27.34	5.73
13:54:32	17.00	3.18	4.80	86.33	38.70	22.84	5.36
13:54:47	16.32	3.38	0.46	113.93	51.75	23.21	5.14
13:55:02	15.84	3.06	0.02	110.91	54.26	36.95	5.39
13:55:17	15.84	2.25	3.69	51.63	48.15	29.37	4.90
13:55:32	16.89	1.82	7.01	29.69	36.06	18.74	4.95
13:55:47	17.56	1.62	4.95	26.01	27.38	21.68	4.83
13:56:02	18.01	1.54	4.03	25.37	22.24	32.22	4.88
13:56:17	18.22	1.50	3.69	25.45	19.13	25.21	4.87
13:56:32	18.43	1.54	3.34	26.35	17.49	21.40	5.04
13:56:47	18.45	2.35	3.16	35.15	17.65	28.29	5.56
13:57:02	17.85	2.98	5.96	60.92	26.22	33.78	5.99
13:57:17	16.77	3.21	6.16	93.96	42.09	27.28	5.39
13:57:32	16.15	3.25	1.21	112.25	51.48	23.00	5.41
13:57:47	15.82	2.49	1.31	71.37	50.43	20.31	4.95
13:58:02	16.35	1.94	3.97	34.40	40.86	27.39	4.93
13:58:17	17.25	1.72	6.09	24.95	30.62	27.57	4.69
13:58:32	17.80	1.59	5.09	23.66	24.22	21.55	4.61
13:58:47	18.13	1.53	4.43	24.77	20.52	24.25	4.76
13:59:02	18.32	1.49	4.01	25.31	18.21	31.58	4.62
13:59:17	18.46	1.56	3.34	26.12	16.48	23.28	4.87
13:59:32	18.47	2.42	4.09	35.83	16.73	21.37	5.32
13:59:46	17.83	3.05	7.30	65.47	25.76	30.64	5.23
14:00:01	16.65	3.25	5.30	97.08	42.42	27.19	4.96
AVERAGE	16.13	3.07	14.93	109.30	42.06	33.57	9.84
MINIMUM	11.69	1.49	0.00	10.06	1.25	0.00	1.51

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 03 09/22/90

09-22-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
MAXIMUM	18.47	6.71	344.92	270.61	177.77	142.35	160.43

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 04, 09/23/90

09-23-19902	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmVw	ppmCw
11:40:17	16.89	2.22	37.53	19.35	0.00	2.21
11:40:47	17.15	1.90	38.70	17.67	0.00	61.99
11:41:17	19.20	0.83	100.62	9.53	0.00	162.29
11:41:47	17.04	3.75	155.35	32.94	0.72	58.44
11:42:17	12.95	6.00	386.65	85.03	7.11	40.47
11:42:47	12.65	5.85	419.96	89.44	11.04	38.06
11:43:17	12.59	5.93	382.04	93.95	15.56	43.56
11:43:47	12.10	6.16	477.15	90.35	18.84	54.24
11:44:17	12.17	5.91	551.70	81.79	18.53	36.35
11:44:47	12.64	5.59	409.47	75.32	15.31	21.72
11:45:17	12.79	5.38	244.87	73.42	12.81	13.39
11:45:47	13.04	5.18	151.37	72.05	10.61	9.30
11:46:17	13.19	5.08	97.34	73.15	9.34	6.98
11:46:47	13.29	4.95	69.06	72.59	8.79	5.26
11:47:17	13.38	4.90	53.90	72.13	8.81	5.72
11:47:47	13.46	4.86	56.73	70.72	8.80	4.11
11:48:17	13.41	4.79	46.70	69.55	8.31	3.86
11:48:47	13.70	4.65	44.64	67.12	7.65	2.42
11:49:17	13.70	4.67	26.04	68.49	7.24	1.98
11:49:46	13.49	4.77	25.01	71.77	6.77	1.44
11:50:16	13.57	4.68	27.94	70.16	6.21	1.13
11:50:46	13.68	4.59	27.19	69.23	5.69	0.60
11:51:16	13.66	4.63	22.67	70.90	5.51	0.53
11:51:46	13.76	4.54	21.60	68.93	5.79	0.44
11:52:16	13.68	4.59	22.07	69.63	6.31	0.24
11:52:46	13.71	4.53	18.38	68.23	5.98	0.00
11:53:16	13.74	4.51	12.30	66.47	5.68	0.00
11:53:46	13.71	4.50	8.43	64.27	5.10	0.00
11:54:16	13.91	4.38	7.71	61.61	4.66	0.00
11:54:46	13.98	4.29	5.91	61.29	5.19	0.00
11:55:16	14.27	4.15	5.87	58.18	5.53	0.00
11:55:46	14.23	3.96	25.82	54.37	5.87	13.61
11:56:16	15.00	4.75	301.46	66.68	4.79	16.79
11:56:46	11.61	6.96	577.42	106.86	14.21	17.52
11:57:16	11.19	6.87	668.24	105.44	21.10	8.32
11:57:46	11.80	6.57	403.77	103.04	16.74	1.74
11:58:16	12.00	6.27	188.23	103.96	15.24	0.00
11:58:46	12.61	5.73	63.95	104.33	9.75	0.00
11:59:16	13.18	5.45	28.65	102.70	6.10	0.00
11:59:46	13.48	5.12	19.12	102.81	4.71	0.00
12:00:16	13.60	5.13	11.49	103.79	3.04	0.00
12:00:46	13.63	5.04	17.01	99.19	4.48	0.00
12:01:16	13.70	4.93	13.78	91.40	6.58	21.78
12:01:45	14.03	4.73	103.67	82.82	7.92	10.00
12:02:15	14.06	4.72	99.13	83.35	10.65	0.26
12:02:45	13.94	4.83	33.58	85.26	11.77	3.19

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 04, 09/23/90

09-23-19902	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmVw	ppmCw
12:03:15	14.02	4.56	125.75	82.69	11.78	406.33
12:03:45	13.93	4.70	833.69	73.89	14.12	25.92
12:04:15	13.39	5.08	231.54	77.69	13.65	1.83
12:04:45	13.07	5.01	31.27	78.79	10.89	33.63
12:05:15	13.94	4.58	268.18	73.36	9.16	199.20
12:05:45	13.96	4.44	583.94	66.93	11.66	11.70
12:06:15	15.39	3.49	843.45	35.17	9.39	255.55
12:06:45	16.20	3.07	1926.63	25.27	3.94	145.92
12:07:15	16.15	3.20	1664.14	25.27	1.88	75.23
12:07:45	16.29	3.09	1221.99	23.75	1.67	58.35
12:08:15	16.35	3.05	845.59	22.83	1.34	42.59
12:08:45	16.47	3.00	683.13	22.29	1.08	34.18
12:09:15	16.45	2.96	620.88	22.19	0.97	29.67
12:09:45	15.77	3.80	637.40	33.04	1.18	30.6
12:10:15	13.36	5.01	2120.08	68.58	44.58	0.36
12:10:45	13.34	4.57	505.97	69.60	28.37	9.33
12:11:14	15.58	3.18	382.94	30.70	11.44	25.26
12:11:44	16.55	2.85	443.25	21.46	4.12	10.81
12:12:14	16.80	2.72	298.19	20.51	2.40	5.66
12:12:44	16.96	2.61	244.69	20.83	1.42	3.55
12:13:14	16.99	2.92	229.56	23.10	1.02	8.55
12:13:44	14.87	4.14	461.06	44.48	3.42	0.00
12:14:14	14.63	3.69	224.99	48.20	6.14	4.96
12:14:44	16.48	2.75	244.42	25.03	4.30	2.15
12:15:14	17.19	2.42	187.72	21.63	2.15	0.00
12:15:44	17.38	2.52	174.42	23.70	1.58	2.85
12:16:14	15.97	4.57	279.66	34.52	4.99	0.00
12:16:44	14.13	5.34	426.70	47.11	23.89	0.00
12:17:14	14.38	4.90	46.21	48.71	21.08	0.00
12:17:44	14.63	4.75	7.10	55.99	18.74	0.00
12:18:14	14.61	4.72	10.99	72.89	18.94	0.00
12:18:44	14.76	4.51	13.50	81.92	18.68	0.00
12:19:14	14.98	4.39	21.15	73.94	17.63	0.00
12:19:44	15.00	4.35	36.45	65.84	15.83	0.00
12:20:14	15.09	4.17	41.89	62.00	14.35	0.00
12:20:44	15.45	3.95	71.73	52.52	12.71	0.00
12:21:17	15.55	3.85	117.06	45.84	11.25	0.00
12:23:21	16.01	3.45	727.31	27.28	9.11	4.19
12:23:51	16.10	3.33	766.42	24.78	7.85	8.58
12:24:21	16.23	3.18	713.77	22.91	7.14	9.26
12:24:51	16.20	3.31	685.16	23.70	6.11	9.95
12:25:21	16.28	3.12	657.71	22.49	5.55	11.07
12:25:51	16.62	2.98	494.66	21.53	4.49	11.64
12:26:20	16.65	2.91	441.66	21.08	4.06	8.00
12:26:50	16.73	2.90	351.63	20.62	3.82	7.34
12:27:20	16.72	2.87	316.96	20.56	3.61	5.38

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 04, 09/23/90

09-23-19902	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmVw	ppmCw
12:27:50	16.73	2.86	270.64	20.29	3.37	2.71
12:28:20	16.98	2.64	212.67	19.56	3.14	0.71
12:28:50	17.07	2.63	167.41	19.99	2.76	0.54
12:29:20	16.98	2.69	169.53	19.96	2.61	1.20
12:29:50	16.99	2.65	173.14	20.04	2.61	0.14
12:30:20	17.15	2.55	148.61	20.07	2.32	0.00
12:30:50	17.11	2.72	160.58	24.49	2.36	3.51
12:31:20	14.34	6.17	3012.34	60.74	25.35	65.03
12:31:50	11.58	7.52	3817.24	98.39	59.32	86.44
12:32:20	11.48	7.23	1905.45	94.64	73.18	68.64
12:32:50	12.85	6.12	1130.79	97.66	68.45	0.00
12:33:20	13.94	5.59	101.29	92.67	44.00	0.00
12:33:50	14.18	5.39	16.82	85.55	34.59	0.00
12:34:20	14.56	5.07	13.52	78.28	29.83	0.00
12:34:50	14.45	5.15	15.89	79.46	27.40	0.00
12:35:19	14.27	5.14	21.78	78.73	26.61	0.00
12:35:49	13.66	6.05	187.89	78.19	27.64	55.39
12:36:19	12.24	6.29	848.89	82.95	45.41	12.32
12:36:49	12.24	6.08	424.30	86.61	44.71	1.87
12:37:19	12.59	5.77	242.74	86.58	36.16	2.11
12:37:49	12.74	5.65	212.99	89.09	31.85	0.56
12:38:19	12.88	5.50	160.32	93.72	29.37	0.00
12:38:49	13.16	5.16	100.49	93.87	25.25	0.00
12:39:19	14.25	3.96	281.74	66.98	20.58	735.77
12:39:49	16.12	2.71	3272.05	23.03	19.76	1589.23
12:40:19	16.77	2.67	3793.85	18.32	21.06	604.53
12:40:49	16.14	3.26	1918.27	27.13	19.11	28.35
12:41:19	16.09	3.19	990.25	24.97	15.65	16.67
12:41:49	16.15	3.13	712.83	22.86	12.29	11.33
12:42:19	16.39	2.99	449.59	20.80	9.34	8.05
12:42:49	16.57	2.87	266.20	19.61	7.41	5.40
12:48:35	14.61	4.65	94.99	120.07	29.55	197.33
12:49:05	15.42	3.22	1285.55	70.26	26.01	1859.37
12:49:35	15.39	4.03	2994.01	81.83	26.38	78.39
12:50:05	14.95	4.20	342.56	88.30	25.34	21.77
12:50:35	15.05	4.16	184.30	78.88	23.58	11.45
12:51:05	15.09	4.12	215.72	73.52	21.13	8.95
12:51:34	15.18	4.00	275.68	67.60	17.83	9.21
12:52:04	15.09	4.06	379.53	66.23	15.81	9.05
12:52:34	15.27	3.93	377.25	60.25	14.09	8.88
12:53:04	15.25	3.90	428.75	55.20	12.54	8.45
12:53:34	15.48	3.76	496.65	50.01	11.16	7.06
12:54:04	15.48	3.72	494.54	49.68	10.56	6.89
12:54:34	15.57	3.65	539.00	46.46	10.00	6.25
12:55:04	15.67	3.55	647.99	43.20	9.44	6.89
12:55:34	15.79	3.47	738.26	41.00	8.25	6.88

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 04, 09/23/90

=====							
09-23-19902	CO2	CO	NOx	SO2	HC1	THC	
TIME	%V	%V	ppmV	ppmV	ppmVw	ppmCw	

12:56:04	15.83	3.44	766.26	39.91	7.66		7.04
12:56:34	15.81	3.45	752.81	38.09	4.40		7.34
12:57:04	15.83	3.43	762.31	38.65	0.22		6.37
12:57:34	15.81	3.46	705.21	38.57	0.01		6.97
12:58:04	15.89	3.40	731.04	36.46	0.13		10.70
12:58:34	15.87	3.38	843.30	36.61	0.28		10.18
12:59:04	15.97	3.30	827.12	36.29	0.45		10.28
12:59:34	16.25	3.09	694.64	32.73	0.64		10.17
13:00:04	16.41	3.07	548.19	31.47	0.79	213.22	8.20
13:00:33	16.49	3.02	497.33	30.64	0.83	264.24	6.01
13:01:07	16.41	3.08	422.60	39.49	0.95	263.11	1.77
13:01:37	15.61	3.99	384.51	55.26	2.76	747.55	9.87
13:02:07	13.85	4.78	6113.44	84.78	23.07	1131.55	2.94
13:02:37	14.37	4.70	2475.45	133.25	27.26	1149.81	0.00
13:03:07	14.22	4.83	103.25	163.67	22.19	994.81	0.00
13:03:37	14.11	4.81	60.79	167.71	18.35	845.78	0.00
13:04:07	14.52	4.45	44.74	141.24	15.32	726.61	0.00
13:04:37	14.80	4.23	40.36	117.71	12.76	661.90	0.00
13:05:07	14.94	4.18	42.93	105.25	11.59	614.99	0.00
13:05:37	14.93	4.12	49.70	100.75	10.74	585.87	0.00
13:06:07	15.04	4.07	53.48	90.95	7.26	535.55	0.00
13:06:37	15.15	3.93	56.83	87.16	12.53	507.89	0.00
13:07:07	15.21	3.92	63.56	81.78	13.07	485.93	0.00
13:07:37	15.19	3.96	78.02	83.12	13.47	459.81	0.00
13:08:07	15.00	4.07	90.42	84.87	13.50	452.85	0.00
13:08:37	14.73	4.31	108.37	92.47	12.55	445.18	0.00
13:09:07	14.77	4.19	127.43	88.07	13.98	457.41	0.00
13:09:37	14.87	4.16	147.00	84.82	14.04	458.39	0.56
13:10:06	14.78	4.21	170.98	84.57	14.80	495.83	2.21
13:10:36	15.32	3.34	686.79	60.98	27.74	513.22	1671.43
13:11:06	15.79	3.37	3305.76	54.48	76.41	539.92	868.43
13:11:36	15.24	3.89	1108.09	70.56	32.85	530.60	137.42
13:12:06	15.18	3.76	537.58	64.14	25.74	537.45	70.68
13:12:36	15.48	3.64	724.23	55.55	22.98	515.28	49.92
13:13:06	15.31	3.75	821.61	56.96	20.33	510.50	41.25
13:13:36	15.16	3.88	791.20	58.20	17.12	484.78	39.24
13:14:06	15.25	3.71	976.43	51.24	15.27	472.91	51.89
13:14:36	15.21	3.70	1189.39	50.57	16.04	453.44	48.08
13:15:06	15.64	3.40	1147.42	44.24	15.19	434.58	52.95
13:15:36	15.75	3.41	1167.69	39.62	13.00	409.36	7.06
13:16:06	14.95	4.07	3336.20	45.83	27.38	399.64	11.31
13:16:36	13.26	6.10	13129.37	78.14	35.22	526.77	49.61
13:17:06	12.03	6.84	2072.03	117.41	38.62	995.89	19.51
13:17:36	12.58	6.44	687.92	146.66	32.46	1083.37	2.98
13:18:06	12.78	6.33	308.01	164.27	28.89	1043.58	1.10
13:18:36	13.17	5.81	200.10	170.62	25.55	895.48	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 04, 09/23/90

09-23-19902	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmVw	ppmCw
13:19:06	13.73	5.44	88.38	176.55	24.76	761.74
13:19:35	14.02	5.23	35.05	169.04	20.56	675.13
13:20:05	14.26	5.06	24.44	155.55	17.34	628.63
13:20:35	14.51	4.86	21.80	138.48	16.88	579.83
13:21:05	14.66	4.73	25.25	123.45	15.90	530.64
13:21:35	14.89	4.53	31.06	104.94	15.07	500.69
13:22:05	15.08	4.42	47.57	88.09	16.90	507.22
13:22:35	15.06	4.34	82.67	80.00	16.55	532.86
13:23:05	15.52	3.77	394.49	60.71	17.49	517.93
13:23:35	15.99	2.84	3083.65	36.21	87.53	503.82
13:24:05	16.25	3.11	5829.39	35.71	172.06	467.19
13:24:35	14.94	4.23	2174.73	62.58	76.94	473.23
13:25:05	14.57	4.45	602.34	63.88	51.71	459.80
13:25:35	14.64	3.95	542.89	53.86	39.95	443.77
13:26:05	16.15	2.89	2712.22	28.96	59.48	383.07
13:26:35	15.76	3.64	2358.56	41.32	38.05	388.08
13:27:12	15.38	3.76	1020.79	41.19	27.18	392.65
13:27:27	15.57	3.60	1050.95	36.86	25.72	376.65
13:27:42	15.60	3.54	1034.36	35.99	24.47	365.70
13:27:57	15.65	3.57	1036.64	36.37	22.24	349.32
13:28:12	15.61	3.60	1052.03	36.53	23.23	356.15
13:28:27	15.58	3.71	1053.37	38.07	20.18	362.86
13:28:42	15.43	3.63	1062.14	37.33	20.84	357.66
13:28:57	15.59	3.54	1040.15	34.39	19.03	354.69
13:29:12	15.67	3.46	972.22	32.73	19.98	344.44
13:29:27	15.80	3.42	906.17	31.49	17.86	341.52
13:29:42	15.90	3.34	856.75	30.39	18.54	338.96
13:29:57	16.00	3.32	776.81	29.30	18.75	323.38
13:30:12	16.05	3.30	693.06	28.86	16.85	330.96
13:30:27	16.08	3.26	656.25	28.27	18.01	339.87
13:30:41	16.16	4.29	995.25	30.49	23.96	346.27
13:30:56	13.78	5.43	9374.06	38.93	48.24	349.76
13:31:11	13.34	5.65	17868.63	66.44	41.78	633.89
13:31:26	13.20	5.61	9683.21	107.02	37.72	1161.72
13:31:41	13.18	5.62	2764.40	141.15	34.61	1768.55
13:31:56	13.25	5.63	1232.60	189.89	31.88	2027.40
13:32:11	13.47	5.68	542.91	217.12	30.35	2108.57
13:32:26	13.44	5.62	319.60	227.73	29.33	2056.44
13:32:41	13.52	5.36	236.86	223.65	27.98	1885.07
13:32:56	13.84	5.18	185.47	212.85	25.23	1732.93
13:33:11	14.00	5.07	135.43	204.17	25.48	1581.06
13:33:26	14.09	5.11	114.21	203.01	25.00	1479.96
13:33:41	14.05	5.05	98.08	196.02	25.40	1355.55
13:33:56	14.03	5.06	84.32	193.12	25.61	1253.85
13:34:11	14.03	5.02	66.73	186.84	22.01	1167.01
13:34:26	14.01	4.93	55.82	181.92	22.82	1080.97

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 04, 09/23/90

09-23-19902	CO2	CO	NOx	SO2	HCl	THC	
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:34:41	14.19	4.89	45.93	180.63	22.17	982.83	0.00
13:34:56	14.20	4.87	38.55	180.49	19.97	936.24	0.00
13:35:11	14.25	4.75	30.78	177.25	17.32	904.67	0.00
13:35:26	14.39	4.73	25.73	174.82	17.59	883.84	0.00
13:35:41	14.42	4.74	23.18	174.10	17.53	834.88	0.00
13:35:56	14.45	4.56	24.23	163.73	15.51	807.13	0.00
13:36:10	14.70	4.44	24.48	153.63	16.20	777.89	0.00
13:36:25	14.81	4.34	24.53	143.26	15.43	750.13	0.00
13:36:40	14.95	4.20	26.91	130.79	15.41	711.39	0.00
13:36:55	15.14	4.11	30.95	116.86	14.61	697.31	0.00
13:37:10	15.25	4.12	39.52	109.09	15.10	687.65	0.00
13:37:25	15.25	4.03	50.11	97.85	15.23	675.05	0.00
13:37:40	15.37	4.01	72.22	89.70	17.24	653.58	0.00
13:37:55	15.39	3.81	116.72	76.42	15.46	634.73	0.01
13:38:10	15.60	3.52	307.88	64.58	16.25	625.62	1.14
13:38:25	15.86	3.20	606.57	58.09	16.95	621.20	65.54
13:38:40	16.11	2.73	2190.61	45.27	21.56	609.57	575.51
13:38:55	16.34	2.45	4408.91	35.58	46.24	601.22	1074.61
13:39:10	16.56	2.32	5618.46	32.55	76.34	566.99	1186.05
13:39:25	16.74	2.66	5217.76	35.66	86.43	550.15	406.62
13:39:40	16.43	3.34	3845.58	56.10	54.73	538.99	33.70
13:39:55	15.83	3.56	2450.41	61.17	34.59	544.27	18.47
13:40:10	15.51	3.61	1516.43	62.13	27.23	538.60	12.07
13:40:25	15.49	3.56	1264.96	57.54	25.69	519.46	8.71
13:40:40	15.49	3.46	1160.88	52.91	24.43	496.33	7.32
13:40:55	15.55	3.37	1146.47	47.99	22.88	482.08	6.34
13:41:09	15.72	3.38	1167.21	44.34	21.40	452.64	5.67
13:41:24	15.70	3.34	1183.72	41.90	18.40	434.96	4.93
13:41:39	15.78	3.35	1168.86	41.15	16.44	417.06	4.92
13:41:54	15.73	3.34	1102.31	38.33	15.89	413.47	4.44
13:42:09	15.79	3.35	1010.40	34.91	16.22	403.85	3.99
13:42:24	15.83	3.35	870.17	32.07	15.95	384.17	3.67
13:42:39	15.87	3.31	722.46	29.90	15.24	373.93	3.48
13:42:54	15.92	3.22	661.81	29.08	17.53	369.88	3.11
13:43:09	16.03	3.12	617.10	27.02	15.93	354.98	2.85
13:43:24	16.17	3.08	511.73	24.87	14.91	340.86	1.96
13:43:39	16.31	3.01	421.70	22.79	15.40	330.92	1.35
13:43:54	16.38	2.96	315.71	21.10	13.98	327.32	1.62
13:44:09	16.48	2.94	252.08	20.72	17.09	310.88	1.23
13:44:24	16.49	2.89	225.50	20.68	15.26	298.45	1.19
13:44:39	16.59	2.81	207.79	21.99	14.56	300.20	0.27
13:44:54	16.70	2.75	183.35	22.88	13.85	292.59	0.00
13:45:09	16.78	2.74	152.52	23.26	13.25	268.39	0.00
13:45:24	16.82	2.79	138.47	23.45	11.02	259.77	0.00
13:45:39	16.76	3.52	210.58	24.93	12.20	273.51	16.44
13:45:54	16.26	6.37	6727.42	46.82	36.35	290.09	2.81

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 04, 09/23/90

09-23-19902	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmVw	ppmCw
13:46:09	11.90	6.61	17786.65	62.51	28.45	321.42
13:46:24	12.51	7.04	11601.92	83.61	24.45	355.10
13:46:38	12.12	6.74	2947.49	97.76	22.53	399.63
13:46:53	12.31	6.04	673.42	114.26	18.36	401.87
13:47:08	13.24	5.69	202.71	126.59	20.32	381.52
13:47:23	13.62	5.40	57.32	128.35	18.87	383.83
13:47:38	13.98	5.22	21.34	126.38	17.35	393.75
13:47:53	14.26	5.13	16.82	129.34	18.64	364.37
13:48:08	14.36	4.89	18.95	124.48	17.53	248.54
13:48:23	14.59	4.67	20.95	116.66	16.21	185.44
13:48:38	14.85	4.57	23.43	108.05	15.85	240.98
13:48:53	15.03	4.40	30.20	99.10	18.17	322.92
13:49:08	15.16	4.26	42.44	89.25	16.49	336.85
13:49:23	15.48	4.09	63.25	78.53	13.98	343.99
13:49:38	15.68	3.96	112.12	66.77	14.07	341.72
13:49:53	15.81	3.82	193.44	59.84	14.14	326.12
13:50:08	16.05	3.48	446.80	50.13	19.10	313.12
13:50:23	16.16	3.04	1516.79	40.81	50.05	316.30
13:50:38	16.53	2.69	3202.90	28.73	125.29	309.52
13:50:52	16.08	3.51	3801.22	41.61	123.31	289.43
13:51:07	15.17	4.16	2195.82	60.55	72.58	296.58
13:51:22	14.93	4.25	693.74	65.07	52.18	312.14
13:51:37	15.03	4.13	319.85	61.61	40.73	308.68
13:51:52	15.18	3.96	265.36	53.68	33.58	293.73
13:52:07	15.38	3.86	283.58	49.37	28.92	281.39
13:52:22	15.50	3.76	286.64	47.65	27.90	273.28
13:52:37	15.61	3.60	268.12	45.26	26.05	270.09
13:52:52	15.86	3.53	242.18	42.69	21.87	258.45
13:53:07	15.75	3.59	229.66	42.67	21.11	265.14
13:53:22	15.76	3.58	235.44	41.32	19.37	274.66
13:53:37	15.88	3.49	249.19	38.66	18.93	274.60
13:53:52	15.86	3.51	263.85	39.81	16.34	266.96
13:54:07	15.84	3.57	280.34	41.86	16.17	273.67
13:54:22	15.76	3.53	296.89	44.36	14.61	283.04
13:54:37	15.93	3.38	311.67	40.51	17.24	283.19
13:54:52	16.07	3.32	362.53	38.10	14.12	278.29
13:55:07	15.87	3.22	431.81	37.28	16.12	271.35
13:55:22	16.04	3.17	446.99	34.93	16.08	276.97
13:55:36	16.10	3.15	334.61	27.15	14.68	270.53
13:55:51	16.10	3.10	238.22	17.53	14.27	271.27
13:56:06	16.19	3.08	230.99	13.85	14.65	274.97
13:56:21	16.13	3.10	228.73	13.61	14.64	277.05
13:56:36	16.28	2.95	217.97	12.73	13.74	270.69
13:56:51	16.45	2.89	193.54	13.64	14.89	261.82
13:57:06	16.48	2.81	181.01	14.14	13.84	267.71
13:57:21	16.62	2.81	164.81	14.61	12.71	257.80

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 04, 09/23/90

09-23-19902	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmVw	ppmCw
13:57:36	16.49	2.84	149.07	16.24	12.97	257.35
13:57:51	16.58	2.77	133.76	17.31	13.19	261.55
13:58:06	16.67	2.68	124.46	17.61	12.70	255.80
13:58:21	16.76	2.63	114.19	18.48	11.44	249.52
13:58:36	16.83	2.59	105.12	19.07	13.31	245.63
13:58:51	16.88	2.55	92.75	19.49	11.55	247.79
13:59:06	16.93	2.54	83.67	19.55	12.69	261.73
13:59:21	16.93	2.57	73.30	19.47	11.28	257.54
13:59:36	16.90	2.54	65.69	19.64	11.26	257.35
13:59:51	16.93	2.53	58.85	19.63	10.87	261.48
14:00:06	16.96	2.49	54.47	19.53	10.35	255.98
14:00:21	17.06	2.46	49.56	19.07	9.29	250.97
14:00:36	17.06	2.47	44.76	18.74	8.91	243.25
14:00:51	16.94	2.78	39.19	17.99	11.81	261.78
14:01:06	16.62	3.47	34.03	15.96	15.97	400.07
14:01:21	14.16	5.65	2697.25	12.24	45.47	890.96
14:01:35	12.54	5.24	8717.10	11.17	45.79	1344.74
14:01:50	13.62	5.04	5542.24	33.46	31.30	1630.06
14:02:05	13.91	5.02	1350.81	111.72	26.95	1722.41
14:02:20	13.93	4.75	195.04	133.06	25.23	1704.04
14:02:35	14.78	4.37	132.08	116.51	26.49	1666.03
14:02:50	15.02	4.35	160.24	110.91	25.75	1622.82
14:03:05	15.06	4.24	221.69	106.52	24.28	1534.25
14:03:20	15.31	3.82	505.55	98.27	22.17	1376.27
14:03:35	15.63	3.41	1249.50	94.62	19.97	1233.53
14:03:50	15.84	2.97	2828.76	80.90	19.14	1153.42
14:04:05	16.13	2.59	4184.89	58.88	20.82	1075.86
14:04:20	15.89	3.66	4595.12	93.65	22.20	1011.74
14:04:35	14.98	4.15	2760.57	122.36	21.85	963.31
14:04:50	14.90	4.15	822.56	122.89	21.15	923.87
14:05:05	14.86	4.53	376.93	123.60	25.75	893.94
14:05:20	13.53	5.00	2791.63	113.62	37.46	874.29
14:05:35	14.30	3.82	6729.44	82.97	22.45	876.89
14:06:05	15.80	2.80	4566.65	50.34	18.22	801.15
14:06:35	15.61	3.70	2869.86	78.64	18.30	759.80
14:07:05	15.02	4.02	507.93	88.24	16.84	744.93
14:07:35	15.02	3.92	315.16	81.95	39.59	719.76
14:08:05	15.68	2.99	1148.95	56.80	53.79	693.02
14:08:35	15.64	3.34	4158.74	55.04	76.86	673.90
14:09:04	14.93	3.97	1380.55	81.29	45.76	663.97
14:09:34	15.02	3.90	572.87	76.74	35.14	634.97
14:10:04	15.09	3.83	557.14	70.86	30.47	617.88
14:10:34	15.39	3.50	673.61	63.26	27.43	592.54
14:11:04	16.39	2.87	2788.02	39.62	45.11	556.47
14:11:34	15.59	3.48	1682.41	58.29	30.57	532.21
14:12:04	15.53	3.53	791.52	57.35	26.56	499.70

CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 04, 09/23/90

09-23-19902	CO2	CO	NOx	SO2	HCl	THC
TIME %V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:12:34	15.33	3.64	761.73	56.27	25.49	490.37
14:13:04	15.57	3.49	766.16	50.05	24.67	464.15
14:13:34	15.67	3.40	736.46	46.50	23.72	441.88
14:14:04	15.85	3.31	700.97	43.78	25.24	403.50
14:14:34	15.89	3.28	692.76	42.53	25.02	388.38
14:15:04	15.90	3.33	671.14	41.65	24.31	367.34
14:15:34	15.80	3.43	717.77	40.62	23.06	380.69
14:16:04	12.98	5.92	10660.20	66.58	31.72	542.51
14:16:34	11.76	6.68	10439.12	123.67	41.85	1438.30
14:17:04	13.31	5.49	1640.32	157.33	37.01	1690.81
14:17:34	13.97	5.30	153.38	161.36	28.92	1572.50
14:18:04	13.86	5.33	77.09	169.86	26.49	1555.54
14:18:34	14.08	5.08	59.27	161.96	25.36	1518.00
14:19:04	14.20	4.96	46.43	145.18	26.21	1433.96
14:19:33	14.41	4.82	37.80	135.03	24.16	1347.18
14:20:03	14.60	4.63	32.94	126.10	23.83	1218.56
14:20:33	14.80	4.57	32.81	116.01	23.70	1125.16
14:21:03	14.79	4.58	37.83	108.78	22.20	1083.37
14:21:33	14.90	4.47	50.91	101.12	22.51	1007.83
14:22:03	15.07	4.29	79.01	88.83	22.07	928.43
14:22:33	15.39	3.95	171.55	69.30	21.28	829.97
14:23:03	15.86	3.45	561.02	53.25	18.86	788.94
14:23:33	16.32	2.86	1936.47	41.89	17.48	738.96
14:24:03	16.66	2.43	5435.51	30.04	27.86	689.33
14:24:33	16.86	2.58	5405.69	29.04	52.09	632.32
14:25:03	15.90	3.37	2874.84	45.65	27.86	627.75
14:25:33	15.67	3.42	1669.28	43.09	21.07	589.01
14:26:03	15.76	3.34	1441.46	39.66	18.81	549.40
14:26:33	15.86	3.32	1224.32	36.58	17.10	504.50
14:27:03	15.89	3.28	1069.64	33.68	15.47	478.66
14:27:33	15.96	3.24	936.54	31.02	15.79	431.15
14:28:03	16.10	3.17	749.85	27.28	17.15	405.35
14:28:33	16.19	3.17	642.62	25.32	14.89	380.11
14:29:03	16.19	3.14	557.35	23.79	13.58	367.82
14:29:32	16.35	3.02	483.86	21.33	12.04	356.12
14:30:02	16.43	3.03	419.21	21.01	12.83	348.69
14:30:32	16.29	3.07	429.47	21.02	11.72	351.30
14:31:02	15.67	4.72	4614.79	39.20	19.50	358.88
14:31:32	11.29	7.61	14395.61	91.10	24.30	439.16
14:32:02	11.09	7.09	5696.13	90.57	26.39	593.04
14:32:32	11.84	6.81	1551.38	84.25	25.91	733.39
14:33:02	12.06	6.56	1080.84	80.44	26.11	803.20
14:33:32	12.41	6.31	736.45	80.12	24.25	817.89
14:34:02	12.79	5.95	427.48	80.28	20.46	781.11
14:34:32	13.30	5.59	218.33	76.45	17.43	728.27
14:35:02	13.75	5.28	97.03	73.73	14.09	659.08

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 04, 09/23/90

=====							
09-23-19902	CO2	CO	NOx	SO2	HC1	THC	
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw

14:35:32	14.19	4.89	46.91	67.36	12.99	628.17	0.00
14:36:02	14.76	4.42	38.10	57.49	12.72	572.27	0.00
14:36:32	15.29	3.97	95.72	44.08	13.40	539.58	0.00
14:37:02	15.89	3.25	525.07	33.30	13.17	508.79	1.58
14:37:32	16.55	2.66	2382.25	23.17	11.99	482.10	50.97
14:38:02	16.87	2.48	3836.49	17.76	16.49	448.29	221.55
14:38:32	17.10	2.45	3194.85	15.69	24.21	416.46	209.32
14:39:01	16.55	3.10	2080.76	24.30	18.70	395.19	4.32
14:39:31	16.18	3.19	1121.53	24.19	12.61	366.67	0.54
14:40:01	16.15	3.20	850.37	23.08	9.11	352.91	0.00
14:40:31	16.15	3.20	710.90	22.62	8.69	342.56	0.00
14:41:01	16.13	3.16	616.90	21.58	8.46	336.54	0.00
14:41:31	16.24	3.09	491.80	20.38	8.34	321.67	0.00
14:42:01	16.45	2.89	390.62	19.17	7.40	316.24	0.00
14:42:31	16.61	2.87	292.65	18.59	6.88	294.95	0.00
14:43:01	16.59	2.98	276.94	19.26	5.92	304.28	0.00
14:43:31	16.46	2.94	252.83	19.33	6.00	306.70	0.00
14:44:01	16.59	2.85	198.61	18.76	6.64	300.25	0.00
14:44:31	16.74	2.74	184.20	18.46	5.67	281.58	0.00
14:45:01	16.84	2.65	156.40	18.49	5.59	277.39	0.00
14:45:31	17.00	2.64	122.83	18.15	5.55	262.98	0.00
14:46:01	15.56	5.05	6660.45	40.12	17.44	292.15	8.23
14:46:31	12.77	6.16	13166.30	102.08	17.96	380.67	3.94
14:47:01	13.43	5.12	1141.46	136.63	18.41	512.28	0.00
14:47:31	14.65	4.46	78.92	117.26	16.34	556.79	0.00
14:48:01	15.39	3.90	104.98	86.54	15.44	546.66	0.00
14:48:31	15.98	3.36	405.74	60.36	15.15	500.40	2.88
14:49:01	16.43	2.88	1895.71	45.94	15.30	470.42	82.39
14:49:30	16.68	2.73	4522.92	33.74	26.94	417.53	326.70
14:50:00	16.14	3.50	2730.80	50.58	22.30	412.56	5.94
14:50:30	15.73	3.51	811.98	46.53	15.89	398.74	0.98
14:51:00	15.83	3.39	668.39	39.61	13.19	378.65	1.35
14:51:30	16.03	3.25	643.53	33.76	12.91	356.81	1.66
14:52:00	16.15	3.16	594.51	30.80	9.91	334.73	1.36
14:52:30	16.29	3.10	527.71	27.84	8.43	326.02	0.70
14:53:00	16.33	3.11	495.53	26.79	7.86	311.37	0.64
14:53:30	16.31	3.08	483.22	25.04	7.28	307.58	0.00
14:54:00	16.44	2.97	394.00	22.51	6.95	302.95	0.00
14:54:30	16.52	2.86	319.11	22.32	7.75	290.51	0.00
14:55:00	16.74	2.77	215.03	22.63	8.11	263.84	0.00
14:55:30	16.82	2.69	192.56	22.68	5.96	264.91	0.00
14:56:00	16.94	2.63	178.84	22.98	5.57	248.22	0.00
14:56:30	17.05	2.56	149.90	22.48	6.16	246.12	0.00
14:57:00	17.09	2.54	152.09	22.83	6.69	237.02	0.00
14:57:30	17.09	2.54	141.40	23.07	5.42	239.63	0.00
14:58:00	17.14	2.47	113.65	23.99	5.36	228.50	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 04, 09/23/90

09-23-19902		CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw

14:58:29	17.23	2.40	95.43	24.59	5.49	231.43	0.00
14:58:59	17.29	2.36	82.47	24.78	4.73	217.23	0.00
14:59:29	17.38	2.35	73.21	24.60	5.08	213.87	0.00
14:59:59	17.37	2.36	68.29	24.40	5.11	211.14	0.00
15:00:29	17.40	2.33	64.00	24.94	6.07	212.86	0.00
15:00:59	16.35	4.83	3321.84	40.53	26.03	271.61	3.61
15:01:29	14.24	4.58	6750.13	83.61	24.34	568.56	0.00
15:01:59	14.47	5.15	514.23	133.99	22.44	994.67	17.04
15:02:29	13.47	5.84	428.36	150.63	23.00	1060.47	2.38
15:02:59	13.28	5.94	402.01	163.11	21.62	999.23	0.00
15:03:29	13.42	5.63	230.79	166.33	20.54	858.74	0.00
15:03:59	13.81	5.10	106.40	157.39	16.82	746.46	0.00
15:04:29	14.43	4.80	52.80	142.88	15.33	667.99	0.00
15:04:59	14.68	4.51	44.95	120.27	14.74	603.13	0.00
15:05:29	15.09	4.19	69.85	86.32	12.27	533.50	0.00
15:05:59	15.42	3.82	216.91	61.64	12.55	493.86	0.00
15:06:29	15.90	3.25	696.95	46.77	10.08	452.26	1.24
15:06:59	16.36	2.81	2344.15	38.89	12.29	430.12	117.52
15:07:29	16.59	2.49	4801.13	29.18	31.23	403.63	499.90
15:07:59	16.54	3.00	4761.00	35.88	55.29	409.78	301.65
15:08:28	15.73	3.47	2043.86	51.75	24.12	407.92	14.24
15:08:58	15.63	3.50	1038.50	49.83	16.09	407.64	8.47
15:09:28	15.56	3.51	903.53	47.80	15.03	402.56	5.37
15:09:58	15.64	3.43	915.88	44.19	13.30	408.29	3.77
15:10:28	15.74	3.38	888.14	41.81	10.91	399.38	3.26
15:10:58	15.71	3.41	903.13	41.02	10.18	409.40	3.06
15:11:28	15.71	3.34	967.20	39.00	8.98	396.67	2.50
15:11:58	15.86	3.33	926.11	38.78	8.38	398.71	2.29
15:12:28	15.83	3.28	876.20	36.45	7.33	382.14	2.62
15:12:58	15.91	3.33	896.20	37.56	7.20	383.00	1.40
15:13:28	15.71	3.37	837.86	43.49	7.30	377.00	8.96
15:13:58	16.27	2.55	1540.81	29.84	7.68	366.49	46.80
15:14:28	16.66	3.00	1780.20	34.42	7.00	363.30	3.58
15:14:58	16.15	3.16	1036.15	35.68	6.94	360.41	2.00
15:15:28	16.06	3.10	891.93	31.91	6.09	349.24	1.71
15:15:58	16.07	4.86	3206.46	37.93	15.19	332.51	22.89
15:16:28	10.08	9.45	19104.19	77.80	44.52	573.20	72.39
15:16:58	9.22	8.08	14945.66	88.51	55.68	1186.91	9.29
15:17:28	11.35	6.69	3440.76	94.49	33.75	1284.28	0.00
15:17:58	12.50	6.09	513.82	101.72	23.77	1190.82	0.00
15:18:28	13.32	5.54	171.05	99.16	17.60	1139.06	0.00
15:18:58	14.01	4.97	74.98	88.34	17.52	1030.61	0.00
15:19:27	14.62	4.48	56.65	75.87	15.19	923.56	0.00
15:19:57	15.20	4.16	81.13	61.19	13.72	810.75	0.00
15:20:27	15.54	3.89	227.96	50.45	14.05	747.92	0.00
15:20:57	15.82	3.33	691.71	42.27	12.33	689.03	0.39

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 04, 09/23/90

09-23-19902	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmVw	ppmCw
15:21:27	16.37	2.77	1909.86	31.45	10.01	620.89
15:21:57	16.75	2.58	3768.36	24.93	9.04	545.48
15:22:27	16.91	2.47	4108.96	21.03	16.13	498.30
15:22:57	16.67	3.20	3081.94	32.31	14.88	465.93
15:23:27	15.94	3.44	1185.13	38.61	8.47	445.35
15:23:57	15.70	3.55	828.67	38.66	5.73	412.72
15:24:27	15.65	3.53	835.56	35.21	6.57	388.38
15:24:57	15.57	3.57	834.82	35.89	5.74	375.23
15:25:27	15.66	3.41	777.88	33.15	5.65	357.76
15:25:57	15.79	3.48	753.86	32.68	5.22	357.62
15:26:27	15.61	3.41	752.47	32.94	4.47	357.80
15:26:57	15.88	3.26	657.34	29.64	4.41	343.26
15:27:27	15.95	3.30	657.54	29.86	4.52	332.67
15:27:57	15.91	3.19	638.15	27.61	3.94	328.31
15:28:27	16.14	3.06	585.96	26.04	3.55	307.82
15:28:57	16.23	3.07	562.93	25.74	4.06	298.84
15:29:27	16.29	2.97	567.08	24.47	3.08	285.06
15:29:56	16.41	2.91	496.99	22.55	3.96	281.39
15:30:26	16.54	2.79	460.27	22.77	3.70	272.15
15:30:56	16.12	6.39	4107.79	43.68	16.90	304.43
15:31:26	9.33	11.12	17531.38	93.64	23.75	446.07
15:31:56	8.08	10.20	6376.64	119.25	26.83	755.36
15:32:26	8.89	8.79	3524.91	125.29	20.62	996.40
15:32:56	10.11	7.86	2061.98	119.38	13.69	999.21
15:33:26	11.17	6.97	1422.82	108.13	12.52	912.91
15:33:56	12.27	6.29	706.76	107.02	13.62	807.95
15:34:26	13.04	5.75	340.35	104.78	13.47	712.05
15:34:56	13.61	5.37	114.45	101.95	12.30	650.17
15:35:26	14.21	4.97	42.27	92.99	10.13	577.46
15:35:56	14.54	4.67	29.31	84.35	9.62	539.43
15:36:26	14.87	4.49	34.22	73.77	9.33	507.36
15:36:56	15.14	4.21	49.56	61.02	9.43	484.63
15:37:26	15.49	3.91	80.94	49.54	9.45	476.58
15:37:56	15.66	3.76	170.58	41.95	9.58	483.33
15:38:25	15.93	3.39	369.55	33.92	8.64	494.42
15:38:55	16.20	3.20	630.46	30.75	7.56	483.62
15:39:25	16.42	3.01	1106.42	27.50	6.95	479.89
15:39:55	16.54	2.73	2071.42	23.85	6.45	466.44
15:40:25	16.80	2.52	3364.53	19.43	6.04	472.03
15:40:55	16.94	2.46	3987.52	18.02	6.19	479.81
15:41:25	16.69	3.17	3048.19	26.48	5.57	498.52
15:41:55	15.89	3.44	1025.15	31.12	4.60	481.62
15:42:25	15.76	3.44	675.96	30.86	4.07	475.71
15:42:55	15.74	2.96	783.63	26.73	3.88	459.55
15:43:25	16.84	2.57	1814.33	20.48	3.61	469.12
15:43:55	16.40	3.04	1244.03	26.63	3.08	470.37

CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 04, 09/23/90

=====							
09-23-19902		CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw

15:44:25	16.15	3.10	647.10	27.52	3.00	474.43	0.00
15:44:55	16.30	2.98	553.25	27.11	2.66	454.57	0.00
15:45:25	16.44	2.89	463.83	27.00	2.62	461.35	0.27
15:45:55	16.52	2.83	493.66	26.52	2.68	460.60	0.54
15:46:25	16.51	2.82	461.16	26.82	2.58	464.00	0.42
15:46:55	16.69	2.70	440.89	26.52	2.39	445.52	0.32
15:47:25	16.88	2.56	415.34	25.42	2.13	406.87	0.00
=====							
AVERAGE	15.16	4.01	1187.03	62.92	18.18	568.45	60.18
MINIMUM	8.08	0.83	5.87	9.53	0.00	185.44	0.00
MAXIMUM	19.20	11.12	19104.19	227.73	172.06	2108.57	2230.61

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 05 09/24/90

09-24-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:45:00	16.61	2.51	47.31	20.12	0.00		11.63
11:45:30	16.53	2.50	45.39	20.36	0.00		29.67
11:46:00	17.43	2.06	120.76	16.72	0.24		243.41
11:46:29	15.33	5.55	341.35	56.31	14.01		129.30
11:46:59	12.89	5.94	393.03	115.80	32.43		42.16
11:47:29	13.70	4.98	100.28	129.31	34.00		28.30
11:47:59	14.63	3.89	12.03	110.77	36.75		23.51
11:48:29	15.34	3.57	32.96	81.61	32.20		21.73
11:48:59	15.62	3.34	88.20	65.99	28.68		20.38
11:49:29	15.70	3.38	147.10	61.91	25.55		20.71
11:49:59	15.45	3.49	199.96	62.65	24.72		20.19
11:50:29	15.49	3.38	273.75	57.36	22.41		20.73
11:50:59	15.57	3.25	335.79	52.59	20.12		41.73
11:51:29	15.78	3.22	344.68	44.90	18.12		61.66
11:51:59	15.66	3.19	362.88	43.52	18.25		20.62
11:52:29	15.85	3.03	357.17	37.02	17.25		23.13
11:52:59	15.97	3.02	321.98	31.07	16.86		19.19
11:53:29	16.03	2.93	279.25	29.18	16.80		15.83
11:53:59	16.21	2.80	199.85	24.59	16.60		10.71
11:54:29	16.38	2.75	123.54	20.94	16.58		9.42
11:54:58	16.24	2.90	98.22	20.59	17.18		8.39
11:55:28	16.11	2.92	94.99	20.72	17.76		7.36
11:55:58	16.11	2.90	86.15	20.83	17.43		6.83
11:56:28	16.08	2.92	78.37	21.52	17.48		8.59
11:56:58	16.09	2.89	182.61	28.37	16.40		15.17
11:57:28	16.08	2.84	323.97	34.65	14.76		15.80
11:57:58	16.15	2.83	316.98	35.09	14.22		15.46
11:58:28	16.07	2.91	334.85	39.88	14.18		14.37
11:58:58	16.02	2.89	313.53	35.83	14.53		13.31
11:59:28	16.07	2.87	287.70	34.05	14.69		12.04
11:59:58	16.08	2.87	269.22	30.90	14.86		11.08
12:00:28	16.02	2.84	252.76	30.59	14.62		16.16
12:00:58	16.83	2.77	360.58	43.23	12.67		61.05
12:01:28	14.70	6.06	396.73	140.78	29.84		10.04
12:01:58	13.19	5.08	186.77	182.59	62.45		5.36
12:02:28	14.87	3.66	32.48	131.28	81.82		6.75
12:02:58	15.45	3.31	28.57	91.54	85.38		8.99
12:03:28	15.61	3.24	39.31	88.25	70.83		8.71
12:03:57	15.80	3.11	41.53	84.76	51.06		8.05
12:04:27	15.93	3.06	38.49	83.76	41.09		7.44
12:04:57	15.87	3.22	34.48	88.64	36.60		6.45
12:05:27	15.58	3.31	37.29	89.81	35.30		6.91

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 05 09/24/90

09-24-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:05:57	15.61	3.26	44.71	88.04	33.77		7.02
12:06:27	15.78	3.12	45.57	82.79	32.87		7.46
12:06:57	15.89	3.01	44.16	81.90	31.68		6.58
12:07:27	16.03	3.08	45.20	78.60	31.23		6.11
12:07:57	15.72	3.26	45.13	85.66	32.01		5.76
12:08:27	15.55	3.30	43.62	86.73	33.08		6.17
12:08:57	15.75	3.09	43.78	82.44	31.98		6.14
12:09:27	15.85	3.09	34.63	84.16	30.88		5.18
12:09:57	15.89	3.12	28.97	87.14	30.63		4.65
12:10:27	15.75	3.23	26.32	90.43	31.87		3.85
12:10:57	15.81	3.05	24.35	87.75	32.15		3.36
12:11:27	15.96	3.06	20.99	89.44	31.64		3.19
12:11:57	15.86	3.13	19.02	90.07	32.44		3.30
12:12:27	15.90	3.10	20.20	89.74	32.83		2.75
12:12:57	15.79	3.15	17.67	91.96	33.23		3.29
12:13:27	15.87	3.04	18.98	87.36	32.87		2.27
12:13:56	16.01	3.14	20.20	87.84	32.99		1.97
12:14:26	15.88	2.91	384.72	77.06	33.62		110.86
12:14:56	15.96	3.19	495.15	92.33	34.83		8.00
12:15:26	15.57	3.31	43.09	93.72	37.28		5.02
12:15:56	15.62	3.17	33.19	85.09	36.16		3.84
12:16:26	15.88	3.11	36.70	79.89	34.48		3.79
12:16:56	15.82	3.01	39.88	77.34	33.68		2.93
12:17:26	16.13	2.87	36.04	74.58	31.49		1.86
12:17:56	16.17	2.87	34.01	74.45	30.65		2.01
12:18:26	16.27	2.81	35.59	71.39	29.76		1.51
12:18:56	16.34	2.78	37.46	68.81	29.04		1.55
12:19:26	16.40	2.77	40.06	68.29	28.54		1.55
12:19:56	16.23	3.00	41.40	71.14	28.85		2.32
12:20:26	15.79	3.09	53.38	72.41	30.61		4.70
12:20:56	16.28	3.49	154.70	84.15	29.92		3.55
12:21:26	14.80	4.89	150.26	174.33	48.64		0.00
12:21:56	14.62	4.01	33.80	180.78	51.53		0.00
12:22:26	15.41	3.40	0.00	144.67	44.32		0.00
12:22:56	15.69	3.33	0.00	134.45	43.20		0.00
12:23:26	15.53	3.52	0.00	133.43	45.80		0.00
12:23:56	15.40	3.39	2.34	123.39	46.26		0.63
12:24:26	15.56	3.36	3.92	112.10	43.65		0.05
12:24:55	15.41	3.46	8.85	108.94	43.99		0.00
12:25:25	15.37	3.43	10.02	106.25	43.34		0.29
12:25:55	15.38	3.41	13.13	102.00	41.88		0.00
12:26:25	15.38	3.43	14.80	101.05	41.08		0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 05 09/24/90

09-24-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:26:55	15.45	3.25	14.70	98.78	40.44		0.88
12:27:25	15.77	3.24	13.52	96.31	38.26		1.61
12:27:55	15.54	3.36	14.00	101.77	39.53		0.79
12:28:25	15.61	3.21	17.25	91.76	38.94		0.46
12:28:55	15.65	3.31	19.66	93.34	38.74		0.60
12:29:25	15.53	3.31	21.44	91.95	38.69		0.95
12:29:55	15.56	3.29	22.40	93.18	38.07		0.80
12:30:25	15.57	3.23	23.29	88.18	37.79		1.13
12:30:55	15.73	3.13	25.47	84.12	36.55		1.63
12:31:25	15.76	3.17	25.96	84.86	36.21		1.12
12:31:55	15.68	3.19	26.76	85.03	36.53		0.26
12:32:25	15.69	3.21	30.50	84.48	36.58		0.42
12:32:55	15.69	3.23	29.80	86.12	36.21		1.60
12:33:25	15.59	3.22	26.08	88.46	36.42		1.86
12:33:55	15.71	3.14	27.80	82.86	35.58		1.22
12:34:25	15.74	3.14	29.97	82.48	35.36		0.54
12:34:55	15.81	3.11	28.62	83.39	35.02		0.43
12:35:25	15.81	3.08	28.10	80.98	34.88		0.02
12:35:54	15.85	3.12	28.14	83.78	34.90		0.00
12:36:24	15.78	3.13	26.20	82.83	35.67		0.65
12:36:54	15.77	3.05	31.36	79.31	35.65		1.55
12:37:24	16.02	2.89	30.09	74.98	33.76		0.99
12:37:54	16.10	2.95	25.73	78.25	33.69		0.31
12:38:24	16.04	2.97	23.18	81.11	34.37		0.02
12:38:54	16.05	2.96	21.62	80.01	33.82		0.00
12:39:24	16.01	2.95	24.27	77.67	33.30		0.00
12:39:54	15.98	3.16	27.97	81.15	33.73		0.00
12:40:24	15.68	3.27	29.24	87.25	35.22		0.00
12:40:54	15.71	3.88	58.86	77.01	34.91		0.04
12:41:24	14.21	7.41	175.80	158.14	78.29		0.00
12:41:54	12.72	5.59	141.88	183.52	99.92		0.00
12:42:24	14.13	4.59	13.10	199.72	85.09		0.00
12:42:54	14.38	4.12	0.00	228.44	77.25		0.00
12:43:24	14.83	3.86	0.00	214.43	64.74		0.00
12:43:54	15.00	3.74	0.00	201.39	59.02		0.00
12:44:24	15.07	3.78	0.00	202.50	56.73		0.00
12:44:54	15.09	3.69	0.00	194.24	54.01		0.00
12:45:24	15.09	3.73	0.00	188.17	52.37		0.00
12:45:54	15.10	3.69	0.00	179.99	51.21		0.00
12:46:24	15.07	3.71	0.00	176.69	50.51		0.00
12:46:54	15.07	3.65	0.00	177.95	48.69		0.00
12:47:23	15.18	3.47	0.00	169.82	46.41		0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 05 09/24/90

09-24-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:47:53	15.40	3.49	0.00	165.28	45.39		0.00
12:48:23	15.29	3.58	0.00	169.49	46.80		0.00
12:48:53	15.26	3.39	0.00	154.68	46.23		0.00
12:49:23	15.48	3.43	0.00	153.39	45.72		0.00
12:49:53	15.53	3.33	0.00	146.47	44.65		0.00
12:50:23	15.47	3.42	0.00	150.06	46.17		0.00
12:50:53	15.52	3.11	0.00	134.16	44.36		0.00
12:51:23	15.92	3.02	0.00	128.32	41.72		0.00
12:51:53	16.01	3.03	0.00	131.22	41.19		0.00
12:52:23	15.98	3.05	0.00	132.24	41.16		0.00
12:52:53	15.77	3.20	0.00	134.68	42.26		0.00
12:53:23	15.48	3.35	0.00	132.44	44.14		0.00
12:53:53	15.41	3.40	0.00	133.14	45.28		0.00
12:54:23	15.38	3.39	0.00	135.12	45.97		0.00
12:54:53	15.48	3.34	0.00	131.06	45.34		0.00
12:55:22	15.65	3.16	0.00	118.40	44.05		0.00
12:55:52	15.83	3.12	0.18	114.58	42.42		0.00
12:56:22	15.88	3.13	0.00	119.02	42.31		0.00
12:56:52	15.81	3.19	0.00	125.11	42.80		0.00
13:00:26	15.54	3.40	0.26	127.12	46.35		0.00
13:00:56	15.30	3.37	13.07	96.65	44.03		0.00
13:01:26	15.16	7.48	279.36	156.56	79.96		0.00
13:01:56	12.31	5.77	523.19	203.16	107.63		0.00
13:02:26	13.72	3.84	105.26	185.31	70.20		0.00
13:02:56	15.26	3.67	9.45	181.39	56.14		0.00
13:03:26	15.17	3.84	0.00	210.65	50.61		0.00
13:03:56	14.97	3.72	0.00	204.77	47.72		0.00
13:04:26	15.07	3.58	0.00	193.68	44.96		0.00
13:04:56	15.21	3.54	0.00	185.29	44.15		0.00
13:05:26	15.31	3.43	0.00	174.13	42.71		0.00
13:05:55	15.43	3.35	0.00	167.61	41.00		0.00
13:06:25	15.54	3.26	0.00	157.52	40.17		0.00
13:06:55	15.75	3.15	0.00	147.78	39.76		0.00
13:14:38	16.31	3.17	0.00	132.36	38.97		0.00
13:15:08	15.99	2.94	0.00	119.29	37.11		0.00
13:15:37	16.04	2.98	0.00	121.23	36.52		0.00
13:16:07	16.11	4.91	28.72	103.14	43.06		0.00
13:16:37	13.72	6.83	277.83	180.17	97.62		0.00
13:17:07	12.84	4.91	203.60	209.78	87.73		0.00
13:17:37	14.42	3.80	9.24	218.38	66.70		0.00
13:18:07	15.41	3.40	0.00	198.44	56.23		0.00
13:18:37	15.80	3.25	0.00	178.07	50.77		0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 05 09/24/90

09-24-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:19:07	15.89	3.54	0.00	198.77	47.80		0.00
13:19:37	15.44	3.47	0.00	203.32	45.77		0.00
13:20:17	15.49	3.60	0.00	208.16	44.93		0.00
13:20:47	14.97	3.72	0.00	216.38	48.17		0.00
13:21:17	15.09	3.60	0.00	209.44	47.69		0.00
13:21:47	15.21	3.41	0.00	191.04	45.75		0.00
13:22:17	15.37	3.43	0.00	190.27	45.30		0.00
13:22:47	15.44	3.55	0.00	192.45	45.81	53.88	0.00
13:23:17	15.16	3.62	0.00	195.72	48.21	62.62	0.00
13:23:47	15.14	3.59	0.00	191.12	48.41	55.61	0.00
13:24:17	14.95	3.55	0.00	188.22	47.76	63.82	0.00
13:24:47	15.20	3.32	0.00	179.95	47.71	54.82	0.00
13:25:17	15.59	3.20	0.00	174.65	45.43	56.30	0.00
13:25:47	15.72	3.18	0.00	183.64	45.27	44.81	0.00
13:26:17	15.79	3.17	0.00	182.24	44.15	50.80	0.00
13:26:46	15.80	3.23	0.00	179.43	43.77	40.57	0.00
13:27:16	15.66	3.55	0.00	197.86	47.63	47.66	0.00
13:27:46	15.30	3.28	0.00	181.56	47.05	43.96	0.00
13:28:16	15.60	3.40	0.00	180.82	45.15	47.99	0.00
13:28:46	15.41	3.42	0.00	180.27	46.17	40.04	0.00
13:29:16	15.41	3.38	0.00	178.49	45.50	43.71	0.00
13:29:46	15.41	3.46	0.00	180.01	45.74	36.56	0.00
13:30:16	15.30	3.34	0.00	173.72	45.24	35.24	0.00
13:30:46	15.52	3.50	1.78	124.44	42.52	33.30	0.00
13:31:16	15.33	7.56	67.26	171.84	86.36	55.08	0.00
13:31:46	12.34	5.53	92.21	188.39	106.86	76.76	0.00
13:32:16	13.83	4.48	16.64	199.71	70.10	50.39	0.00
13:32:46	14.46	4.59	9.78	208.38	60.82	46.07	0.00
13:33:16	14.43	4.50	25.09	216.19	57.50	31.41	0.00
13:33:46	14.56	4.19	12.29	230.31	55.48	37.12	0.00
13:34:16	14.86	3.93	2.06	231.54	52.81	33.82	0.00
13:34:46	15.09	4.06	0.00	244.71	52.91	39.93	0.00
13:35:16	14.94	4.02	0.36	242.58	53.53	29.61	0.00
13:35:46	14.97	3.87	0.46	230.87	52.39	35.08	0.00
13:36:16	15.14	3.77	0.79	219.71	50.68	25.46	0.00
13:36:46	15.29	3.68	0.71	211.35	49.67	29.57	0.00
13:37:15	15.41	3.44	0.48	197.22	49.23	28.20	0.00
13:37:45	15.70	3.38	0.69	184.76	48.65	27.93	0.00
13:38:15	15.83	3.16	0.97	164.62	48.08	27.22	0.00
13:38:45	16.03	3.05	1.50	152.61	46.88	28.14	0.00
13:39:15	16.21	3.06	2.44	139.49	46.75	29.62	0.00
13:39:45	16.18	3.42	2.45	171.40	45.71	23.02	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 05 09/24/90

09-24-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:40:15	15.60	3.56	0.00	195.24	45.40	30.17	0.00
13:40:45	15.35	3.32	0.00	174.27	45.26	29.97	0.00
13:41:15	15.73	2.89	5.54	116.65	44.19	32.30	0.00
13:41:45	16.27	3.23	6.26	150.92	42.98	24.01	0.00
13:42:15	15.79	3.37	0.00	172.94	41.81	33.08	0.00
13:42:45	15.56	3.38	0.00	171.87	41.51	25.79	0.00
13:43:15	15.52	3.33	0.00	165.35	40.83	32.45	0.00
13:43:45	15.54	3.34	0.00	162.98	40.56	29.45	0.00
13:44:15	15.52	3.53	0.00	166.16	41.03	34.29	0.00
13:45:01	15.26	3.64	0.00	172.68	42.27	24.86	0.00
13:45:31	15.04	3.58	0.00	160.28	43.48	26.60	0.00
13:46:01	15.02	5.51	14.43	104.19	47.23	39.58	0.00
13:46:31	13.65	11.20	92.63	179.03	186.92	64.66	0.00
13:47:01	9.96	6.96	44.74	197.89	163.29	77.70	0.00
13:47:31	12.33	4.77	4.19	260.31	103.54	51.93	0.00
13:48:01	13.92	4.21	0.00	267.48	83.64	48.55	0.00
13:48:31	14.61	3.95	0.00	267.33	71.85	46.44	0.00
13:49:01	14.98	3.65	0.00	242.57	65.16	48.54	0.00
13:49:31	15.39	3.46	0.00	217.32	60.62	42.97	0.00
13:50:01	15.64	3.37	0.00	204.83	58.65	42.08	0.00
13:50:31	15.78	3.27	0.00	187.90	56.45	41.03	0.00
13:51:01	15.92	3.20	0.00	167.49	53.34	46.77	0.00
13:51:31	15.88	3.74	0.00	209.59	51.72	40.20	0.00
13:52:01	15.12	3.71	0.00	217.11	51.47	43.71	0.00
13:52:31	15.06	3.42	0.00	196.18	48.82	39.87	0.00
13:53:01	15.38	3.26	0.00	185.97	46.21	37.33	0.00
13:53:31	15.59	3.29	0.00	183.86	44.45	36.05	0.00
13:54:01	15.60	3.11	0.00	165.13	44.66	37.15	0.00
13:54:31	15.93	2.99	5.46	126.71	44.26	31.52	0.00
13:55:00	16.03	3.35	1.66	174.21	44.95	35.04	0.00
13:55:30	15.61	3.49	0.00	189.81	45.05	33.53	0.00
13:56:00	15.28	3.53	0.00	191.79	44.99	30.04	0.00
13:56:30	15.24	3.56	0.00	189.78	44.57	37.92	0.00
13:57:00	15.16	3.64	0.00	196.76	45.64	30.57	0.00
13:57:30	15.06	3.66	0.00	199.84	46.03	39.69	0.00
13:58:00	15.00	3.64	0.00	198.13	45.83	30.39	0.00
13:58:30	15.04	3.56	0.00	194.03	45.25	39.34	0.00
13:59:00	15.16	3.34	0.00	178.71	42.78	30.65	0.00
13:59:30	15.41	3.53	0.00	188.60	42.78	35.86	0.00
14:00:00	15.22	3.60	0.00	194.27	43.94	27.43	0.00
14:00:30	15.14	3.32	0.00	175.34	42.38	32.91	0.00
14:01:00	15.45	5.58	17.36	121.32	48.30	28.50	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 05 09/24/90

09-24-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:01:30	13.85	9.64	146.11	171.03	144.78	44.11	0.00
14:02:00	11.52	5.73	53.36	211.73	122.15	37.25	0.00
14:02:30	13.72	3.90	0.00	248.76	92.37	41.41	0.00
14:03:00	15.00	3.54	0.00	230.54	77.87	35.18	0.00
14:03:30	15.47	3.41	0.00	211.15	71.80	32.46	0.00
14:03:59	15.68	3.30	0.00	196.23	67.14	31.48	0.00
14:04:29	15.82	3.23	0.00	177.36	62.31	33.25	0.00
14:04:59	15.87	3.64	0.00	210.82	58.85	28.77	0.00
14:05:29	15.26	3.54	0.00	211.13	56.35	30.68	0.00
14:05:59	15.28	3.41	0.00	204.02	53.54	30.01	0.00
14:06:29	15.45	3.13	0.00	150.77	53.06	31.98	0.00
14:06:59	15.87	3.40	2.52	167.16	54.82	32.34	0.00
14:07:29	15.53	3.56	0.00	204.24	54.01	30.80	0.00
14:07:59	15.25	3.59	0.00	212.49	52.79	30.75	0.00
14:08:29	15.09	3.57	0.00	206.58	52.85	32.52	0.00
14:08:59	15.19	3.48	0.00	201.46	50.90	33.18	0.00
14:09:29	15.27	3.52	0.00	204.48	50.67	26.20	0.00
14:09:59	15.26	3.39	0.00	193.10	49.70	30.84	0.00
14:10:29	15.42	3.42	0.00	187.71	48.51	27.31	0.00
14:10:59	15.39	3.37	0.00	183.44	48.70	29.10	0.00
14:11:29	15.46	3.26	0.00	175.61	47.31	22.19	0.00
14:11:59	15.61	3.26	0.00	175.25	46.76	29.12	0.00
14:12:29	15.61	3.26	0.00	175.06	47.08	24.85	0.00
14:12:59	15.63	3.34	0.00	180.53	47.55	27.34	0.00
14:13:29	15.55	3.32	0.00	177.68	48.37	29.01	0.00
14:13:59	15.55	3.16	0.00	166.94	47.04	26.92	0.00
14:14:28	15.74	3.34	0.00	172.40	46.37	27.81	0.00
14:14:58	15.53	3.50	0.00	184.80	48.99	27.39	0.00
14:15:28	15.29	3.58	0.00	192.87	50.51	30.65	0.00
14:15:58	15.13	3.51	0.00	190.92	51.16	27.51	0.00
14:16:28	15.22	3.54	0.00	191.89	50.21	31.10	0.00
14:16:58	15.14	3.56	0.00	194.80	51.47	25.73	0.00
14:17:28	15.12	3.48	0.00	184.11	50.85	30.64	0.00
14:17:58	15.23	3.46	0.00	181.78	49.41	29.26	0.00
14:18:28	15.27	3.50	0.00	175.66	49.63	32.94	0.00
14:18:58	15.25	3.50	0.00	181.34	49.73	28.12	0.00
14:19:28	15.21	3.49	0.00	188.84	49.53	32.84	0.00
14:19:58	15.24	3.46	0.00	186.89	48.66	27.19	0.00
14:20:28	15.27	3.36	0.00	180.41	47.99	28.80	0.00
14:20:58	15.40	3.86	0.00	136.56	48.11	27.24	0.00
14:21:28	15.28	5.17	23.55	132.57	74.59	36.55	0.00
14:21:58	15.13	3.14	44.39	86.88	73.15	22.86	133.40

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 05 09/24/90

09-24-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:22:28	16.93	2.92	979.44	84.12	64.44	19.84	21.22
14:22:58	16.62	3.67	218.44	214.69	71.51	19.55	0.00
14:23:28	15.41	3.70	2.25	242.67	68.81	30.09	0.00
14:23:58	15.13	3.28	0.00	209.49	66.74	25.49	0.00
14:24:27	15.68	3.17	0.00	190.96	66.43	29.30	0.00
14:24:57	15.90	3.30	0.00	193.04	66.62	23.31	0.00
14:25:27	15.73	3.64	0.00	237.19	64.69	28.66	0.00
14:25:57	15.23	3.43	0.00	219.11	63.28	23.60	0.00
14:26:27	15.47	3.13	0.00	168.75	62.56	30.16	0.00
14:26:57	15.93	3.31	0.00	179.52	63.28	26.10	0.00
14:27:27	15.70	3.53	0.00	222.40	61.96	30.07	0.00
14:27:57	15.36	3.51	0.00	226.41	60.80	28.33	0.00
14:28:27	15.34	3.13	0.00	168.83	60.30	27.64	0.00
14:28:57	15.87	3.15	0.02	161.46	60.77	26.07	0.00
14:29:27	15.90	3.40	0.00	217.42	61.89	26.12	0.00
14:29:57	15.56	3.27	0.00	212.74	59.08	26.06	0.00
14:30:27	15.69	2.98	0.00	161.72	58.43	22.65	0.00
14:30:57	16.12	3.19	0.00	164.99	58.84	31.84	0.00
14:31:27	15.92	3.73	0.00	231.54	60.25	26.80	0.00
14:31:57	15.13	3.81	0.00	242.95	61.85	31.55	0.00
14:32:27	15.32	3.36	0.00	193.70	61.50	29.69	0.00
14:32:57	15.88	3.25	1.26	165.51	60.96	31.80	0.00
14:33:26	15.27	3.60	0.00	220.78	60.28	27.55	0.00
14:33:56	15.03	3.67	0.00	231.72	58.86	28.53	0.00
14:34:26	15.01	3.47	0.00	212.19	58.46	27.56	20.43
14:34:56	16.78	2.08	168.73	61.65	53.51	26.24	7.93
14:35:26	17.79	1.94	91.34	18.70	37.62	17.73	0.00
14:35:56	17.95	1.84	12.51	18.14	27.38	14.17	0.00
14:36:26	18.09	1.77	184.65	19.57	23.74	18.11	0.00
14:36:56	18.11	2.50	5.54	45.81	25.91	19.16	0.00
14:37:26	16.37	3.49	2.43	170.38	59.31	27.90	0.00
14:37:56	15.42	3.62	0.00	213.34	77.74	26.58	0.00
14:38:26	15.15	3.62	0.00	220.55	69.46	30.63	0.00
14:38:56	15.14	3.55	0.00	214.28	61.62	24.64	0.00
14:39:26	15.24	2.85	0.00	129.78	55.96	32.88	0.00
14:39:56	16.65	2.00	10.15	27.10	39.20	22.62	0.00
14:40:26	17.61	1.81	5.64	21.73	28.02	22.15	0.00
14:40:56	17.90	4.32	25.18	55.96	32.80	20.49	0.00
14:41:26	15.02	6.58	114.36	106.12	104.30	29.62	0.00
14:41:56	13.94	6.13	51.34	168.21	112.73	23.11	0.00
14:42:25	13.59	4.74	19.27	244.17	99.95	29.63	0.00
14:42:55	14.47	3.92	0.00	247.64	75.73	24.40	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 05 09/24/90

09-24-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:43:25	15.18	3.66	0.00	239.33	63.72	31.40	0.00
14:43:55	15.47	3.62	0.00	232.23	59.35	21.09	0.00
14:44:25	15.54	3.46	0.00	217.91	58.44	31.52	0.00
14:44:55	15.74	3.32	0.00	202.79	57.48	23.56	0.00
14:45:25	15.90	3.32	0.00	198.59	56.47	30.78	0.00
14:45:55	15.91	3.33	0.00	196.02	56.10	22.99	0.00
14:46:25	15.89	3.34	0.00	188.09	55.49	32.94	0.00
14:46:55	15.79	3.79	0.00	220.58	55.42	24.95	0.00
14:47:25	15.14	3.71	0.00	226.32	56.45	30.88	0.00
14:47:55	15.27	3.40	0.00	197.79	57.15	21.25	0.00
14:48:25	15.67	3.21	0.00	175.88	56.72	25.53	0.00
14:48:55	15.87	3.72	0.00	222.34	55.22	24.84	0.00
14:49:25	15.16	3.66	0.00	225.80	56.54	26.43	0.00
14:49:55	15.29	3.21	0.00	179.20	56.00	29.82	0.00
14:50:25	15.86	3.31	0.00	180.96	55.68	28.77	0.00
14:50:55	15.69	3.82	0.00	229.57	57.11	32.70	0.00
14:51:25	15.02	3.66	0.00	227.42	57.98	28.13	0.00
14:51:54	15.27	3.18	0.00	179.27	56.59	35.23	0.00
14:52:24	15.85	3.17	0.00	169.27	57.01	23.97	0.00
14:52:54	15.90	3.56	0.00	209.23	55.93	31.90	0.00
14:53:24	15.37	3.65	0.00	220.69	55.93	28.97	0.00
14:53:54	15.21	3.09	5.86	169.18	57.10	28.48	22.78
14:54:24	16.13	2.00	159.35	45.28	49.93	22.01	0.49
14:54:54	17.54	1.82	46.90	22.97	32.20	22.06	0.00
14:55:24	17.95	1.69	4.29	23.04	23.64	16.98	0.00
14:55:54	18.15	2.52	5.74	51.90	25.46	18.88	0.00
14:56:24	16.99	3.65	3.26	184.43	63.20	23.65	0.00
14:56:54	15.52	3.75	0.00	217.33	72.60	33.22	0.00
14:57:24	15.10	3.67	0.00	217.29	63.70	27.72	0.00
14:57:54	15.10	3.60	0.00	213.33	58.30	33.94	0.00
14:58:24	15.25	2.21	2.09	73.49	49.58	27.74	0.05
14:58:54	17.11	1.73	5.80	26.16	31.27	24.99	0.00
14:59:24	17.98	1.64	4.71	24.21	22.86	22.56	0.00
14:59:54	16.83	2.70	6.63	63.17	27.01	18.29	0.00
15:00:24	15.43	3.48	2.26	173.83	59.78	26.41	0.00
15:00:54	15.24	3.57	0.00	201.96	63.71	33.00	0.00
15:01:24	15.20	3.51	0.00	205.58	58.63	35.05	0.00
15:01:54	15.59	3.27	0.00	189.48	53.32	26.76	0.00
15:02:24	16.27	2.62	0.00	115.53	48.53	33.42	0.00
15:02:53	17.78	1.80	5.17	31.51	34.32	20.62	0.00
15:03:23	18.22	1.62	3.35	25.68	23.99	18.46	0.00
15:03:53	18.19	2.06	4.35	33.11	21.19	16.87	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 05 09/24/90

09-24-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
15:04:23	15.82	3.52	3.83	155.06	52.90	32.99	0.00
15:04:53	15.31	3.46	0.00	186.95	66.14	27.55	0.00
15:05:23	15.53	3.32	0.00	186.41	57.58	31.56	0.00
15:05:53	15.59	3.04	0.00	161.38	52.16	30.06	0.00
15:06:23	16.87	1.99	1.63	40.64	41.16	25.03	0.00
15:06:53	17.89	1.68	2.71	25.71	27.57	15.74	0.00
15:07:23	18.25	1.67	1.95	26.27	21.57	21.77	0.00
15:07:53	17.65	3.05	4.82	90.98	32.80	18.95	0.00
15:08:23	15.77	3.62	0.00	187.72	64.00	30.08	0.00
15:08:53	15.20	3.63	0.00	201.44	62.70	26.95	0.00
15:09:23	15.08	3.64	0.00	205.87	56.68	31.65	0.00
15:09:53	15.15	2.66	0.23	108.12	51.90	30.09	0.00
15:10:23	16.92	1.76	6.49	28.36	34.79	22.44	0.00
15:10:53	17.87	3.17	27.33	50.03	28.13	21.07	0.00
15:11:23	16.21	5.68	83.11	120.91	79.36	21.21	0.00
15:11:52	14.64	4.22	43.71	205.53	98.33	33.39	0.00
15:12:22	15.43	3.46	1.67	213.38	88.39	25.28	0.00
15:12:52	15.66	3.60	0.00	232.57	84.33	32.05	0.00
15:13:22	15.44	3.89	0.00	263.55	80.38	31.70	0.00
15:13:52	15.07	3.93	0.00	267.99	79.15	34.96	0.00
15:14:22	15.03	3.89	0.00	264.85	76.10	33.21	0.00
15:14:52	15.06	3.90	0.00	263.03	73.04	45.00	0.00
15:15:22	15.00	3.93	0.00	264.21	72.14	36.89	0.00
15:15:52	14.97	3.93	0.00	263.70	71.49	41.69	0.00
15:16:22	14.95	3.78	0.00	254.61	70.24	43.17	0.00
15:16:52	15.19	3.53	0.00	232.84	67.22	41.73	0.00
15:17:22	15.41	3.69	0.00	241.45	67.08	28.62	0.00
15:17:52	15.27	3.60	0.00	237.62	67.78	34.88	0.00
15:18:22	15.40	3.55	0.00	229.60	66.60	34.94	0.00
15:18:52	15.40	3.56	0.00	227.40	67.41	39.84	0.00
15:19:22	15.42	3.53	0.00	222.18	67.65	34.96	0.00
15:19:51	15.51	3.28	0.00	203.74	66.12	33.40	0.00
15:20:21	15.85	3.12	0.00	191.62	63.00	31.74	0.00
15:20:51	16.08	3.05	0.00	183.71	61.28	28.51	35.05
15:21:21	16.30	2.14	475.06	65.09	56.57	18.32	96.34
15:21:51	17.44	2.11	357.98	26.48	46.31	7.56	1.48
15:22:21	17.64	2.05	29.41	18.00	36.68	16.58	0.00
15:22:51	17.75	1.97	19.85	15.29	30.87	13.74	0.00
15:23:21	17.88	1.94	11.23	14.84	27.67	20.86	0.00
15:23:51	17.94	1.92	9.68	16.20	26.93	21.37	0.00
15:24:21	17.95	1.89	11.54	17.75	26.25	23.39	0.00
15:24:51	17.99	1.95	7.47	20.14	26.16	15.26	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 05 09/24/90

09-24-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
15:25:21	17.83	3.35	19.63	125.53	50.65	20.00	0.00
15:25:51	15.98	3.57	14.09	183.17	94.84	22.42	0.56
15:26:21	15.65	5.88	50.39	116.51	105.76	37.81	0.00
15:26:51	14.15	5.05	97.73	138.93	140.65	42.97	0.00
15:27:21	14.87	4.84	18.44	250.72	120.94	59.44	0.00
15:27:51	14.41	4.34	8.67	291.15	105.39	54.69	0.00
15:28:20	14.54	4.14	0.00	298.78	90.23	51.40	0.00
15:28:50	14.68	4.01	0.00	296.26	82.85	58.99	0.00
15:29:20	14.82	3.90	0.00	292.29	78.92	48.82	0.00
15:29:50	14.96	3.81	0.00	284.07	75.59	54.34	0.00
15:30:20	15.07	3.77	0.00	275.10	74.25	48.66	0.00
15:30:50	15.12	3.68	0.00	259.61	72.93	54.34	0.00
15:31:20	15.21	3.57	0.00	244.54	71.46	43.29	0.00
15:31:50	15.36	3.46	0.00	230.46	70.17	48.53	0.00
15:32:20	15.52	3.41	0.00	216.27	68.54	46.40	0.00
15:32:50	15.61	3.45	0.00	211.05	68.64	46.60	0.00
15:33:20	15.60	3.42	0.00	205.87	69.13	46.09	0.00
15:33:50	15.61	3.37	0.00	199.57	68.95	50.14	0.00
15:34:20	15.69	3.32	0.00	191.92	67.36	47.90	0.00
15:34:50	15.73	3.54	0.00	206.54	67.68	51.35	0.00
15:35:20	15.41	3.85	0.00	247.93	68.65	49.46	0.00
15:35:50	14.94	3.47	0.00	211.54	69.54	52.26	0.00
15:36:20	15.40	3.43	0.00	202.97	70.49	50.60	0.00
15:36:50	15.54	3.38	0.00	198.44	71.24	50.79	0.00
15:37:20	15.63	3.40	0.00	198.99	70.92	49.58	0.00
15:37:50	15.58	3.92	0.00	254.38	71.30	51.14	0.00
15:38:20	14.87	3.58	0.00	229.26	73.00	58.89	0.00
15:38:49	15.25	3.36	0.00	202.95	72.81	49.69	0.00
15:39:19	15.59	3.37	0.00	207.52	72.76	55.24	0.00
15:39:49	15.67	3.32	0.00	201.07	72.01	51.81	0.00
15:40:19	15.76	3.18	0.00	187.87	70.64	56.67	24.90
15:40:49	15.97	2.41	188.30	61.25	63.07	40.59	0.50
15:41:19	16.96	2.01	63.20	20.53	46.63	35.33	0.00
15:41:49	17.63	1.86	14.01	18.14	34.48	25.66	0.00
15:42:19	17.93	1.81	8.92	19.80	29.84	30.75	0.00
15:42:49	18.06	1.80	8.74	21.52	28.47	26.43	0.00
15:43:19	18.06	2.34	9.37	40.47	29.24	30.07	0.00
15:43:49	17.45	3.79	5.77	195.12	70.61	37.56	0.00
15:44:19	15.34	3.86	0.00	242.58	90.80	50.33	0.00
15:44:49	15.03	3.93	0.00	252.24	79.41	53.54	0.00
15:45:19	14.82	4.00	0.00	263.74	73.56	52.80	0.00
15:45:49	14.61	2.77	87.05	149.84	69.35	54.19	49.53

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 05 09/24/90

09-24-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
15:46:19	16.16	1.83	226.34	27.24	53.91	27.31	0.00
15:46:49	17.63	1.77	24.18	20.46	35.98	34.55	0.00
15:47:19	17.92	1.65	8.02	22.55	28.29	22.99	0.00
15:47:49	18.19	1.58	3.78	23.24	24.81	30.09	0.00
15:48:19	18.35	2.44	7.11	56.74	29.62	32.22	0.00
15:48:48	17.36	3.57	2.81	188.46	69.63	45.57	0.00
15:49:18	15.78	3.84	0.00	234.47	76.73	47.55	0.00
15:49:48	15.12	3.84	0.00	239.01	69.93	51.26	0.00
15:50:18	14.92	3.06	0.00	156.46	63.89	44.17	0.00
15:50:48	15.77	3.01	12.85	45.22	49.75	43.34	0.00
15:51:18	16.60	8.45	85.60	141.74	97.33	50.09	0.00
15:51:48	12.75	6.07	85.34	154.18	149.21	47.94	0.00
15:52:18	14.01	3.18	95.96	93.19	94.14	29.97	44.94
AVERAGE	15.60	3.46	37.56	149.72	51.47	33.88	3.79
MINIMUM	9.96	1.58	0.00	14.84	0.00	7.56	0.00
MAXIMUM	18.35	11.20	979.44	298.78	186.92	77.70	243.41

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:09:53	16.69	2.47	55.58	19.49	0.00		5.30
10:10:23	16.72	2.45	55.63	19.65	0.00		5.08
10:10:53	16.88	2.12	59.39	18.27	0.00		104.58
10:11:23	18.05	2.42	168.42	23.72	1.91		87.62
10:11:53	14.82	4.84	83.59	74.25	26.04		12.56
10:12:23	14.14	4.94	11.12	108.73	46.71		7.80
10:12:53	14.81	4.20	1.24	87.38	40.71		6.80
10:13:22	15.47	3.39	139.44	63.44	36.86		22.71
10:13:52	15.96	2.99	785.10	45.26	32.23		39.95
10:14:22	16.12	2.87	911.44	41.83	32.61		40.21
10:14:52	16.16	2.86	800.37	42.22	32.06		40.09
10:15:22	16.12	2.89	798.75	46.43	29.41		30.97
10:15:52	16.09	2.91	765.98	50.74	27.37		30.56
10:16:22	16.06	2.94	737.07	53.85	25.22		28.27
10:16:52	16.02	2.95	717.09	57.05	24.41		30.36
10:17:22	16.05	2.92	716.58	55.17	23.20		27.70
10:17:52	16.10	2.90	670.69	56.23	22.57		27.46
10:18:22	16.14	2.87	636.41	55.13	22.98		25.60
10:18:52	16.11	2.91	590.06	52.22	22.32		26.00
10:19:22	16.11	2.90	573.00	51.30	22.30		26.68
10:19:52	16.11	2.91	571.79	52.08	21.99		27.45
10:20:22	16.10	2.90	573.72	54.38	22.63		25.24
10:20:52	16.13	2.88	570.50	54.44	22.91		24.68
10:21:22	16.13	2.88	539.50	53.66	23.16		23.20
10:21:52	16.17	2.85	529.82	56.05	23.74		22.80
10:22:21	16.13	2.92	518.03	60.75	24.93		21.10
10:22:51	16.05	2.93	520.57	61.17	25.69		20.51
10:23:21	16.18	2.86	503.61	59.29	24.74		19.43
10:23:51	16.13	2.92	497.84	58.37	24.06		19.06
10:24:21	16.09	2.94	462.46	60.54	24.59		16.88
10:24:51	16.21	2.86	431.61	59.15	24.35		16.54
10:25:21	16.16	2.91	414.68	56.82	24.29		15.94
10:25:51	16.11	2.93	407.29	55.12	24.65		14.84
10:26:21	16.14	2.89	377.73	51.71	24.16		13.97
10:26:51	16.19	2.85	340.13	48.80	23.68		13.60
10:27:21	16.27	2.84	314.20	45.97	22.91		12.51
10:27:51	16.19	2.87	287.73	43.43	22.95		12.05
10:28:21	16.20	2.87	271.74	43.28	22.84		12.94
10:28:51	16.35	2.75	287.92	41.56	22.50		12.27
10:29:21	16.31	2.82	273.10	41.11	22.18		10.73
10:29:51	16.22	2.87	243.24	38.90	22.12		8.88
10:30:21	16.26	2.83	218.32	35.42	21.84		8.98

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:30:51	16.26	2.84	186.94	33.55	21.34		7.79
10:31:21	16.23	2.86	184.78	33.18	21.55		6.89
10:31:50	16.23	2.82	181.07	32.09	21.70		8.10
10:32:20	16.30	2.81	179.30	30.77	21.56		6.90
10:32:50	16.24	2.85	160.59	27.26	21.30		4.75
10:33:20	16.28	2.79	139.64	23.68	20.89		8.21
10:33:50	16.28	2.80	136.21	21.92	20.39		4.48
10:34:20	16.27	2.82	114.38	21.13	20.57		4.48
10:34:50	16.28	2.78	113.50	21.60	20.61		4.91
10:35:20	16.57	2.61	104.93	18.25	19.78		3.35
10:35:50	16.38	2.60	96.02	19.31	19.08		30.96
10:36:20	16.14	4.13	290.07	74.47	24.79		7.08
10:36:50	13.96	5.32	121.09	180.42	69.95		2.55
10:37:20	13.66	5.08	56.36	213.63	108.70		2.31
10:37:50	14.20	4.39	14.60	227.14	94.78		2.62
10:38:20	14.87	3.78	0.00	199.13	76.22		3.28
10:38:50	15.26	3.61	0.00	168.66	60.04		3.03
10:39:20	15.27	3.59	0.00	152.20	54.23		2.31
10:39:50	15.39	3.48	0.00	132.05	50.58		2.85
10:40:20	15.58	3.33	0.00	112.07	47.70		3.41
10:40:49	15.77	3.15	7.50	92.34	44.61		5.19
10:41:19	16.09	3.03	21.03	78.35	40.39		5.51
10:41:49	16.03	3.04	22.16	80.32	40.29		5.78
10:42:19	16.13	2.99	27.00	75.25	38.32		5.58
10:42:49	16.21	2.92	35.72	71.68	36.82		6.63
10:43:19	16.16	3.02	43.34	73.70	36.09		6.39
10:43:49	15.93	3.13	39.42	77.03	37.75		7.45
10:44:19	15.90	3.14	41.85	77.23	38.19		7.23
10:44:49	15.81	3.20	37.11	80.59	38.83		6.14
10:45:19	15.77	3.22	35.46	81.51	39.48		5.98
10:45:49	15.73	3.21	34.58	81.59	39.23		6.06
10:46:19	15.74	3.20	39.45	79.14	38.45		5.92
10:46:49	15.84	3.12	44.23	76.87	37.61		6.42
10:47:19	15.85	3.15	43.67	75.74	37.42		6.93
10:47:49	15.87	3.13	50.39	73.33	37.62		6.94
10:48:19	15.83	3.18	40.90	78.90	39.28		6.49
10:48:49	15.80	3.16	41.22	77.14	39.09		6.44
10:49:19	15.88	3.03	43.10	73.99	37.79		6.11
10:49:48	16.11	2.90	48.05	68.67	34.94		7.39
10:50:18	16.19	2.90	55.01	67.75	33.55		7.33
10:50:48	16.24	2.80	55.12	65.38	33.32		6.39
10:51:18	16.38	2.78	52.05	66.29	32.79		5.75

CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:51:48	16.43	2.81	49.36	64.75	32.60		7.19
10:52:18	16.19	3.01	56.57	68.51	33.92		6.25
10:52:48	15.96	3.09	51.75	72.64	35.02		6.11
10:53:18	15.92	3.08	52.75	71.30	34.65		6.10
10:53:48	15.94	3.06	52.39	70.99	34.16		6.08
10:54:18	15.93	3.06	46.68	71.70	33.79		6.20
10:54:48	15.98	5.95	51.58	67.59	33.00		6.12
10:55:18	15.96	3.02	60.05	67.29	32.27		6.07
10:55:48	16.02	3.00	64.47	64.97	31.17		6.70
10:56:18	16.01	3.02	69.55	64.36	30.83		6.62
10:56:48	15.96	3.02	72.98	65.95	30.70		6.03
10:57:18	15.98	2.98	74.50	64.12	30.31		6.69
10:57:48	16.07	2.96	79.13	61.84	29.41		6.86
10:58:18	16.12	2.93	78.02	60.98	28.83		6.24
10:58:48	16.14	2.90	77.83	59.81	28.07		6.40
10:59:18	16.16	2.94	78.97	59.87	27.98		5.93
10:59:47	16.13	2.91	77.63	60.01	27.90		5.84
11:00:17	16.10	3.01	70.30	61.76	27.68		5.23
11:00:47	16.01	3.44	92.42	63.37	28.67		6.08
11:01:17	14.58	6.51	174.52	143.66	65.13		1.06
11:01:47	12.90	5.28	106.50	166.48	91.86		0.00
11:02:17	14.04	4.41	7.15	153.86	73.40		0.01
11:02:47	14.64	3.81	0.00	126.58	54.73		0.35
11:03:17	15.11	3.57	0.00	108.00	40.06		0.67
11:03:47	15.30	3.52	0.00	98.46	33.58		0.34
11:04:17	15.33	3.45	1.35	91.35	30.40		0.70
11:04:47	15.49	3.32	7.26	84.08	28.36		1.53
11:05:17	15.67	3.20	17.85	76.27	27.05		2.39
11:05:47	15.80	3.07	40.31	67.95	25.88		4.14
11:06:17	16.05	2.95	51.65	64.86	24.60		3.85
11:06:47	16.18	2.89	61.60	62.60	23.88		4.31
11:07:17	16.16	2.97	71.90	64.65	23.98		3.33
11:07:47	16.15	2.97	53.58	67.36	24.73		2.70
11:08:17	16.13	3.00	37.71	70.50	25.47		2.08
11:08:47							1.45
11:09:16							1.38
11:09:46							1.37
11:10:16							1.39
11:10:46	11.34	3.07	13.00	73.54	26.83		1.64
11:11:16	15.76	3.10	20.60	72.17	26.04		1.45
11:11:46	15.82	3.08	22.83	70.40	25.85		2.16
11:12:16	15.93	3.06	23.75	69.77	25.25		1.44

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:12:46	14.13	2.76	16.04	64.25	22.47		1.36
11:13:16	9.21	2.14	7.16	47.55	72.94		0.82
11:13:46	15.75	3.16	9.84	81.65	27.79		0.69
11:14:16	15.76	3.18	7.29	82.24	27.35		0.52
11:14:46	15.79	3.18	6.14	83.87	27.40		0.25
11:15:16	15.71	3.21	2.46	87.95	28.27		0.37
11:15:46	15.77	3.29	9.53	76.24	28.46		0.83
11:16:16	13.97	7.36	80.70	158.36	45.47		0.00
11:16:46	11.54	6.72	106.81	167.45	83.11		0.00
11:17:16	12.99	4.99	55.60	174.91	77.20		0.00
11:17:46	14.84	3.91	5.03	175.57	65.86		0.00
11:18:16	15.26	4.01	0.00	185.43	58.03		0.00
11:18:45	14.66	4.33	0.00	205.26	55.10		0.00
11:19:24	14.45	4.40	0.00	214.22	52.41		1.06
11:19:54	14.60	3.98	0.00	207.47	50.22		0.98
11:20:24	15.24	3.79	0.00	195.62	47.03		0.98
11:20:54	15.04	4.12	0.00	210.41	44.96		0.56
11:21:24	14.69	4.08	0.00	212.04	43.61		0.09
11:21:54	14.68	4.00	0.00	210.05	42.97		0.06
11:22:24	14.75	3.94	0.00	208.22	42.28		0.61
11:22:54	14.84	3.89	0.00	206.06	41.76		0.62
11:23:23	14.92	3.80	0.00	198.28	41.19		1.34
11:26:38	15.38	3.61	0.00	176.23	39.31		25.12
11:27:08	15.44	3.42	0.00	166.12	38.22		14.74
11:27:38	15.46	3.45	0.00	167.44	38.98		34.01
11:28:08	15.63	3.28	2.36	146.66	39.08		4.87
11:28:38	15.61	3.25	0.00	152.55	39.07		20.97
11:29:08	15.78	3.29	2.96	148.45	39.41		23.12
11:29:38	15.58	3.41	10.74	154.41	40.43		9.33
11:30:08	15.46	3.33	0.00	157.51	39.67		14.60
11:30:38	15.63	3.10	0.00	143.19	37.68		10.74
11:31:07	15.85	3.19	0.00	142.49	36.39		6.24
11:31:37	15.74	3.11	0.00	137.69	36.77		9.11
11:32:07	15.92	3.06	0.00	134.91	35.71		3.87
11:32:37	15.96	3.09	0.00	134.08	35.14		4.32
11:33:07	15.88	3.11	0.00	136.96	35.35		7.00
11:33:37	15.90	3.07	0.00	132.85	34.83		7.57
11:34:07	15.91	3.18	0.00	135.41	34.76		17.17
11:34:37	15.81	3.16	0.00	133.74	35.26		10.70
11:39:35	15.91	3.33	0.00	166.77	45.84		1.16
11:40:16	15.79	3.29	0.00	166.01	45.46		0.83
11:40:46	15.65	3.55	0.00	203.27	50.96		0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:41:16	15.50	3.35	0.00	198.66	56.97		0.00
11:41:46	15.66	3.29	0.00	188.75	52.81		0.04
11:42:16	15.75	3.20	0.00	174.58	49.29		0.03
11:42:46	15.87	3.18	0.00	169.76	47.07		0.00
11:43:16	15.87	3.18	0.00	166.27	46.75		0.00
11:43:46	15.90	3.13	0.00	157.23	46.49		0.00
11:44:16	15.95	3.09	0.00	149.54	46.03		0.01
11:44:46	16.02	3.09	0.00	146.41	45.32		0.00
11:45:16	15.99	3.14	0.00	143.34	45.40		0.61
11:45:46	15.92	3.10	0.00	138.95	45.28		0.67
11:46:16	15.96	3.14	0.00	138.90	44.45		1.15
11:46:46	15.84	3.20	0.00	138.32	44.89		0.31
11:47:15	15.70	3.27	0.00	137.16	45.02		0.38
11:47:45	15.64	3.26	0.00	132.31	44.13		0.50
11:48:15	15.64	3.22	0.00	124.71	43.18		0.44
11:48:45	15.64	3.21	0.00	118.27	42.14		0.59
11:49:15	15.68	3.23	0.00	120.06	41.55		0.64
11:49:45	15.63	3.32	0.00	127.82	41.73		0.08
11:50:15	15.51	3.29	0.00	126.12	41.86		0.05
11:50:45	15.51	3.30	0.00	125.30	41.63		0.10
11:51:15	15.54	4.23	10.35	103.38	41.15		0.27
11:51:45	14.49	7.21	57.92	187.54	81.92		0.11
11:52:15	12.40	5.23	79.80	229.12	102.37		0.09
11:52:45	14.25	3.54	8.38	193.66	83.22		1.72
11:53:15	15.57	3.15	0.00	142.35	70.81		2.55
11:53:45	15.99	3.46	0.00	184.32	65.72		0.48
11:54:15	15.46	3.58	0.00	215.51	62.66		0.43
11:54:45	15.29	3.51	0.00	212.49	58.53		0.70
11:55:15	15.34	3.46	0.00	211.71	56.31		0.43
11:55:45	15.45	3.33	0.00	203.63	53.77		0.23
11:56:15	15.62	3.30	0.00	199.26	52.13		0.46
11:56:45	15.63	3.34	0.00	198.81	51.65		0.58
11:57:14	15.60	3.36	0.00	197.00	51.11		0.35
11:57:44	15.51	3.50	0.00	204.76	52.29		0.57
11:58:14	15.35	3.45	0.00	200.58	53.20		0.95
11:58:44	15.44	3.46	0.00	200.18	52.44		0.42
11:59:14	15.32	3.53	0.00	206.25	53.66		0.25
11:59:44	15.32	3.52	0.00	201.04	53.52		0.28
12:00:14	15.33	3.42	0.00	191.64	52.92		0.47
12:00:44	15.53	3.42	0.00	186.81	51.12		0.42
12:01:14	15.48	3.35	0.00	181.92	51.07		0.48
12:01:44	15.60	3.42	0.00	185.59	50.24		0.32

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:02:14	15.49	3.50	0.00	192.07	51.49		0.25
12:02:44	15.38	3.50	0.00	192.62	52.58		0.92
12:03:14	15.39	3.43	0.00	186.38	52.21		0.43
12:03:44	15.45	3.44	0.00	182.73	51.41		0.44
12:04:14	15.45	3.39	0.00	178.62	50.60		0.60
12:04:44	15.49	3.45	0.00	182.98	50.71		0.72
12:05:14	15.41	3.46	0.00	183.85	51.31		0.67
12:05:44	15.40	3.44	0.00	183.19	51.14		0.63
12:06:14	15.37	3.49	0.00	189.92	51.58		0.35
12:06:43	15.32	3.47	0.00	188.16	51.83		0.56
12:07:13	15.36	3.44	0.00	185.55	51.81		0.96
12:07:43	15.39	3.44	0.00	183.68	51.98		0.61
12:08:13	15.40	3.44	0.00	186.77	51.84		0.47
12:08:43	15.42	3.44	0.00	188.03	51.05		0.00
12:09:13	15.45	3.48	0.00	180.46	50.38		0.00
12:09:43	15.34	3.57	0.00	189.84	51.64		0.00
12:10:13	15.24	3.53	0.00	189.76	51.85		0.01
12:10:43	15.31	3.43	0.00	164.81	50.77		0.35
12:11:13	15.56	7.17	11.04	144.88	65.87		0.00
12:11:43	12.34	8.57	48.90	222.42	152.14		0.00
12:12:16	11.37	5.94	38.29	235.93	137.75		0.00
12:14:04	15.40	3.75	0.00	211.25	71.49		4.16
12:14:49	15.45	3.49	0.00	258.42	70.71		0.21
12:15:19	16.04	3.10	0.00	211.02	63.00		0.00
12:15:49	16.28	2.97	0.00	189.51	58.91		0.05
12:16:19	16.48	3.11	0.00	185.21	55.71		0.00
12:16:49	16.15	3.43	0.00	189.74	55.10		0.00
12:17:19	15.68	3.45	0.00	217.45	54.23		0.13
12:17:49	15.57	3.19	0.00	189.54	53.24		0.74
12:18:19	15.99	2.95	0.00	149.70	51.86		1.10
12:18:49	16.24	3.34	0.00	197.16	51.82		0.66
12:19:19	15.75	3.45	0.00	205.24	51.67		0.15
12:19:49	15.51	3.52	0.00	212.68	52.93		0.05
12:20:19	15.42	3.45	0.00	202.47	52.03		0.00
12:20:49	15.45	3.49	0.00	203.48	51.92		0.03
12:21:19	15.41	3.48	0.00	201.41	51.33		0.38
12:21:49	15.40	3.45	0.00	198.46	50.78		0.40
12:22:19	15.45	3.27	0.00	189.02	49.27		0.03
12:22:49	15.69	3.41	0.00	194.69	48.60		0.00
12:23:19	15.49	3.34	0.00	190.20	49.58		0.11
12:23:49	15.59	3.32	0.00	185.10	48.05		0.00
12:24:19	15.60	3.38	0.00	188.81	48.55		0.48

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:24:48	15.52	3.29	0.00	179.35	47.91		0.68
12:25:18	15.64	3.42	0.00	184.53	47.36		0.02
12:25:48	15.45	3.36	0.00	180.22	47.80		0.12
12:26:18	15.53	3.30	0.00	176.41	46.93		0.59
12:26:48	15.64	3.12	0.00	166.69	45.00	14.65	0.00
12:27:18	15.85	3.16	0.00	165.77	43.50	29.88	0.24
12:27:48	15.80	3.32	0.00	174.92	44.77	29.84	0.45
12:28:18	15.61	3.35	0.00	175.92	46.00	45.81	0.37
12:28:48	15.55	3.35	0.00	175.74	46.47	31.26	0.41
12:29:18	15.53	3.36	0.00	172.30	46.08	41.27	0.89
12:29:48	15.53	3.40	0.00	173.64	45.63	35.83	0.48
12:30:18	15.46	3.34	0.00	172.04	45.67	36.08	0.91
12:30:48	15.50	4.44	0.00	136.39	46.74	38.94	0.01
12:31:18	14.52	7.08	43.73	200.76	109.58	47.84	0.55
12:31:48	13.15	2.95	460.37	49.13	93.18	45.79	170.81
12:32:18	16.68	3.39	747.79	132.86	64.49	32.25	4.36
12:32:47	15.83	3.75	70.33	222.04	70.25	47.19	1.69
12:33:17	15.32	3.26	0.00	197.02	63.72	42.76	1.10
12:33:47	15.87	2.95	0.00	149.07	58.13	51.86	1.79
12:34:17	16.27	3.34	0.00	177.68	58.47	41.65	0.90
12:34:47	15.73	3.61	0.00	220.61	59.56	48.85	0.68
12:35:17	15.29	3.65	0.00	231.44	60.41	53.02	0.35
12:35:47	15.18	3.54	0.00	221.70	58.94	53.94	0.97
12:36:17	15.36	3.09	0.00	143.31	57.08	44.37	2.39
12:36:47	15.97	3.45	0.00	180.75	57.43	49.59	0.19
12:37:17	15.47	3.60	0.00	223.89	56.69	46.96	0.04
12:37:47	15.21	3.62	0.00	226.92	55.76	56.23	0.18
12:38:17	15.17	3.60	0.00	225.95	55.54	46.18	0.02
12:38:47	15.19	3.58	0.00	221.35	55.32	43.26	0.36
12:39:17	15.19	3.34	0.00	194.64	55.32	43.14	1.59
12:39:47	15.63	2.96	0.00	127.12	54.35	43.39	2.28
12:40:17	16.11	3.31	0.00	183.71	53.45	46.83	1.03
12:40:47	15.72	3.22	0.00	187.36	51.83	47.42	0.18
12:41:17	15.76	3.24	0.00	193.70	50.45	46.84	0.20
12:41:47	15.73	3.35	0.00	202.48	50.70	40.83	0.49
12:42:17	15.59	3.38	0.00	374.65	52.18	46.55	0.94
12:42:47	15.56	3.27	0.00	198.32	51.47	41.68	0.17
12:43:16	15.65	3.31	0.00	201.00	51.12	47.57	0.73
12:43:46	15.61	3.38	0.00	205.31	51.88	45.84	0.10
12:44:16	15.52	3.38	0.00	205.47	51.53	51.27	0.33
12:44:46	15.35	3.52	0.00	217.46	53.23	41.31	0.47
12:45:16	15.63	3.28	0.00	191.91	53.63	48.87	1.33

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	02	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:45:46	16.75	3.16	7.04	106.24	51.42	41.17	3.99
12:46:16	12.58	6.62	102.22	166.24	82.93	50.38	1.37
12:46:46	14.49	5.02	87.99	252.33	112.65	64.09	0.30
12:47:16	15.54	3.75	0.00	254.08	92.18	63.10	0.38
12:47:46	15.95	3.37	0.00	223.90	76.67	58.70	0.00
12:48:16	16.11	3.22	0.00	205.79	69.82	71.29	0.06
12:48:46	16.18	3.15	0.00	195.54	66.41	79.26	0.20
12:49:16	16.25	3.10	0.00	185.92	64.55	83.77	0.13
12:49:46	16.18	3.14	0.00	180.86	63.65	81.86	0.19
12:50:16	15.79	3.43	0.00	205.47	63.62	84.08	0.00
12:50:46	15.30	3.60	0.00	237.89	62.60	82.80	0.00
12:51:15	15.89	3.21	0.00	186.34	61.98	74.85	0.13
12:51:45	16.36	3.00	0.00	158.42	60.50	76.27	0.16
12:52:15	15.86	3.39	0.00	202.72	59.67	74.80	0.00
12:52:45	15.41	3.52	0.00	229.55	59.61	72.88	0.00
12:53:15	15.93	3.17	0.00	179.54	59.28	69.42	0.65
12:53:45	16.29	3.01	0.00	156.14	58.75	70.88	0.32
12:54:15	15.89	3.40	0.00	204.77	57.37	65.11	0.00
12:54:45	15.43	3.52	0.00	230.71	56.89	70.91	0.00
12:55:15	15.89	3.08	0.00	181.05	56.41	59.02	0.00
12:55:45	16.38	2.95	0.00	153.10	55.43	67.51	0.00
12:56:15	15.99	3.36	0.00	202.48	54.66	62.60	0.00
12:56:45	15.57	3.48	0.00	223.48	54.06	65.05	0.00
12:57:15	15.68	3.17	0.00	188.53	54.14	54.42	0.00
12:57:45	16.29	2.94	0.00	152.53	53.98	62.93	0.00
12:58:15	16.15	3.36	0.00	200.04	53.55	60.93	0.00
12:58:45	15.50	3.60	0.00	227.48	54.77	68.28	0.00
12:59:15	15.30	3.36	0.00	204.27	55.57	63.32	0.01
12:59:45	16.04	3.09	0.00	156.68	55.25	58.56	0.31
13:00:15	15.90	3.52	0.00	198.12	57.78	58.15	0.00
13:00:45	15.34	3.96	0.00	171.00	56.66	62.23	0.00
13:01:15	15.00	5.36	54.53	151.67	84.19	60.92	0.00
13:01:44	15.52	2.69	34.84	74.62	81.93	53.99	166.34
13:02:14	17.65	2.52	931.84	62.04	62.83	31.25	92.13
13:02:44	16.46	3.91	442.43	234.37	75.34	42.22	3.55
13:03:14	15.02	3.88	3.74	260.83	80.28	53.15	1.45
13:03:44	15.23	3.33	0.00	195.48	75.86	56.68	1.11
13:04:14	15.81	3.32	0.00	180.33	71.18	55.92	0.70
13:04:44	15.63	3.82	0.00	244.16	69.40	51.81	0.04
13:05:14	14.99	3.80	0.00	251.99	68.61	59.44	0.30
13:05:44	15.14	3.25	0.00	182.35	65.41	49.84	0.86
13:06:21	15.83	3.20	0.00	165.86	63.90	54.08	0.59

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:06:54	15.92	3.53	0.00	219.07	59.94	54.08	0.00
13:07:24	15.38	3.42	0.00	218.94	57.51	54.46	0.00
13:07:54	15.68	2.94	0.00	148.05	55.23	51.87	0.42
13:08:24	16.28	3.09	0.00	156.96	54.65	48.40	0.00
13:08:54	16.02	3.44	0.00	215.04	54.56	53.40	0.00
13:09:24	15.50	3.64	0.00	231.40	55.95	55.67	0.04
13:09:54	15.24	3.33	0.00	207.21	55.83	57.67	0.00
13:10:24	15.78	3.09	0.00	147.39	54.92	49.54	1.15
13:10:53	16.04	3.56	0.00	198.85	57.63	53.17	0.00
13:11:23	15.29	3.84	0.00	247.00	59.72	50.84	0.00
13:11:53	14.93	3.80	0.00	246.28	61.39	58.60	0.00
13:12:23	15.04	3.24	0.00	174.17	59.69	47.00	0.98
13:12:53	15.86	3.11	0.00	152.43	57.52	53.63	0.04
13:13:23	15.96	3.43	0.00	211.66	55.70	47.32	0.00
13:13:53	15.57	3.37	0.00	212.64	54.68	55.29	0.00
13:14:23	15.78	2.31	0.00	66.17	47.60	39.57	0.00
13:14:53	17.29	1.85	0.00	20.81	31.82	38.49	0.00
13:15:23	17.94	1.69	0.00	19.54	24.26	33.89	0.00
13:15:53	18.16	3.39	34.98	58.52	25.64	39.51	1.71
13:16:23	16.25	7.27	151.34	144.31	99.53	49.19	1.03
13:16:53	13.14	6.66	171.37	204.66	171.73	67.10	0.00
13:17:23	13.27	4.89	25.71	297.73	132.35	59.00	0.00
13:17:53	14.15	4.49	0.00	324.69	106.17	62.74	0.00
13:18:23	14.41	4.29	0.00	329.97	93.64	51.04	0.00
13:18:53	14.67	4.12	0.00	325.37	85.92	53.08	0.00
13:19:23	14.89	4.01	0.00	321.92	79.87	53.22	0.00
13:20:00	15.02	4.01	0.00	197.67	76.40	53.60	0.00
13:20:30	15.02	3.88	0.00	302.80	72.61	54.60	0.00
13:21:00	15.17	3.87	0.00	299.04	70.43	45.74	0.00
13:21:30	15.18	3.86	0.00	299.14	69.34	55.77	0.00
13:21:59	15.16	3.78	0.00	292.75	68.47	39.17	0.00
13:22:29	15.26	3.75	0.00	289.60	67.49	50.88	0.00
13:22:59	15.28	3.68	0.00	282.22	67.12	47.95	0.00
13:23:29	15.40	3.56	0.00	275.24	65.83	49.08	0.00
13:23:59	15.57	3.37	0.00	261.09	63.12	44.29	0.00
13:24:29	15.79	3.36	0.00	256.17	61.06	40.91	0.00
13:24:59	15.83	3.36	0.00	254.99	61.11	41.02	0.00
13:25:29	15.86	3.26	0.00	243.25	60.42	47.72	0.00
13:25:59	15.98	3.18	0.00	235.67	58.88	39.27	0.00
13:26:29	16.09	3.17	0.00	233.56	57.67	39.15	0.00
13:26:59	16.13	3.21	0.00	236.51	58.16	40.97	0.00
13:27:29	16.08	3.37	0.00	245.67	58.96	40.99	0.94

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:27:59	15.84	3.53	0.00	258.57	61.97	37.80	0.00
13:28:29	15.64	3.50	0.00	256.09	63.56	42.63	0.00
13:28:59	15.65	3.30	0.00	243.42	62.56	37.68	0.21
13:29:29	15.93	3.22	0.00	234.12	59.75	37.39	0.01
13:29:59	16.04	3.14	0.00	217.71	58.77	35.87	0.00
13:30:29	16.20	4.88	27.93	139.96	65.89	37.77	0.00
13:30:58	15.20	5.56	70.84	207.55	98.54	44.27	0.00
13:31:28	14.48	4.09	10.60	282.83	96.22	36.13	0.00
13:31:58	15.10	3.64	0.00	278.62	88.87	42.93	0.08
13:32:28	15.47	3.44	0.00	260.50	82.60	31.31	0.06
13:32:58	15.70	3.34	0.00	237.08	76.48	39.26	0.00
13:33:28	15.82	3.37	0.00	223.42	73.95	29.84	0.00
13:33:58	15.79	3.39	0.00	211.71	73.00	37.94	0.00
13:34:28	15.76	3.40	0.00	209.05	73.16	37.19	0.00
13:34:58	15.75	3.15	0.00	191.77	70.68	33.58	0.12
13:35:28	16.10	3.15	0.00	184.99	66.26	37.53	0.87
13:35:58	16.02	3.55	0.00	240.03	65.98	30.28	0.00
13:36:28	15.44	3.35	0.00	220.68	65.03	34.01	0.00
13:36:58	15.80	3.15	0.00	190.53	64.05	30.90	0.00
13:37:28	16.00	3.24	0.00	194.30	65.44	34.35	0.40
13:37:58	15.96	3.35	0.00	204.48	65.42	27.26	0.72
13:38:28	15.72	3.67	0.00	249.12	63.94	40.74	0.18
13:38:58	15.26	3.32	0.00	203.34	63.41	30.36	0.05
13:39:28	15.76	3.23	0.00	191.65	62.39	37.71	0.00
13:39:58	15.92	3.15	0.00	182.64	61.53	34.54	0.00
13:40:28	15.96	3.48	0.00	228.93	59.85	34.54	0.00
13:40:58	15.46	3.54	0.00	224.22	63.51	35.54	0.00
13:41:28	15.45	3.18	0.00	169.53	65.37	36.37	0.47
13:41:57	15.95	3.22	0.00	180.95	63.19	33.20	0.01
13:42:27	15.82	3.42	0.00	224.90	60.60	39.32	0.00
13:42:57	15.56	3.18	0.00	200.88	59.01	34.21	0.00
13:43:27	15.93	2.83	0.00	152.29	57.39	36.54	31.30
13:44:04	16.48	2.17	177.59	77.55	52.21	24.40	16.88
13:44:34	17.56	1.84	38.91	19.74	33.92	17.29	0.00
13:45:04	18.02	1.70	0.00	19.48	25.17	21.94	0.00
13:45:34	18.20	2.06	0.00	26.17	23.45	18.48	0.00
13:46:04	17.76	5.92	57.25	117.89	49.00	32.38	3.71
13:46:33	14.54	6.23	237.34	188.72	131.34	50.13	0.00
13:47:03	15.63	3.95	64.22	215.22	96.97	125.63	0.00
13:47:33	15.80	3.58	0.00	226.38	67.65	117.00	0.00
13:48:03	15.32	3.87	0.00	250.52	58.81	97.13	0.00
13:48:33	15.01	4.01	0.00	261.32	57.45	82.50	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:49:03	15.05	3.94	0.00	262.11	57.66	78.75	0.00
13:49:33	15.21	3.80	0.00	253.47	58.43	61.37	0.00
13:50:03	15.37	3.71	0.00	241.46	58.13	66.37	0.00
13:50:33	15.41	3.69	0.00	237.73	58.45	62.17	0.00
13:51:03	15.40	3.65	0.00	233.72	59.25	58.32	0.00
13:51:33	15.56	3.58	0.00	221.93	59.31	52.33	0.00
13:52:03	15.60	3.51	0.00	212.75	60.40	53.23	0.00
13:52:33	15.73	3.40	0.00	200.08	60.46	48.87	0.00
13:53:03	15.82	3.35	0.00	187.80	59.74	50.88	0.00
13:53:33	15.89	3.28	0.00	177.81	59.17	45.31	0.00
13:54:03	15.96	3.33	0.00	179.79	58.65	44.44	0.00
13:54:33	15.53	3.53	0.00	220.51	57.19	45.95	0.00
13:55:03	15.20	3.40	0.00	207.01	56.72	39.50	28.03
13:55:33	16.99	2.05	175.69	45.83	52.96	36.10	2.47
13:56:02	17.87	1.97	47.15	16.11	39.56	27.21	0.00
13:56:32	17.95	1.91	6.05	13.54	29.49	30.46	0.00
13:57:02	17.99	1.87	6.77	14.82	25.83	28.45	0.00
13:57:32	18.08	2.03	1.00	20.63	24.24	31.30	0.29
13:58:02	17.22	3.17	2.18	127.72	48.08	26.09	0.18
13:58:32	15.78	3.44	0.00	195.88	76.78	45.31	0.00
13:59:02	15.61	3.41	0.00	209.13	67.22	33.87	0.00
13:59:32	15.57	3.48	0.00	215.32	59.84	41.35	0.00
14:00:02	15.58	2.56	0.00	95.83	53.74	30.05	0.00
14:00:32	17.22	1.98	4.35	22.13	36.76	35.70	0.00
14:01:02	17.56	4.90	38.84	85.59	43.11	31.74	0.88
14:01:32	14.49	5.05	155.56	110.55	100.26	38.94	31.36
14:02:02	16.17	2.31	373.47	41.63	73.25	19.97	225.68
14:02:32	17.90	2.26	1181.28	42.00	58.64	23.93	15.89
14:03:02	17.43	3.50	120.10	148.19	60.28	17.68	3.16
14:03:32	15.53	4.22	19.33	243.29	72.44	25.85	1.24
14:04:02	14.83	3.74	6.92	272.91	73.41	20.86	0.62
14:04:32	15.42	3.52	0.00	265.29	69.73	30.39	0.72
14:05:02	15.61	3.49	0.00	254.60	67.84	28.66	0.52
14:05:31	15.68	3.39	0.00	243.46	65.78	37.91	0.73
14:06:01	15.80	3.25	0.00	221.25	64.06	26.71	0.13
14:06:31	16.06	3.05	0.00	203.74	60.72	34.96	0.01
14:07:01	16.32	3.04	0.00	195.29	58.75	28.39	0.00
14:07:31	16.32	3.06	0.00	190.01	58.73	29.43	0.00
14:08:01	16.27	3.19	0.00	200.69	58.36	33.38	0.00
14:08:31	15.92	3.63	0.00	246.86	58.74	30.86	0.00
14:09:01	15.41	2.81	43.47	165.21	58.91	29.45	72.63
14:09:31	16.99	1.95	291.66	36.23	51.80	16.71	18.68

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:10:01	17.85	1.98	66.87	22.97	41.23	20.43	0.00
14:10:31	17.95	1.93	7.60	15.95	32.58	16.63	0.00
14:11:01	18.01	1.87	7.62	13.55	28.40	26.22	0.00
14:11:31	18.11	1.83	8.43	13.08	26.20	17.13	0.00
14:12:01	18.15	1.89	3.70	13.45	73	25.73	0.00
14:12:31	18.00	2.78	3.75	89.66		25.19	0.00
14:13:01	16.56	3.40	0.00	205.61		26.29	0.00
14:13:31	15.79	3.61	0.00	237.64	74	27.35	0.00
14:14:01	15.32	3.69	0.00	248.02	66.0	29.14	0.00
14:14:31	15.23	3.09	3.03	185.82	60.63	29.02	18.86
14:15:01	16.42	1.94	92.11	35.51	51.62	23.08	11.81
AVERAGE	15.70	3.40	65.33	153.43	51.05	45.83	5.63
MINIMUM	9.21	1.69	0.00	13.08	0.00	14.65	0.00
MAXIMUM	18.20	8.57	1181.28	374.65	171.73	125.63	225.68

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
09:40:13	21.06	0.00	0.00	0.00	0.52	6.11	4.26
09:40:28	20.84	0.00	0.00	0.00	0.66	2.62	4.20
09:40:43	21.06	0.24	0.00	0.29	0.68	0.00	30.53
09:40:58	19.96	1.21	17.26	4.65	0.59	0.00	54.05
09:41:13	18.28	1.85	58.94	6.43	0.74	0.00	107.02
09:41:28	17.40	2.17	125.53	6.99	0.73	2.97	136.19
09:41:43	16.93	2.35	182.67	7.67	0.87	0.00	131.74
09:41:58	16.72	2.42	212.04	8.23	0.91	0.00	132.18
09:42:13	16.61	2.44	221.22	8.67	1.00	1.11	151.04
09:42:46	16.59	2.44	223.99	8.95	1.03	1.12	138.23
09:43:01	16.50	2.49	223.23	10.34	0.99	0.00	119.41
09:43:16	16.54	2.47	217.43	10.72	0.77	2.70	115.67
09:43:31	16.53	2.49	206.74	11.28	0.95	0.00	116.63
09:43:46	16.51	2.49	202.57	11.65	0.84	0.00	112.47
09:44:01	16.54	2.51	200.23	12.22	0.96	0.00	111.64
09:44:16	16.53	2.48	198.03	12.56	1.01	0.00	100.04
09:44:31	16.57	2.48	191.63	12.88	0.89	0.00	96.75
09:44:46	16.55	2.44	184.28	12.96	0.83	0.00	99.17
09:45:01	16.69	2.39	177.70	13.20	0.87	5.52	41.43
09:45:16	16.70	2.40	154.42	14.77	0.72	0.00	37.77
09:45:31	16.75	2.46	124.67	15.72	0.82	0.00	36.35
09:45:46	16.55	2.51	117.27	16.85	0.87	0.00	36.83
09:46:01	16.53	2.51	118.39	17.34	0.88	0.00	36.12
09:46:16	16.57	2.48	116.99	17.19	0.90	0.00	35.49
09:46:31	16.61	2.48	113.84	17.21	1.07	0.00	36.83
09:46:46	16.59	2.45	111.78	17.21	0.87	0.00	33.02
09:47:01	16.72	2.40	107.65	16.61	0.80	1.67	32.88
09:47:15	16.64	2.46	105.52	17.10	0.76	0.00	33.21
09:47:30	16.51	2.52	109.72	18.13	0.86	0.00	33.11
09:47:45	16.47	2.52	113.20	18.69	1.08	0.00	33.52
09:48:00	16.56	2.50	109.60	18.66	0.81	2.96	32.01
09:48:15	16.55	2.50	104.96	18.80	0.86	0.00	31.57
09:48:30	16.58	2.48	104.13	18.72	0.93	0.00	30.98
09:48:45	16.62	2.45	102.26	18.52	0.79	4.84	30.41
09:49:00	16.72	2.41	97.74	18.09	0.82	3.01	30.41
09:49:15	16.70	2.43	95.14	18.44	0.73	0.00	30.65
09:49:30	16.63	2.46	95.29	19.09	0.79	1.34	27.81
09:49:45	16.57	2.48	95.71	19.48	0.82	4.57	28.42
09:50:00	16.57	2.48	97.13	19.61	0.64	0.00	27.76
09:50:15	16.56	2.48	95.42	19.87	0.88	0.00	26.56
09:50:30	16.65	2.46	91.57	19.79	0.76	0.00	26.01
09:50:45	16.56	2.47	88.28	20.29	0.94	3.09	27.52

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
09:51:00	16.57	2.48	89.15	20.49	0.84	0.00	27.35
09:51:15	16.63	2.46	89.11	20.38	0.91	0.00	26.83
09:51:30	16.67	2.44	85.61	20.08	0.80	1.13	25.78
09:51:45	16.59	2.47	84.32	20.36	0.91	2.00	25.24
09:52:00	16.63	2.46	85.29	20.75	1.12	0.00	24.41
09:52:15	16.61	2.46	82.99	20.96	0.98	0.00	24.88
09:52:30	16.61	2.46	80.98	20.88	0.88	0.00	25.09
09:52:44	16.66	2.44	81.27	20.65	1.06	1.26	24.93
09:52:59	16.70	2.43	80.48	20.36	0.79	3.22	25.46
09:53:14	16.58	2.47	80.81	20.84	0.79	0.00	26.80
09:53:29	16.66	2.43	84.81	20.13	0.77	0.00	45.68
09:53:44	16.68	2.44	95.55	19.50	0.79	1.84	31.99
09:53:59	16.55	2.49	100.85	20.80	0.91	0.56	24.87
09:54:14	16.52	2.52	93.17	21.33	0.93	0.00	25.03
09:54:29	16.50	2.51	87.40	21.52	0.87	3.28	24.06
09:54:44	16.67	2.45	84.36	21.00	0.91	10.41	23.13
09:54:59	16.71	2.43	78.42	20.88	0.85	8.40	22.90
09:55:14	16.62	2.46	75.36	21.18	0.80	0.00	33.49
09:55:29	16.68	2.42	82.75	20.53	0.86	0.67	41.94
09:55:44	16.68	2.43	95.01	20.52	0.86	5.52	40.75
09:55:59	16.73	2.40	98.53	20.63	0.79	0.64	25.17
09:56:14	16.70	2.42	87.41	21.61	0.87	0.00	22.42
09:56:29	16.69	2.41	72.19	21.89	0.89	3.28	21.43
09:56:44	16.84	2.35	65.67	21.27	0.89	9.52	24.28
09:56:59	16.89	2.30	63.11	20.52	0.73	3.35	26.75
09:57:14	17.04	2.28	63.14	20.04	0.92	0.00	21.34
09:57:29	16.77	2.38	59.82	21.68	0.91	0.96	19.51
09:57:44	16.73	2.42	57.60	22.74	0.91	2.88	20.19
09:57:59	16.67	2.43	57.93	22.93	0.88	0.00	20.65
09:58:14	16.72	2.41	57.62	22.80	0.81	0.00	20.50
09:58:29	16.69	2.42	57.03	22.82	0.78	3.24	20.36
09:58:44	16.74	2.39	56.56	22.50	0.67	4.21	21.40
09:58:59	16.81	2.39	55.97	22.38	0.66	8.60	20.16
09:59:14	16.81	2.34	55.62	21.89	0.83	3.33	20.43
09:59:29	16.82	2.37	54.55	21.88	0.88	0.00	21.45
09:59:43	16.69	2.44	56.74	22.42	0.91	0.00	21.83
09:59:58	16.70	2.42	60.02	22.28	0.59	4.28	20.75
10:00:13	16.68	2.41	61.06	22.07	0.58		20.70
10:00:28	16.87	2.35	59.10	21.27	0.74		23.90
10:00:43	16.88	2.33	57.70	20.86	0.70		40.03

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:00:58	17.27	1.87	73.96	17.96	0.75		122.97
10:01:13	18.89	1.19	113.57	12.09	0.98		144.59
10:01:28	19.31	1.28	143.02	10.84	1.19		91.24
10:01:43	16.89	3.29	172.48	34.52	1.20		67.03
10:01:58	13.82	5.39	318.79	61.88	1.91		134.43
10:02:13	11.92	6.78	677.71	77.24	4.47		99.93
10:02:28	10.36	7.81	1052.18	96.79	6.85		94.15
10:02:43	10.53	7.78	1183.49	101.66	7.64		79.76
10:02:58	10.65	7.51	1207.61	99.68	7.41		72.97
10:03:13	10.90	7.34	1127.67	92.96	7.43		74.83
10:03:28	11.06	7.16	1000.42	85.95	7.79		64.08
10:03:43	11.28	6.94	867.77	80.74	8.71		57.23
10:03:58	11.61	6.69	712.21	76.11	10.05		52.53
10:04:13	11.72	6.59	583.41	73.47	11.25		49.47
10:04:28	11.94	6.42	495.54	72.50	11.88		46.88
10:04:43	12.17	6.17	468.04	72.27	12.52		45.80
10:04:58	12.40	6.08	422.51	72.98	12.73		36.24
10:05:12	12.75	5.70	331.68	75.17	12.91		28.34
10:05:27	13.46	5.37	176.01	74.68	12.22		26.39
10:05:42	13.66	5.19	67.46	72.06	11.42		25.14
10:05:57	13.96	5.06	30.55	69.13	10.59		24.18
10:06:12	13.93	4.92	18.83	66.95	9.82		23.33
10:06:27	14.23	4.79	11.51	63.38	9.49		22.54
10:06:42	14.45	4.60	5.36	58.90	9.09		22.02
10:06:57	14.50	4.56	2.60	56.74	8.84		21.51
10:07:12	14.57	4.40	0.48	54.74	8.67		21.37
10:07:27	14.89	4.28	0.96	52.60	8.38		20.26
10:07:42	14.42	4.50	3.15	52.59	8.49		19.70
10:07:57	14.15	4.65	9.63	53.60	8.40		19.52
10:08:12	14.01	4.67	14.80	54.02	7.87		19.04
10:08:27	13.96	4.74	16.22	53.81	7.84		18.40
10:08:42	13.86	4.72	18.21	53.45	7.83		18.58
10:08:57	14.29	4.49	14.10	53.92	7.54		18.94
10:09:12	14.58	4.37	5.57	53.59	7.73		18.60
10:09:27	14.69	4.30	0.52	53.16	7.91		18.32
10:09:42	14.72	4.36	0.00	52.37	8.24		17.33
10:09:57	14.20	4.51	2.45	51.90	8.34		17.83
10:10:12	14.24	4.54	8.09	50.89	8.05		17.30
10:10:27	13.99	4.63	8.89	52.43	7.82		17.34
10:10:42	13.90	4.64	8.73	53.33	7.53		17.51
10:10:57	14.02	4.57	10.71	53.07	7.60		18.93
10:11:12	14.40	4.21	10.16	52.05	7.53		18.90

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:11:26	15.00	3.96	4.66	50.40	7.44		18.22
10:11:41	15.20	3.98	0.75	49.88	7.71		17.06
10:11:56	14.60	4.24	0.07	50.93	8.09		16.50
10:12:11	14.43	4.33	0.22	50.87	7.59		16.39
10:12:26	14.30	4.36	0.00	50.51	7.35		16.43
10:12:41	14.30	4.34	0.00	49.75	7.47		16.75
10:12:56	14.34	4.26	0.00	48.57	7.45		16.54
10:13:11	14.47	4.22	0.00	47.78	7.27		16.85
10:13:26	14.52	4.14	0.00	46.47	7.33		16.90
10:13:41	14.57	4.12	0.00	45.55	7.42		17.33
10:13:56	14.65	4.03	0.00	44.10	7.63		17.10
10:14:11	14.67	3.99	0.00	43.56	7.67		17.22
10:14:26	14.79	3.95	0.00	43.04	7.74		16.96
10:14:41	14.73	3.90	0.00	42.22	7.93		16.49
10:14:56	14.88	3.86	0.00	41.43	8.05		16.15
10:15:11	14.91	3.82	0.00	40.59	7.88		15.84
10:15:26	14.91	3.85	0.00	40.64	8.08		15.31
10:15:41	14.77	3.87	0.00	39.88	8.26		20.63
10:15:56	15.14	3.19	60.53	30.38	8.40		31.54
10:16:11	16.99	2.92	231.44	29.33	8.09		17.73
10:16:26	16.01	4.01	230.26	55.00	8.52		17.93
10:16:41	14.29	5.03	127.87	82.56	9.92		25.37
10:16:56	13.13	5.67	160.07	94.15	11.36		31.26
10:17:10	12.41	6.12	299.31	99.79	12.87		28.59
10:17:25	11.90	6.32	401.68	99.25	14.32		25.17
10:17:40	11.86	6.16	419.17	95.89	16.19		16.56
10:17:55	12.36	6.07	309.31	92.40	17.00		16.74
10:18:10	12.43	6.02	199.84	89.07	16.81		16.89
10:18:25	12.50	6.00	176.35	87.04	16.78		15.27
10:18:40	12.53	5.94	170.54	85.74	17.10		14.99
10:18:55	12.60	5.87	162.92	86.18	17.29		14.06
10:19:10	12.77	5.76	145.33	85.17	17.37		12.94
10:19:25	12.82	5.68	123.73	86.41	17.35		12.62
10:19:40	12.98	5.59	96.13	87.67	16.98		12.29
10:19:55	13.10	5.33	75.94	86.26	16.46		12.01
10:20:10	13.50	5.23	54.85	87.53	16.01		11.63
10:20:25	13.64	5.10	40.24	86.88	15.39		11.31
10:20:48	13.72	5.10	28.79	88.78	15.08		11.05
10:21:03	13.74	4.93	11.15	89.47	13.72		11.41
10:21:18	14.02	4.79	5.74	87.20	13.11		11.16
10:21:33	14.04	4.83	4.15	90.15	12.76		11.16
10:21:48	13.98	4.70	2.29	89.90	12.28		11.52

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:22:03	14.29	4.56	1.00	89.29	11.89		11.37
10:22:18	14.42	4.47	0.00	89.87	11.26		11.53
10:22:33	14.51	4.39	0.00	90.10	11.17		11.40
10:22:48	14.62	4.29	0.00	90.00	10.80		11.48
10:23:03	14.68	4.26	0.00	92.05	10.49		11.20
10:23:18	14.77	4.19	0.00	91.85	10.45		11.26
10:23:33	14.81	4.22	0.00	93.89	10.58		11.28
10:23:47	14.72	4.16	0.00	94.01	10.53		12.19
10:24:02	14.95	4.04	0.00	91.48	10.51		13.28
10:24:17	15.07	3.92	0.19	86.86	10.50		13.37
10:24:32	15.14	3.89	0.39	85.19	10.78		13.57
10:24:47	15.12	4.18	0.67	88.38	10.98		11.88
10:25:08	14.54	4.35	0.79	90.37	11.06		12.25
10:25:23	14.24	4.36	0.00	87.60	10.91		12.43
10:25:38	14.35	4.21	0.00	83.53	10.59		12.58
10:25:53	14.57	4.11	0.00	79.69	10.35		12.29
10:26:08	14.52	4.12	0.00	79.86	10.23		12.28
10:26:23	14.58	4.11	0.00	79.43	10.32		11.83
10:26:38	14.56	4.10	0.00	78.73	10.31		11.96
10:26:53	14.68	4.04	0.00	76.41	10.22		12.26
10:27:08	14.76	3.99	0.00	74.08	10.29		12.35
10:27:23	14.78	3.94	0.00	72.84	10.41		12.50
10:27:38	14.88	3.87	0.00	70.88	10.31		12.45
10:27:53	14.95	3.81	0.00	68.44	10.45		11.95
10:28:08	15.08	3.74	0.00	66.09	10.45		12.52
10:28:23	15.19	3.66	0.00	64.17	10.54		13.16
10:28:38	15.26	3.59	0.00	63.49	10.54		11.90
10:28:52	15.49	3.47	0.00	60.31	10.42		12.87
10:29:07	15.32	3.58	0.00	61.12	10.20		12.39
10:29:22	15.13	3.62	0.00	62.29	10.10		12.04
10:29:37	15.45	3.50	0.00	58.06	10.20		11.83
10:29:52	15.58	3.40	0.00	55.01	9.98		11.64
10:30:07	15.64	3.36	0.00	52.79	9.96		11.89
10:30:22	15.67	3.33	0.00	52.30	9.78		11.41
10:30:37	15.80	3.13	13.21	44.42	9.74		13.42
10:30:52	17.37	2.68	99.52	33.45	9.54		13.19
10:31:07	15.77	4.08	170.18	45.99	8.99		61.95
10:31:22	12.45	5.84	377.01	71.07	12.93		107.06
10:31:37	11.60	6.44	1029.60	80.06	24.51		155.50
10:31:52	10.85	6.88	1922.40	85.70	44.87		77.48
10:32:07	11.10	6.88	2166.20	85.98	68.63		57.08
10:32:22	11.20	6.85	1725.50	88.64	77.16		39.79

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:32:37	11.33	6.82	1315.90	93.16	80.72		29.77
10:32:52	11.44	6.70	1039.80	98.16	81.92		23.19
10:33:07	11.51	6.66	846.29	106.07	80.50		19.00
10:33:22	11.75	6.49	661.08	112.65	76.24		15.59
10:33:37	11.83	6.37	506.49	120.82	68.34		13.23
10:33:52	12.15	6.17	398.61	126.41	59.73		12.08
10:34:06	12.24	6.07	301.63	131.46	51.82		10.85
10:34:21	12.51	5.83	220.59	137.64	45.18		10.26
10:34:36	12.83	5.59	153.00	140.35	39.14		10.16
10:34:51	13.06	5.49	103.02	142.53	33.94		10.03
10:35:06	13.09	5.40	82.53	144.74	29.97		9.94
10:35:21	13.18	5.33	68.88	145.49	26.99		9.63
10:35:36	13.32	5.27	58.55	147.44	24.36		9.58
10:35:51	13.32	5.22	45.63	151.88	22.59		9.46
10:36:06	13.45	5.08	34.93	152.83	20.79		9.40
10:36:21	13.52	5.05	24.71	156.79	19.19		9.35
10:36:36	13.64	4.92	18.02	156.57	17.75		9.18
10:36:51	13.80	4.87	13.45	160.62	16.23		9.22
10:37:06	13.78	4.81	10.66	164.42	15.12		9.17
10:37:21	13.88	4.72	7.89	167.22	14.35		9.08
10:37:36	14.04	4.61	5.15	166.45	13.47		9.11
10:37:51	14.19	4.51	3.61	166.07	12.73		9.10
10:38:06	14.33	4.44	2.60	165.45	12.49		9.14
10:38:21	14.38	4.38	1.59	163.65	11.98		9.25
10:38:35	14.43	4.37	1.27	163.41	11.42		9.54
10:38:50	14.48	4.30	0.60	162.16	11.00		9.67
10:39:05	14.57	4.26	0.60	161.74	10.58		9.55
10:39:22	14.57	4.19	0.00	159.23	10.30		9.62
10:43:27	15.68	3.90	0.00	128.51	9.54		10.88
10:43:57	15.47	3.61	0.29	110.45	8.67		9.85
10:44:27	15.04	3.98	0.28	119.81	8.56		9.21
10:44:57	14.58	3.96	0.00	118.40	7.88		9.85
10:45:27	15.23	3.58	0.96	104.40	7.61		22.20
10:45:56	15.83	4.02	145.30	64.37	8.81		19.47
10:46:26	12.55	7.55	398.40	116.54	22.66		20.62
10:46:56	9.72	8.31	634.25	132.77	49.80		13.97
10:47:26	9.98	7.79	586.75	124.93	56.29		11.97
10:47:56	10.58	7.39	445.40	118.75	54.08		9.46
10:48:26	11.02	7.07	279.10	116.11	46.44		27.43
10:48:56	11.49	6.62	149.70	119.19	35.55		36.05
10:49:26	11.89	6.41	96.40	125.18	28.25		9.63
10:50:09	12.08	6.16	73.80	130.14	23.81		8.80

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90 TIME	O2 %V	CO2 %V	CO ppmV	NOx ppmV	SO2 ppmV	HC1 ppmVw	THC ppmCw
10:55:11	15.33	3.81	0.00	102.52	9.64		76.34
10:55:41	15.36	3.78	1.41	100.04	9.85		77.28
10:56:11	15.32	3.82	0.85	99.38	10.11		78.72
10:56:41	15.24	3.88	1.27	96.44	10.19		79.22
10:57:11	15.13	3.99	0.53	95.02	10.15		76.53
10:57:41	15.07	3.98	0.66	91.19	10.00		69.92
10:58:11	15.03	4.04	0.50	91.71	9.55		69.32
10:58:43	14.98	4.07	0.31	91.50	9.30		72.21
10:59:13	15.07	3.96	0.82	86.38	8.85		69.92
10:59:43	15.10	3.96	0.66	85.36	8.72		69.87
11:00:13	15.10	3.95	1.78	83.03	8.78		67.33
11:00:43	15.14	3.89	2.48	78.40	8.96		105.56
11:01:13	15.63	3.96	182.99	48.71	10.13		515.45
11:01:43	15.00	4.93	374.86	61.72	17.61		82.87
11:02:13	15.09	4.28	36.64	57.35	17.58		98.78
11:02:43	14.84	6.33	215.95	69.20	19.62		195.65
11:03:13	11.65	7.57	439.97	81.13	35.25		83.27
11:03:43	10.43	7.72	233.30	83.35	32.65		72.09
11:04:13	10.46	7.44	202.65	79.51	24.20		63.78
11:04:43	10.41	7.37	183.24	76.37	19.92		60.95
11:05:13	10.69	7.23	177.04	73.43	17.23		58.70
11:05:43	10.64	7.19	168.17	73.59	16.32		56.50
11:06:13	11.47	6.67	156.11	66.83	14.55		52.60
11:06:43	11.37	6.68	143.56	63.72	12.77		50.51
11:07:13							46.16
11:07:43							41.70
11:08:13							41.46
11:08:42							41.93
11:09:12							39.19
11:09:42							39.37
11:10:12							38.64
11:10:42							35.90
11:11:12							33.98
11:11:42							33.66
11:12:12							31.79
11:12:42							28.03
11:13:12							24.20
11:13:42							25.88
11:14:12							591.61
11:14:42							0.00
11:15:12							0.00
11:15:42							43.45

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:16:12	11.99	4.95	170.05	44.38	6.88		118.02
11:16:42	14.00	5.18	169.13	64.59	22.64		62.12
11:17:12	15.04	4.77	23.43	70.79	23.11		55.03
11:17:42	15.13	4.66	0.70	73.60	21.74		53.85
11:18:11	15.28	4.48	1.08	70.54	20.70		52.20
11:18:41	15.24	4.48	1.41	70.25	19.89		48.25
11:19:11	15.03	4.97	22.29	79.85	19.17		121.07
11:19:41	11.15	7.41	405.90	114.18	57.87		69.17
11:20:11	10.15	7.94	528.23	110.69	114.85	638.50	54.75
11:20:41	10.61	7.59	467.14	100.59	109.81	726.52	48.23
11:21:11	11.09	7.23	412.07	90.02	97.25	678.73	44.78
11:21:41	11.30	6.98	327.94	85.80	78.45	635.90	39.50
11:22:11	11.88	6.49	224.54	82.71	55.87	553.25	34.90
11:22:41	12.51	5.95	120.38	84.28	36.67	494.77	32.11
11:23:11	13.32	5.49	57.94	83.65	23.28	444.54	33.13
11:23:41	13.12	5.44	53.88	79.37	17.09	424.86	34.78
11:24:11	13.30	5.27	52.34	78.57	13.49	394.50	32.83
11:24:41	13.33	5.21	32.99	79.40	10.65	369.33	32.81
11:25:11	13.51	5.06	22.10	79.47	8.73	376.08	33.83
11:25:41	13.88	4.79	15.86	76.81	7.18	339.04	34.20
11:26:11	13.75	4.85	7.11	77.45	6.10	326.95	37.78
11:26:40	13.79	4.78	3.91	77.07	5.16	316.84	40.41
11:27:10	14.02	4.64	1.78	76.97	4.33	293.86	40.05
11:27:40	14.03	4.60	1.50	76.86	3.90	267.78	41.52
11:28:12	14.85	4.04	2.61	64.28	3.56	268.14	40.63
11:28:42	17.35	2.56	53.23	28.48	5.05	198.36	26.49
11:29:12	17.78	2.10	532.30	18.50	4.66	181.62	235.94
11:29:42	18.15	1.66	857.00	9.22	5.72	160.84	246.66
11:30:12	18.14	1.83	1303.41	10.63	8.11	152.97	180.87
11:30:42	15.20	4.13	1660.04	30.65	80.59	189.00	45.23
11:31:12	14.78	4.64	1488.87	46.31	158.75	409.90	24.22
11:31:42	14.77	4.48	93.20	55.98	60.77	651.06	17.56
11:32:12	15.63	3.95	18.63	66.76	36.70	628.66	15.14
11:32:42	16.18	3.56	13.01	75.68	28.88	585.05	13.49
11:33:12	16.61	3.27	17.67	78.00	24.99	509.88	12.47
11:33:41	16.83	3.10	29.17	70.36	22.58	448.00	16.69
11:34:11	17.07	2.80	209.33	55.58	19.63	409.80	208.71
11:34:41	17.38	2.39	1156.06	39.22	22.27	378.53	204.41
11:35:11	16.62	3.10	1196.05	69.09	23.86	351.35	60.13
11:35:41	16.28	3.23	53.94	64.79	20.00	341.30	31.40
11:36:11	16.33	3.22	19.91	61.71	18.63	312.83	21.44
11:36:41	16.26	3.29	17.61	63.87	18.18	304.01	17.48

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:37:11	16.40	3.17	15.59	58.16	17.02	285.28	15.41
11:37:41	16.43	3.16	14.31	55.71	15.82	270.76	14.54
11:38:11	16.46	3.17	15.15	56.83	14.73	262.01	13.67
11:38:41	16.42	3.12	16.29	53.67	14.00	264.46	12.98
11:39:11	16.48	3.12	16.68	54.31	13.12	256.10	11.98
11:39:41	16.55	3.01	18.40	49.57	12.49	258.10	11.19
11:40:11	16.69	2.91	16.99	44.66	11.77	243.32	10.47
11:40:41	16.78	2.87	21.07	42.50	11.18	241.29	9.89
11:41:11	16.81	2.82	24.60	39.31	10.59	227.63	9.31
11:41:41	16.87	2.79	30.64	38.42	10.27	219.41	8.97
11:42:11	16.92	2.73	33.96	35.50	9.87	220.65	8.21
11:42:41	17.02	2.68	46.14	32.25	9.50	213.93	7.96
11:43:11	17.03	2.65	61.95	30.29	9.07	217.86	8.21
11:43:40	17.08	2.57	86.90	27.37	8.73	210.86	7.68
11:44:10	17.17	2.51	119.30	26.04	8.23	218.37	6.97
11:44:40	17.25	2.48	120.11	25.65	7.86	206.45	6.59
11:45:10	17.26	2.48	125.73	25.19	7.47	206.65	6.52
11:45:40	17.30	2.71	188.70	25.33	7.22	189.37	7.55
11:46:10	16.43	3.84	223.14	40.18	8.91	209.56	6.10
11:46:40	15.49	4.68	62.01	83.89	15.35	218.63	5.64
11:47:10	14.75	4.85	18.83	87.96	18.81	289.17	4.90
11:47:40	14.90	4.20	6.46	84.69	15.06	312.04	4.70
11:48:10	15.85	3.80	3.84	76.68	12.33	350.90	4.00
11:48:40	16.23	3.60	5.70	69.64	11.06	359.98	3.67
11:49:10	16.44	3.48	8.90	65.37	10.59	361.36	3.47
11:49:40	16.55	3.42	14.22	63.16	10.60	366.20	3.20
11:50:10	16.58	3.31	17.88	60.12	10.48	361.57	2.91
11:50:40	16.73	3.44	28.85	57.82	10.23	344.53	2.36
11:51:10	16.15	3.55	13.84	58.53	9.31	320.29	2.06
11:51:40	16.06	3.46	10.11	55.04	7.94	276.21	1.98
11:52:10	16.15	3.35	9.37	49.04	6.76	256.48	2.11
11:52:39	16.26	3.25	10.83	43.86	6.17	240.13	1.55
11:53:09	16.39	3.19	12.28	41.24	5.93	215.21	1.30
11:53:39	16.42	3.19	14.58	40.84	5.72	209.13	1.42
11:54:09	16.50	3.00	17.58	35.76	5.48	195.40	0.98
11:54:39	16.65	2.94	24.76	32.46	5.57	188.85	1.08
11:55:09	16.74	2.87	32.04	30.47	5.55	169.02	1.02
11:55:39	16.82	2.84	34.16	28.82	5.56	167.29	1.01
11:56:09	16.89	2.74	40.38	25.87	5.38	148.42	1.20
11:56:39	17.00	2.67	41.41	24.37	5.32	147.81	1.05
11:57:09	17.10	2.60	54.45	21.77	5.07	138.77	1.22
11:57:39	17.19	2.55	84.75	20.23	4.97	135.30	1.24

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:58:09	17.24	2.51	106.02	19.63	4.86	123.95	0.98
11:58:39	17.18	2.54	97.62	20.48	4.47	125.92	1.20
11:59:09	17.23	2.49	101.49	19.53	4.47	115.27	1.34
11:59:39	17.28	2.46	132.18	17.93	4.42	121.31	1.58
12:00:09	17.34	2.42	149.39	17.47	4.16	106.70	1.35
12:00:39	17.20	2.60	138.16	20.06	4.37	111.46	1.71
12:01:09	16.82	3.04	175.89	26.61	5.64	115.64	1.08
12:01:39	16.41	3.43	56.29	42.62	11.50	237.08	2.16
12:02:09	15.87	3.77	11.94	54.00	20.81	480.62	2.28
12:02:39	15.17	4.22	19.38	65.36	20.64	619.55	1.94
12:03:09	14.71	4.40	19.76	77.50	17.50	648.22	1.69
12:03:39	15.95	3.62	11.83	75.90	14.24	606.80	0.94
12:04:08	16.54	3.27	10.32	69.58	11.89	529.70	0.60
12:04:38	16.68	3.16	17.67	67.02	10.99	491.79	0.60
12:05:08	16.95	3.02	37.70	63.91	10.78	465.49	0.71
12:05:38	16.60	3.30	55.53	68.45	11.00	462.39	0.13
12:06:08	16.15	3.40	25.01	71.03	9.98	445.32	0.05
12:06:38	16.05	3.38	15.06	69.23	8.76	419.72	0.00
12:07:08	16.18	3.29	15.30	64.64	7.99	405.82	0.00
12:07:38	16.26	3.26	15.91	62.15	7.55	390.53	0.00
12:08:08	16.27	3.24	17.12	60.75	7.42	392.25	0.00
12:08:38	16.43	3.13	16.60	57.12	7.19	382.30	0.00
12:09:08	16.39	3.19	12.62	57.12	7.18	387.71	0.00
12:09:38	16.52	3.03	11.34	53.75	7.01	368.80	0.00
12:10:08	16.61	2.98	12.18	50.66	6.91	363.41	0.00
12:10:38	16.63	2.98	16.73	47.61	6.60	351.38	0.00
12:11:08	16.57	2.98	17.01	48.13	6.42	334.14	0.00
12:11:38	16.68	2.95	17.30	46.74	6.26	325.23	0.00
12:12:08	16.74	2.88	16.30	41.83	6.04	318.51	0.00
12:12:38	16.78	2.84	25.05	39.73	5.74	304.09	0.00
12:13:08	16.87	2.76	32.43	36.56	5.62	291.84	0.00
12:13:38	16.87	2.82	39.84	38.20	5.35	285.72	0.00
12:14:07	16.84	2.80	35.50	37.33	5.24	274.00	0.00
12:14:37	16.94	2.74	33.76	36.13	5.21	263.79	0.00
12:15:07	16.93	2.73	43.33	36.65	4.98	252.30	0.00
12:15:37	16.96	2.90	57.25	36.79	4.93	252.87	0.00
12:16:07	16.48	3.22	136.03	39.82	5.33	248.21	0.00
12:16:37	16.14	4.03	102.25	56.36	6.39	241.78	0.00
12:17:07	15.12	4.70	27.36	78.48	11.53	429.81	0.00
12:17:37	14.83	4.65	6.42	80.31	13.90	729.98	0.00
12:18:07	15.37	4.22	3.43	86.64	14.74	934.17	0.04
12:18:37	15.73	4.11	1.43	96.38	14.17	943.29	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:19:07	15.78	4.03	3.38	103.82	13.19	855.95	0.00
12:19:37	15.92	3.86	3.36	104.06	12.22	786.39	0.00
12:20:07	16.01	3.75	4.36	98.32	11.61	743.05	0.00
12:20:37	16.17	3.61	5.15	93.29	10.94	688.09	0.00
12:21:07	16.21	3.58	8.00	91.82	10.76	641.87	0.00
12:21:37	16.20	3.56	8.92	90.61	10.47	615.64	0.00
12:22:07	16.23	3.52	10.16	87.58	10.07	571.32	0.00
12:22:37	16.26	3.50	10.96	85.19	9.44	542.09	0.00
12:23:07	16.30	3.32	10.41	81.98	8.72	499.16	0.00
12:23:37	16.55	3.24	13.08	84.97	8.31	461.94	0.00
12:24:07	16.60	3.16	16.12	87.48	8.54	450.72	0.00
12:24:37	16.75	3.04	23.48	84.83	8.68	435.77	0.00
12:25:06	16.85	3.01	33.45	79.78	8.99	434.08	0.00
12:25:36	16.58	3.44	43.71	81.35	9.38	463.91	0.00
12:26:06	15.83	3.65	19.41	84.38	9.00	495.61	0.00
12:26:36	15.68	3.39	20.90	79.02	8.03	479.42	0.00
12:27:06	16.67	2.85	83.24	66.41	8.19	466.98	0.00
12:27:36	16.86	3.11	125.92	68.86	8.94	456.51	0.00
12:28:06	16.15	3.35	39.48	72.30	8.69	446.70	0.00
12:28:36	16.03	3.39	18.73	71.37	7.86	422.22	0.00
12:29:06	15.94	3.43	19.44	70.85	7.24	409.27	0.00
12:29:36	15.98	3.40	18.53	67.26	6.37	383.32	0.00
12:30:06	16.06	3.35	18.02	64.71	5.77	360.97	0.00
12:30:36	15.99	3.54	38.42	62.67	5.45	335.97	1.29
12:31:06	15.51	3.95	296.83	52.39	8.23	346.07	0.00
12:31:36	15.03	4.40	84.35	90.20	12.81	396.34	0.00
12:32:06	15.52	4.12	13.20	132.39	16.17	589.96	0.00
12:32:36	15.80	3.96	4.83	159.56	14.21	692.27	0.00
12:33:06	15.94	3.85	5.20	170.88	11.94	705.73	0.00
12:33:36	16.02	3.71	6.01	164.82	9.60	690.91	0.00
12:34:05	16.20	3.59	7.36	158.39	8.44	678.00	0.00
12:34:35	16.45	3.32	8.00	146.98	7.91	657.47	0.00
12:35:05	16.62	3.26	8.87	143.38	8.02	649.15	0.00
12:35:35	16.54	3.26	11.05	140.85	8.38	668.44	0.00
12:36:05	16.73	3.11	15.52	121.38	8.11	659.74	0.00
12:36:35	16.83	3.04	27.33	107.60	7.77	652.72	0.00
12:37:05	16.91	2.94	38.81	97.51	7.64	624.30	0.00
12:37:35	16.53	3.36	37.94	108.46	7.33	599.15	0.00
12:38:05	15.95	3.48	13.37	110.40	6.25	550.84	0.00
12:38:35	15.93	3.35	14.65	105.60	4.98	527.23	0.00
12:39:05	16.73	2.94	50.57	88.42	5.06	505.77	0.00
12:39:35	16.89	3.10	96.13	87.40	5.48	505.02	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:40:05	16.11	3.40	43.68	100.96	5.48	482.85	0.00
12:40:35	16.00	3.37	15.50	98.49	4.95	466.66	0.00
12:41:05	16.10	3.31	13.84	95.55	4.10	434.79	0.00
12:41:35	16.08	3.31	13.30	96.96	3.65	421.46	0.00
12:42:05	16.03	3.35	13.51	101.73	3.17	396.59	0.00
12:42:35	16.03	3.35	11.56	103.74	2.97	398.07	0.00
12:43:05	15.93	3.48	11.30	115.53	2.90	380.53	0.00
12:43:35	16.70	3.03	24.93	105.76	2.88	362.06	0.00
12:44:05	16.99	2.92	64.60	103.28	4.12	339.61	0.00
12:44:34	15.88	3.45	46.75	126.37	4.77	355.62	0.00
12:45:04	15.80	3.53	17.31	128.32	4.10	347.40	0.00
12:45:34	15.63	3.66	25.88	119.84	3.33	352.46	6.80
12:46:04	16.40	3.46	344.45	65.35	4.78	365.79	49.79
12:46:34	14.74	4.87	443.76	81.42	13.35	561.33	0.68
12:47:04	14.31	5.30	107.80	82.37	21.88	992.68	0.00
12:47:34	14.34	5.26	32.62	77.41	21.12	1267.76	0.00
12:48:04	14.39	5.13	27.05	75.97	20.69	1371.74	0.00
12:48:34	14.70	4.82	10.61	77.82	18.59	1329.06	0.00
12:49:04	15.04	4.54	2.66	80.22	15.66	1191.04	0.00
12:49:34	15.11	4.44	1.63	81.94	13.55	1130.16	0.00
12:50:04	15.29	4.27	1.61	83.47	11.80	1035.82	0.00
12:50:34	15.43	4.16	1.04	83.58	10.36	946.89	0.00
12:51:04	15.58	4.04	2.43	83.51	9.26	842.52	0.00
12:51:34	15.77	3.88	2.73	79.32	8.19	775.03	0.00
12:52:04	15.92	3.77	4.68	77.33	7.15	696.13	0.00
12:52:34	16.02	3.70	5.73	77.61	6.29	625.08	0.00
12:53:04	16.18	3.56	8.09	73.68	5.71	578.66	0.00
12:53:34	16.41	3.37	9.59	71.48	5.20	532.63	0.00
12:54:04	16.43	3.37	10.32	74.72	5.01	515.79	0.00
12:54:34	16.46	3.34	13.52	75.80	4.62	475.86	0.00
12:55:04	16.42	3.39	15.85	79.39	4.61	461.09	0.00
12:55:34	16.43	3.34	18.77	77.36	4.38	448.01	0.00
12:56:03	16.57	3.22	24.56	74.34	4.18	438.32	0.00
12:56:33	16.64	3.17	33.19	72.56	4.45	420.26	0.00
12:57:03	16.73	3.09	43.95	71.52	4.85	423.12	0.00
12:57:33	16.82	3.00	58.78	70.74	5.14	410.69	0.00
12:58:03	16.93	3.05	80.17	70.95	5.56	415.40	0.00
12:58:33	16.13	3.50	55.14	76.42	5.20	415.35	0.00
12:59:03	15.78	3.50	26.93	74.64	4.31	411.39	0.00
12:59:33	16.54	2.99	64.72	64.76	4.13	366.30	0.00
13:00:03	16.96	2.87	134.90	63.75	5.07	367.60	0.00
13:00:33	16.59	3.42	119.10	70.88	5.65	359.30	0.00

CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:01:03	14.73	4.97	308.49	65.45	15.05	412.29	0.00
13:01:33	14.40	5.38	139.16	83.03	20.79	704.26	0.00
13:02:03	14.45	5.21	19.69	95.32	20.68	1147.35	0.00
13:02:33	14.74	4.94	6.78	108.17	19.52	1395.61	0.00
13:03:03	14.94	4.68	3.71	117.17	17.77	1436.44	0.00
13:03:33	15.45	4.14	1.69	115.40	15.49	1228.39	0.00
13:04:03	15.98	3.82	2.09	110.25	13.48	1046.22	0.00
13:04:33	16.33	3.52	3.75	98.06	11.89	917.51	0.00
13:05:03	16.76	3.25	7.17	82.98	10.70	781.25	0.00
13:05:33	16.70	3.28	15.49	77.47	10.70	782.01	0.00
13:06:03	16.84	3.13	28.27	70.04	10.57	737.15	0.00
13:06:33	16.96	3.04	39.65	64.81	10.64	670.71	0.00
13:07:03	17.07	2.90	61.20	52.72	10.69	612.26	0.00
13:07:33	17.20	2.95	265.02	50.16	10.25	593.84	78.77
13:08:02	16.52	3.18	275.93	63.52	9.83	554.38	0.88
13:08:32	16.42	3.21	20.83	65.04	8.70	505.12	0.00
13:09:02	16.30	3.30	12.51	67.96	7.92	497.40	0.00
13:09:32	16.20	3.28	14.05	68.68	7.35	519.72	0.00
13:10:02	16.32	3.21	12.63	65.48	6.79	510.41	0.00
13:10:32	16.43	3.06	12.47	61.90	6.12	482.77	0.00
13:11:02	16.57	2.96	11.90	59.71	5.56	453.12	0.00
13:11:32	16.74	2.89	12.35	56.19	5.57	444.08	0.00
13:12:02	16.77	2.87	13.95	55.81	5.43	448.03	0.00
13:12:32	16.81	2.84	15.29	53.99	5.46	443.83	0.00
13:13:02	16.87	2.77	17.48	51.09	5.34	431.74	0.00
13:13:32	16.98	2.82	21.31	51.29	5.22	425.99	0.00
13:14:02	16.78	2.88	27.59	53.03	5.14	430.66	0.00
13:14:32	16.72	2.91	27.98	52.73	4.96	434.65	0.00
13:15:02	16.74	2.88	27.58	51.78	4.58	433.12	0.00
13:15:32	16.73	3.01	30.76	51.36	4.63	435.46	0.00
13:16:02	16.29	3.65	120.40	41.02	5.67	480.88	0.00
13:16:31	15.14	4.89	118.25	53.89	10.98	820.81	0.00
13:17:01	14.31	4.84	125.33	58.69	17.27	1126.70	0.00
13:17:31	15.11	4.33	31.28	55.45	15.92	1055.75	0.00
13:18:01	15.57	4.09	8.29	52.40	13.72	1022.85	0.00
13:18:31	15.75	3.88	7.06	49.42	11.92	1006.90	0.00
13:19:01	16.13	3.56	6.41	45.50	10.46	936.59	0.00
13:19:31	16.28	3.51	7.26	44.55	9.92	891.73	0.00
13:20:01	16.30	3.51	7.88	44.91	9.69	890.10	0.00
13:20:31	16.40	3.46	9.58	45.66	9.07	822.55	0.00
13:21:01	16.27	3.55	11.66	47.06	8.59	826.13	0.00
13:21:31	16.27	3.50	14.41	44.96	8.27	801.02	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:22:01	16.31	3.41	15.19	42.47	7.97	741.54	0.00
13:22:31	16.50	3.38	13.46	41.39	7.26	680.84	0.00
13:23:01	16.43	3.37	17.50	40.09	7.18	653.25	0.00
13:23:31	16.51	3.31	22.98	39.34	7.15	609.65	0.00
13:24:01	16.54	3.27	27.68	39.00	7.10	575.39	0.00
13:24:30	16.65	3.17	39.40	37.99	7.06	548.28	0.00
13:25:00	16.73	3.08	48.34	37.37	7.02	512.91	0.00
13:25:30	16.85	3.02	56.66	37.71	7.06	484.75	0.00
13:26:00	16.91	3.11	86.25	36.52	6.92	458.86	0.00
13:26:30	16.25	3.37	34.73	40.32	6.39	459.55	0.00
13:27:00	16.12	3.28	23.59	41.03	5.68	429.84	0.00
13:27:30	16.77	2.69	106.28	30.92	5.68	402.26	0.00
13:28:00	17.30	2.66	217.81	31.02	6.03	375.15	34.90
13:28:30	16.92	2.97	252.52	36.06	5.93	363.65	0.00
13:29:00	16.56	3.12	53.85	37.94	5.34	338.44	0.00
13:29:30	16.42	3.01	40.88	35.30	4.85	331.51	0.00
13:30:00	16.65	3.00	34.85	35.37	4.59	307.88	0.00
13:30:30	16.53	3.06	42.92	34.32	4.49	294.16	0.00
13:31:08	16.24	4.22	343.64	39.72	17.33	307.19	0.00
13:31:38	14.65	4.98	109.25	72.17	11.67	318.60	0.00
13:32:08	15.24	4.60	21.92	79.37	8.70	360.28	0.00
13:32:38	15.46	4.34	3.07	79.26	7.67	389.49	0.00
13:33:08	15.73	4.15	2.13	82.08	6.18	369.72	0.00
13:33:38	16.07	3.69	3.35	76.38	4.65	331.50	0.00
13:34:08	16.36	3.61	4.15	75.89	4.00	315.50	0.00
13:34:38	16.32	3.63	6.37	81.01	3.56	290.00	0.00
13:35:08	16.45	3.51	7.52	78.26	3.04	267.08	0.00
13:35:38	16.73	3.30	15.15	70.91	3.21	244.84	0.00
13:36:08	16.87	3.18	26.42	68.83	3.51	234.06	0.00
13:36:37	17.10	2.97	36.28	64.60	4.02	208.87	0.00
13:37:07	16.66	3.21	45.77	66.24	4.53	200.12	0.00
13:37:37	16.07	3.50	23.94	71.98	3.70	206.69	0.00
13:38:07	15.95	3.54	16.00	71.16	2.75	195.75	0.00
13:38:37	16.05	3.47	14.21	70.10	2.26	194.80	0.00
13:39:07	16.07	3.43	12.82	70.20	1.89	191.91	0.00
13:39:37	16.12	3.36	11.34	70.20	1.76	193.35	0.00
13:40:07	16.17	3.32	11.67	70.58	1.57	181.68	0.00
13:40:37	16.22	3.28	11.04	69.91	1.51	186.96	0.00
13:41:07	16.28	3.21	11.52	67.04	1.50	171.59	0.00
13:41:37	16.41	3.14	12.09	64.25	1.55	177.97	0.00
13:42:07	16.40	3.12	13.62	62.94	1.64	167.32	0.00
13:42:37	16.50	3.06	15.08	61.33	1.76	170.36	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:43:07	16.52	3.04	15.40	60.94	1.87	161.80	0.00
13:43:37	16.55	3.02	15.84	61.98	2.05	164.06	0.00
13:44:07	16.59	2.99	16.10	59.19	2.14	155.89	0.00
13:44:37	16.62	2.96	19.07	57.67	2.15	160.69	0.00
13:45:06	16.57	2.99	19.05	61.07	2.23	153.09	0.00
13:45:36	16.63	3.00	20.56	60.46	2.19	157.01	0.00
13:46:06	15.80	3.77	61.85	52.32	3.64	187.27	0.00
13:46:36	14.87	4.58	77.85	76.73	12.07	425.23	0.00
13:47:06	14.92	4.56	31.83	106.03	17.06	690.00	0.00
13:47:36	15.10	4.50	7.19	129.36	17.53	915.85	0.00
13:48:06	15.26	4.34	3.78	144.04	16.18	936.36	0.00
13:48:36	15.43	4.15	3.47	153.20	14.71	864.23	0.00
13:49:06	15.71	3.93	3.53	151.02	13.43	784.72	0.00
13:49:36	16.04	3.70	3.00	145.23	11.83	717.49	0.00
13:50:06	16.14	3.61	4.38	140.62	10.56	667.84	0.00
13:50:36	16.17	3.57	5.44	136.24	9.59	634.45	0.00
13:51:06	16.27	3.47	8.43	129.93	8.80	596.57	0.00
13:51:36	16.57	3.21	8.90	119.28	8.45	519.31	0.00
13:52:06	16.79	3.10	8.43	116.03	8.28	472.58	0.00
13:52:36	16.71	3.14	9.12	118.31	8.10	445.91	0.00
13:53:06	16.70	3.10	10.64	116.93	7.70	420.53	0.00
13:53:36	16.69	3.14	14.71	119.11	7.49	396.39	0.00
13:54:06	16.78	3.04	26.27	105.95	7.39	389.44	0.00
13:54:36	16.93	2.94	44.46	102.06	7.40	361.06	0.00
13:55:06	17.05	2.85	55.91	93.23	7.64	344.99	0.00
13:55:36	17.08	2.84	97.45	90.52	7.80	326.59	0.00
13:56:06	16.60	3.26	77.95	105.42	7.74	325.63	0.00
13:56:35	15.94	3.46	30.78	111.86	6.95	327.49	0.00
13:57:05	16.02	3.28	22.71	101.03	5.91	309.62	0.00
13:57:35	17.03	2.59	226.50	64.60	5.76	285.76	67.03
13:58:05	17.14	2.79	1010.17	70.80	6.61	281.21	19.94
13:58:35	16.38	3.17	241.75	89.01	6.58	279.67	0.00
13:59:05	16.15	3.23	38.45	93.23	6.19	275.75	0.00
13:59:35	16.31	3.19	37.32	87.46	5.86	273.39	0.00
14:00:05	16.33	3.09	39.09	84.43	5.74	266.25	0.00
14:00:35	16.36	3.38	49.48	82.48	5.86	270.72	0.00
14:01:05	14.90	4.42	190.75	62.69	12.99	278.27	0.00
14:01:35	15.33	4.02	92.83	63.65	11.36	266.73	0.00
14:02:05	15.20	4.40	13.50	78.07	8.23	274.56	0.00
14:02:35	14.19	5.03	47.71	82.43	7.12	322.82	0.00
14:03:05	13.37	5.40	252.61	78.77	9.90	344.69	0.00
14:03:35	12.71	5.83	583.33	78.17	17.56	359.27	0.00

CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 07, 09/26/90

09-26-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:04:05	12.05	6.28	782.40	79.34	31.32	343.49	0.00
14:04:35	11.89	6.38	825.37	76.60	42.92	347.34	0.00
14:05:05	12.01	6.32	753.26	72.37	46.39	328.61	0.00
14:05:34	12.06	6.27	498.87	68.90	47.99	308.37	0.00
14:06:04	12.09	6.25	498.88	67.57	48.26	302.01	0.00
14:06:34	12.47	5.96	483.06	66.57	45.99	292.90	0.00
AVERAGE	15.21	4.07	119.11	75.25	13.27	453.49	19.26
MINIMUM	9.72	1.19	0.00	9.22	0.58	106.70	0.00
MAXIMUM	19.31	8.31	2166.20	170.88	158.75	1436.44	591.61

CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 08 09/27/90

09-27-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:45:06	16.77	2.31	52.37	16.58	5.92		6.10
13:45:36	16.68	2.35	58.52	17.15	5.87		6.12
13:46:06	17.09	1.84	79.82	15.20	5.91		28.68
13:46:36	18.00	2.95	255.24	23.51	14.00		17.37
13:47:06	11.22	7.45	1680.23	67.15	184.47		29.55
13:47:36	10.53	7.38	2026.00	75.23	115.89		48.35
13:48:06	10.80	7.04	1284.32	70.78	51.07		130.23
13:48:36	11.16	6.68	714.52	66.34	25.64		104.62
13:49:06	11.75	6.14	456.20	60.79	15.82		99.48
13:49:36	12.16	5.88	353.12	64.96	13.16		73.25
13:50:06	13.13	5.31	104.73	75.59	12.04		65.83
13:50:36	13.38	5.19	29.36	79.91	12.19		61.84
13:51:06	13.67	4.94	21.38	79.61	13.12		58.89
13:51:35	14.01	4.67	11.54	78.09	13.95		56.86
13:52:05	14.44	4.39	4.45	76.24	14.33		56.06
13:52:35	14.50	4.31	2.19	75.80	14.65		54.76
13:53:05	14.72	4.17	0.00	70.53	14.30		53.69
13:53:35	14.82	4.08	0.00	68.95	14.06		53.31
13:54:05	14.89	4.03	0.00	67.58	13.88		54.05
13:54:35	14.95	4.02	0.00	63.81	13.39		53.94
13:55:05	14.10	4.50	1.58	63.86	12.77		53.67
13:55:35	13.98	4.43	2.20	61.90	11.11		54.05
13:56:05	14.50	4.06	0.24	62.46	10.41		56.32
13:56:35	14.86	4.04	0.00	64.46	11.11		56.51
13:57:05	14.09	4.40	0.06	65.74	10.78		56.66
13:57:35	14.04	4.35	0.00	61.91	9.59		57.13
13:58:05	14.08	4.36	0.00	59.81	8.47		58.19
13:58:35	14.76	3.83	1.33	54.54	8.65		59.88
13:59:05	14.79	4.03	6.12	55.08	10.11		60.69
13:59:34	14.32	4.15	0.38	56.14	9.98		61.13
14:00:04	14.50	3.97	0.00	53.70	9.14		61.23
14:00:34	14.54	3.91	4.09	51.88	8.74		63.21
14:01:04	14.29	5.89	164.63	62.52	10.68		73.67
14:01:34	8.49	10.44	278.44	146.02	33.66		71.48
14:02:04	7.89	10.21	274.94	140.38	71.47		66.26
14:02:34	8.86	9.42	460.79	120.38	35.25		64.83
14:03:04	9.07	9.09	427.91	111.17	17.53		63.91
14:03:34	10.27	8.00	376.84	93.60	13.66		63.73
14:04:04	11.09	7.28	317.76	81.52	13.62		61.88
14:04:34	11.74	6.71	216.56	76.85	13.99		62.22
14:05:04	12.35	6.21	182.19	75.29	14.69		61.56
14:05:34	12.79	5.89	96.62	78.81	13.12		62.57

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 08 09/27/90

09-27-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:06:04	12.91	5.77	52.63	82.28	11.26		63.60
14:06:34	13.36	5.39	34.48	80.05	9.71		64.26
14:07:04	13.60	5.22	22.32	80.38	8.82		65.01
14:07:34	13.80	4.94	12.47	78.41	8.21		64.94
14:08:04	14.22	4.69	2.28	76.82	7.97		65.13
14:08:34	14.36	4.54	0.00	74.31	8.26		66.13
14:09:04	14.50	4.43	7.67	68.21	8.46		67.20
14:09:33	14.76	4.24	3.62	61.69	8.57		67.68
14:10:03	14.72	4.24	0.00	61.42	8.59		68.28
14:10:33	14.84	4.15	0.00	61.32	8.52		68.70
14:11:03	14.96	4.05	0.00	61.44	8.37		68.83
14:11:33	14.99	3.99	0.00	62.98	8.35		69.88
14:12:03	15.06	3.92	0.00	63.58	8.20		71.10
14:12:33	15.12	3.83	0.00	63.25	8.19		72.35
14:13:03	15.32	3.64	0.00	58.52	8.21		72.63
14:13:33	15.53	3.54	0.00	55.54	8.74		73.90
14:14:03	15.59	3.43	1.28	53.95	9.21		74.66
14:14:33	15.74	3.39	2.86	54.26	9.25		74.65
14:15:03	15.11	3.74	1.97	56.54	8.99		73.22
14:15:33	14.97	3.78	0.00	54.20	7.99		73.12
14:16:03	14.45	5.01	84.92	47.46	9.43		79.18
14:16:33	13.94	5.60	143.66	54.16	14.89		74.09
14:17:03	14.39	5.20	43.97	56.41	19.40		73.27
14:17:33	15.10	4.56	6.03	52.05	20.37		70.90
14:18:02	15.74	4.33	0.40	49.04	20.43		87.27
14:18:32	12.72	6.78	408.86	65.86	29.77		90.78
14:19:02	11.41	6.95	673.45	67.15	46.07		70.67
14:19:32	12.03	6.45	374.30	63.90	41.50		65.34
14:20:02	12.30	6.23	158.96	66.39	29.64		63.59
14:20:32	12.86	5.72	89.74	66.39	21.57		61.15
14:21:02	13.33	5.35	65.64	69.33	17.25		59.63
14:21:32	13.88	4.89	23.76	69.38	13.60		58.30
14:22:02	14.14	4.73	5.85	69.52	10.69		57.03
14:22:32	14.25	4.64	0.73	71.58	9.23		56.60
14:23:02	14.44	4.45	0.00	68.34	8.41		55.25
14:23:32	14.54	4.37	0.00	65.51	7.58		54.11
14:24:02	14.67	4.25	0.00	65.11	7.08		54.37
14:24:32	14.90	4.05	0.00	61.92	6.68		53.72
14:25:02	15.11	3.87	0.00	60.34	6.86		52.61
14:25:32	15.36	3.67	0.00	58.24	7.47		52.21
14:26:02	15.69	3.22	9.42	49.16	7.03		160.02
14:26:32	17.74	1.97	34.60	14.61	7.17		253.84

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 08 09/27/90

09-27-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:27:02	17.88	2.23	924.12	16.67	11.40		119.24
14:27:31	17.29	2.49	253.27	19.83	11.11		68.73
14:28:01	17.45	2.35	125.22	18.13	9.30		61.10
14:28:31	17.64	2.24	128.01	16.54	7.96		58.58
14:30:57	15.98	4.59	156.78	40.85	12.35		66.25
14:31:27	13.51	6.20	346.99	62.69	24.86		63.04
14:31:58	12.97	6.18	439.07	77.30	31.41		50.42
14:32:28	13.79	6.43	132.75	109.62	23.77		58.88
14:32:58	10.51	8.12	372.78	121.87	28.06		49.46
14:33:28	10.43	7.73	324.25	99.71	24.69		46.28
14:33:58	10.82	7.32	291.18	91.13	21.77		42.59
14:34:28	11.58	6.68	240.93	81.57	18.06		40.40
14:34:58	11.98	6.43	191.30	78.99	14.34		39.05
14:35:28	12.24	6.19	153.09	79.81	11.92		37.90
14:35:58	12.45	6.00	111.23	80.29	9.30		37.49
14:36:28	12.55	5.87	88.82	82.99	7.21		36.26
14:36:58	12.87	5.62	77.81	83.62	6.02		35.06
14:37:28	13.16	5.42	47.98	86.71	4.96		34.13
14:37:58	13.37	5.20	26.08	88.55	4.27		33.84
14:38:27	13.74	4.94	14.13	87.73	3.65		33.50
14:38:57	13.87	4.85	3.88	89.72	3.33		33.28
14:39:27	14.14	4.62	0.00	86.89	3.17		32.99
14:39:57	14.36	4.26	0.00	81.30	3.08		32.94
14:40:27	16.75	2.64	28.39	36.24	1.89		236.19
14:40:57	18.07	1.83	34.54	12.79	6.14		253.84
14:41:27	18.39	1.70	34.56	8.82	8.98		253.84
14:41:57	17.88	2.21	1006.23	16.80	11.96		107.76
14:42:27	17.44	2.41	238.61	19.41	10.77		55.84
14:42:57	17.25	2.52	111.57	20.26	9.27		48.28
14:43:27	17.16	2.53	111.22	20.02	8.70		44.34
14:43:57	17.19	2.46	129.32	18.80	8.14		41.96
14:46:58	15.51	4.25	25.24	57.19	15.48		37.11
14:47:28	16.09	3.70	2.82	60.54	13.11		36.67
14:47:58	16.60	3.37	4.39	61.12	13.23		35.72
14:48:28	16.74	3.23	9.26	63.46	14.39		35.62
14:48:58	16.43	3.45	14.58	65.56	14.28		34.43
14:49:28	15.98	3.59	2.19	71.24	12.58		33.81
14:49:58	15.92	3.55	1.50	73.89	11.40		33.02
14:50:28	15.97	3.51	2.38	72.38	10.58		32.12
14:50:58	16.06	3.42	2.75	68.99	9.99		31.39
14:51:28	16.12	3.35	3.91	67.27	9.77		30.86
14:51:58	16.20	3.30	4.85	67.92	9.70		30.37

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 08 09/27/90

09-27-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:52:28	16.27	3.25	7.22	68.99	9.64		30.08
14:52:58	16.27	3.20	9.89	69.45	9.75		29.82
14:53:28	16.50	3.05	13.04	63.46	9.35		29.11
14:53:58	16.54	2.99	15.95	60.19	9.03		28.74
14:54:28	16.59	2.99	19.02	57.32	8.89		28.23
14:54:58	16.43	3.20	21.02	64.47	9.12		27.70
14:55:28	16.14	3.28	14.66	72.47	10.17		27.03
14:55:57	16.41	3.11	17.05	62.71	9.85		26.59
14:56:27	16.47	3.05	26.50	57.67	9.54		26.53
14:56:57	16.57	2.96	28.20	54.53	9.24		26.07
14:57:27	16.70	2.87	30.01	49.06	8.87		26.18
14:57:57	16.77	2.79	39.11	43.65	8.65		25.55
14:58:27	16.89	2.72	48.77	39.55	8.26		24.91
14:58:57	16.83	2.76	55.54	38.05	8.12		24.59
14:59:27	16.77	2.77	61.37	36.72	8.02		24.30
14:59:57	16.81	2.68	78.14	33.89	7.16		105.73
15:00:27	17.03	2.81	344.95	31.05	8.29		62.74
15:00:57	14.44	5.74	598.50	61.98	27.56		51.26
15:01:27	12.19	7.34	1180.52	82.18	51.88		45.01
15:01:57	12.62	6.77	677.69	70.75	37.56		24.59
15:02:27	13.24	6.28	279.11	73.01	28.62		23.58
15:02:57	14.11	5.47	71.03	78.20	22.24		23.10
15:03:27	14.51	5.13	10.28	81.20	16.35	243.12	22.75
15:03:57	15.01	4.70	1.73	76.27	13.25	254.77	22.24
15:04:27	15.37	4.39	0.03	69.21	11.11	268.94	21.82
15:04:57	15.76	4.11	0.00	62.64	9.64	276.22	21.49
15:05:27	15.91	3.97	0.00	58.90	9.64	248.51	20.84
15:05:56	16.08	3.81	0.46	55.82	9.68	241.20	20.49
15:06:26	16.11	3.79	2.10	55.45	9.47	242.80	20.25
15:06:56	16.31	3.57	4.48	51.40	9.42	250.80	20.00
15:07:26	16.58	3.38	9.02	46.83	10.03	248.74	19.34
15:07:56	16.62	3.34	16.04	45.23	10.90	256.70	19.09
15:08:26	16.76	3.22	25.83	43.04	11.17	242.53	18.94
15:08:56	16.90	3.07	35.62	39.07	11.17	239.46	18.63
15:09:26	17.03	3.06	64.59	37.44	11.28	225.89	18.19
15:09:56	16.21	3.55	47.23	41.00	10.98	236.54	17.89
15:10:26	15.98	3.54	11.70	39.71	10.01	230.14	17.67
15:10:56	16.00	3.50	10.59	39.71	9.46	229.15	17.51
15:11:26	16.64	2.94	68.76	33.12	8.43	216.21	112.03
15:11:56	17.19	2.66	913.20	26.45	9.21	195.79	160.18
15:12:26	16.25	3.30	634.65	37.61	10.88	189.36	38.57
15:12:56	16.15	3.30	30.24	36.81	10.04	187.87	25.90

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 08 09/27/90

09-27-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
15:13:26	16.23	3.26	19.33	35.31	9.42	183.64	21.65
15:13:56	16.24	3.26	22.25	35.20	9.09	177.16	20.35
15:14:26	16.39	3.12	23.96	33.36	8.83	185.59	19.76
15:14:56	16.52	3.05	26.06	32.38	8.76	197.52	19.75
15:15:25	16.56	3.02	30.31	31.48	8.42	208.40	18.99
15:15:55	16.14	3.77	85.53	34.03	9.41	205.92	22.90
15:16:25	14.49	4.87	1189.18	45.27	68.02	347.91	20.62
15:16:55	14.73	4.52	359.63	47.87	49.20	769.85	19.53
15:17:25	15.42	4.19	12.87	52.06	30.63	960.56	18.63
15:17:55	15.62	3.98	7.36	58.41	25.67	903.36	17.71
15:18:25	16.00	3.65	10.37	63.54	21.89	828.96	16.84
15:18:55	16.21	3.49	15.87	69.08	19.40	764.05	16.13
15:19:25	16.49	3.27	33.52	67.91	17.69	673.45	15.76
15:19:55	16.57	3.19	49.28	68.95	16.77	600.31	15.39
15:20:25	16.78	3.02	75.62	65.37	15.68	598.92	15.56
15:20:55	16.94	2.87	131.96	59.58	14.61	514.75	15.71
15:21:25	16.83	3.08	196.65	55.53	13.82	460.89	15.43
15:21:55	16.09	3.36	76.32	62.20	12.90	442.41	14.15
15:22:25	16.07	3.33	27.75	59.52	11.80	404.46	13.94
15:22:55	16.07	3.30	28.32	58.50	11.02	380.55	13.69
15:23:25	16.16	3.21	27.72	55.57	9.96	352.77	13.52
15:23:55	16.26	3.14	25.28	55.60	9.13	323.85	13.40
15:24:25	16.47	2.98	22.01	52.59	8.52	303.04	13.21
15:24:55	16.46	3.02	22.16	52.71	7.99	296.00	13.19
15:25:25	16.45	2.99	25.16	52.72	7.92	278.78	13.35
15:25:54	16.55	2.96	27.56	52.40	7.76	276.51	12.91
15:26:24	16.46	3.03	29.50	53.30	7.63	272.37	12.86
15:26:54	16.35	3.08	30.41	55.45	7.39	284.03	12.81
15:27:24	16.42	2.99	30.22	51.52	7.30	275.07	12.61
15:27:54	16.52	2.94	30.59	50.09	7.09	266.86	12.74
15:28:24	16.59	2.91	30.91	48.48	6.88	256.48	12.60
15:28:54	16.65	2.84	31.54	47.54	6.78	257.08	12.65
15:29:24	16.67	2.82	30.58	46.58	6.74	260.41	12.66
15:29:54	16.72	2.79	37.27	43.49	6.67	255.62	12.30
15:30:24	16.77	3.00	43.45	45.31	6.81	276.69	13.39
15:30:54	14.99	4.68	747.23	52.08	33.65	319.10	14.59
15:31:24	13.97	5.40	612.65	60.93	38.23	384.76	22.77
15:31:54	13.92	5.28	378.56	71.50	36.18	486.55	12.56
15:32:24	14.39	4.91	72.61	80.99	30.53	532.84	12.13
15:32:54	14.50	4.83	32.24	96.35	25.00	508.62	11.82
15:33:24	14.62	4.61	17.62	106.69	21.51	500.35	11.71
15:33:53	14.90	4.46	7.27	110.23	18.56	493.90	11.54

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 08 09/27/90

09-27-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
15:34:23	15.10	4.20	4.44	108.63	16.60	499.05	11.46
15:34:53	15.47	3.95	1.79	100.35	14.74	462.97	11.39
15:35:23	15.61	3.89	1.63	93.85	12.89	452.90	11.28
15:35:53	15.67	3.76	2.12	87.35	11.61	435.23	11.33
15:36:23	16.03	3.48	3.53	76.49	10.82	438.31	11.22
15:36:53	16.22	3.36	3.53	70.47	10.26	410.22	11.13
15:37:23	16.40	3.24	6.13	64.91	10.16	365.11	11.16
15:37:53	16.53	3.13	9.62	59.07	10.12	344.94	11.19
15:38:23	16.66	3.02	16.50	54.14	10.44	311.55	11.09
15:38:53	16.83	2.89	28.99	48.97	10.50	280.76	11.16
15:39:23	16.91	2.87	47.44	46.21	10.71	270.26	11.30
15:39:53	16.96	2.78	70.85	42.95	11.02	252.21	11.69
15:40:23	17.14	2.62	121.98	37.08	10.79	252.15	11.93
15:40:53	16.86	3.00	173.20	39.78	10.88	243.20	10.91
15:41:23	16.15	3.29	47.67	45.49	10.14	245.94	10.55
15:41:53	15.87	3.40	21.36	47.50	9.25	255.49	10.72
15:42:22	16.21	2.95	34.76	41.54	8.64	236.00	14.34
15:42:52	17.30	2.27	463.69	26.98	7.13	226.68	195.59
15:43:22	16.82	2.85	1194.51	40.75	9.09	204.18	32.15
15:43:52	16.33	3.03	120.04	44.34	8.95	205.87	17.73
15:44:22	16.42	2.96	39.04	42.11	8.51	201.47	13.90
15:44:52	16.40	2.97	38.55	43.23	8.22	206.82	13.02
15:45:22	16.46	2.95	39.30	42.15	7.94	199.36	11.62
15:45:52	16.39	2.98	44.78	42.57	7.74	184.79	11.54
15:46:22	16.32	3.46	48.62	45.62	7.93	183.22	13.95
15:46:52	13.80	6.02	2547.18	59.23	195.90	231.68	20.66
15:47:22	12.21	7.15	1586.75	92.84	127.15	401.90	12.74
15:47:52	12.88	6.17	514.82	96.42	60.94	513.84	10.90
15:48:22	14.20	5.15	115.83	87.85	37.73	499.65	10.49
15:48:52	14.88	4.62	14.33	82.35	26.46	496.11	10.36
15:49:22	15.53	3.96	3.98	75.33	19.91	438.03	10.28
15:49:52	16.08	3.66	0.86	71.24	15.00	400.46	9.83
15:50:22	16.28	3.47	0.74	68.31	12.45	400.30	9.73
15:50:52	16.58	3.23	1.75	62.21	10.63	372.61	9.79
15:51:22	16.77	3.13	6.99	59.13	10.42	356.48	9.63
15:51:51	16.78	3.10	13.72	57.72	10.37	325.77	9.67
15:52:21	16.84	3.05	21.59	56.06	10.44	287.36	9.60
15:52:51	16.92	2.97	35.81	52.82	10.50	258.79	9.47
15:53:21	17.04	2.88	57.37	49.65	10.50	248.79	9.73
15:53:51	16.95	3.10	83.90	48.95	10.29	223.70	9.36
15:54:21	16.07	3.49	38.96	57.30	9.65	238.89	9.22
15:54:51	15.79	3.55	13.96	57.36	8.21	229.44	9.05

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 08 09/27/90

09-27-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
15:55:21	16.17	3.08	32.60	48.12	7.54	227.45	15.06
15:55:51	17.04	2.56	474.61	32.80	6.44	223.38	221.98
15:56:21	16.61	3.08	1140.11	44.33	9.01	228.82	41.30
15:56:51	16.21	3.17	101.31	46.42	8.54	218.56	20.29
15:57:21	16.28	3.09	16.95	45.48	7.85	222.68	14.79
15:57:51	16.37	3.08	15.50	44.76	7.49	217.23	12.71
15:58:21	16.36	3.07	15.30	44.58	7.39	216.23	12.35
15:58:51	16.34	3.11	16.69	44.62	7.18	216.98	13.48
15:59:21	16.23	3.18	20.02	43.72	7.10	206.70	12.86
15:59:51	16.22	3.12	23.71	41.72	6.94	203.19	12.56
16:00:21	16.32	3.01	25.72	44.00	6.56	203.84	11.79
16:00:51	15.95	3.83	224.66	45.72	12.40	217.91	18.02
16:01:21	14.78	5.18	500.34	55.23	24.59	296.93	13.38
16:01:50	13.92	5.41	215.02	79.34	24.77	396.32	12.89
16:02:20	14.97	4.73	38.31	90.80	22.11	364.58	12.85
16:02:50	15.48	4.29	5.50	96.98	16.63	348.95	12.46
16:03:20	15.63	4.11	0.58	102.07	12.64	341.08	12.28
16:03:50	15.72	4.00	0.00	104.33	10.97	367.96	12.08
16:04:20	15.49	4.12	1.00	113.52	9.77	367.82	12.24
16:04:50	15.73	3.93	2.10	115.11	8.59	347.85	11.95
16:05:20	15.96	3.73	3.92	108.62	8.16	339.57	12.01
16:05:50	16.22	3.49	6.26	96.32	7.95	332.07	11.78
16:06:20	16.47	3.33	10.93	83.71	8.08	336.18	12.02
16:06:50	16.66	3.17	19.05	73.69	8.26	339.20	12.18
16:07:20	16.81	3.05	33.11	64.99	8.22	354.89	12.41
16:07:50	16.83	3.03	51.10	59.91	8.08	358.78	12.72
16:08:20	16.90	2.95	73.93	55.62	8.11	344.03	12.45
16:08:50	16.97	2.89	110.01	51.45	7.95	336.49	13.88
16:09:20	16.69	3.08	153.72	53.35	7.75	334.86	12.95
16:09:50	15.74	3.57	72.20	63.91	7.24	325.45	12.31
16:10:20	15.69	3.59	39.22	65.17	6.41	313.14	12.82
16:10:50	16.61	3.00	78.46	52.68	5.86	287.98	16.99
16:11:20	17.16	2.63	401.55	39.85	4.91	287.48	177.69
16:11:49	16.45	3.01	797.71	55.16	6.51	296.34	29.89
16:12:19	16.09	3.26	116.95	63.42	6.29	305.36	18.71
16:12:49	16.15	3.23	35.23	62.49	5.77	292.38	15.88
16:13:19	16.06	3.27	36.90	64.63	5.73	293.40	15.50
16:13:49	16.11	3.22	39.48	63.53	5.59	284.90	14.86
16:14:19	16.14	3.20	38.82	61.32	5.43	288.07	15.24
16:14:49	16.21	3.16	39.93	56.65	5.42	279.68	14.58
16:15:19	16.27	3.12	42.90	52.96	5.23	274.26	14.40
16:15:49	15.71	3.70	218.35	52.12	9.19	290.39	15.66

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 08 09/27/90

09-27-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
16:16:19	14.34	4.95	593.80	54.61	24.96	317.09	14.23
16:16:49	14.38	5.11	129.07	63.71	27.06	527.25	13.67
16:17:19	14.66	4.87	21.13	62.41	29.62	744.39	12.81
16:17:49	14.95	4.56	12.37	57.91	27.53	766.98	12.46
16:18:19	15.30	4.24	8.49	53.90	23.77	698.64	11.88
16:18:49	15.57	4.02	7.91	50.11	20.29	654.62	11.82
16:19:19	15.83	3.80	10.27	46.96	17.68	640.95	11.54
16:19:49	16.14	3.55	16.56	43.41	15.64	595.08	11.23
16:20:19	16.32	3.41	25.58	41.85	14.31	534.11	11.38
16:20:49	16.49	3.27	36.32	40.93	13.91	508.59	11.21
16:21:19	16.64	3.16	56.94	40.75	13.64	472.63	11.32
16:21:49	16.74	3.04	77.91	40.48	13.60	474.48	11.51
16:22:19	16.98	2.86	98.66	38.72	13.05	500.74	11.28
16:22:49	17.09	2.77	138.51	37.25	12.86	507.68	11.26
16:23:18	17.20	2.65	208.99	33.65	12.48	494.16	28.41
16:23:48	17.39	2.49	544.10	28.88	10.52	486.06	208.18
16:24:18	16.46	2.97	841.77	38.87	11.56	473.51	31.54
16:24:48	16.24	3.15	107.81	42.69	10.90	455.30	18.04
16:25:18	16.32	3.10	41.28	42.19	10.01	442.30	13.40
16:25:48	16.24	3.15	40.77	42.45	9.51	421.76	12.47
16:26:18	16.24	3.13	44.79	41.68	9.12	415.92	11.74
16:26:48	16.38	3.04	43.90	40.42	8.57	408.20	11.06
16:27:18	16.46	2.97	45.17	39.59	8.12	390.82	10.71
16:27:48	16.41	3.01	46.49	40.68	7.83	342.31	10.65
16:28:18	16.35	3.05	48.18	42.49	7.60	323.11	10.60
16:28:48	16.39	3.01	51.92	41.59	7.38	310.44	10.46
16:29:18	16.57	2.88	51.68	40.46	7.24	314.08	10.18
16:29:48	16.58	2.86	53.90	39.80	7.19	303.11	10.10
16:30:18	16.58	2.86	58.95	40.16	6.93	312.50	10.13
16:30:48	15.64	3.55	1346.98	41.96	79.61	316.39	12.23
16:31:17	14.30	5.67	2265.62	63.40	136.58	408.71	21.41
16:31:47	13.05	6.30	711.86	76.18	64.14	825.62	10.26
16:32:17	14.08	5.50	265.77	78.92	47.54	1242.21	9.40
16:32:47	14.54	4.98	56.05	82.17	39.86	1177.16	9.14
16:33:17	15.01	4.60	19.34	81.28	34.48	949.14	8.41
16:33:47	15.47	4.25	9.16	77.86	28.56	960.79	7.89
16:34:17	15.37	4.30	7.87	83.96	25.06	882.42	7.69
16:34:47	15.54	4.12	9.21	87.29	21.65	762.71	7.34
16:35:17	15.71	3.93	8.72	90.58	18.73	646.62	7.10
16:35:47	16.01	3.71	10.44	89.76	16.77	562.07	6.97
16:36:17	16.13	3.63	14.31	90.80	16.21	490.40	7.42
16:36:47	16.28	3.47	20.75	85.82	16.10	445.54	7.34

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 08 09/27/90

09-27-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
16:37:17	16.59	3.24	30.89	77.37	16.11	393.10	6.99
16:37:47	16.82	3.06	45.36	70.25	15.75	343.35	6.93
16:38:17	16.90	2.97	67.17	66.74	15.34	314.07	7.22
16:38:47	17.07	2.84	102.57	56.43	15.05	305.18	7.62
16:39:17	17.16	2.72	168.26	46.76	14.46	291.70	32.25
16:39:47	17.43	2.36	545.28	38.98	11.49	278.54	248.71
16:40:17	16.98	2.77	1590.94	50.60	14.15	273.60	78.42
16:40:47	16.35	3.14	249.18	63.75	13.99	272.50	23.90
16:41:16	16.14	3.27	43.12	66.56	13.18	277.60	15.46
16:41:46	16.21	3.20	38.29	64.68	12.56	289.48	11.80
16:42:16	16.31	3.15	36.47	64.14	12.10	291.74	10.32
16:42:46	16.24	3.11	36.99	65.05	11.80	275.86	10.60
16:43:16	17.19	2.53	184.42	42.91	12.00	255.16	73.58
16:43:46	17.20	2.64	939.47	44.69	13.05	233.18	83.03
16:44:16	16.42	3.08	404.80	62.10	13.14	222.24	14.54
16:44:46	16.40	3.09	54.96	63.01	12.25	212.00	11.26
16:45:16	16.17	3.25	52.02	66.86	11.94	214.61	10.54
16:45:46	14.67	4.94	1625.22	72.39	88.39	233.40	15.33
16:46:16	14.52	4.52	4050.12	79.98	240.49	399.56	10.90
16:46:46	15.79	3.96	159.80	126.31	81.87	926.49	9.99
16:47:16	15.76	3.88	9.82	151.42	43.04	1491.72	9.76
16:47:46	16.02	3.66	15.12	149.82	31.90	1699.59	8.96
16:48:16	16.10	3.61	19.44	150.94	27.05	1528.02	8.51
16:48:46	16.10	3.55	21.01	148.01	24.50	1303.96	7.90
16:49:16	16.21	3.45	21.67	140.07	22.04	1124.06	7.62
16:49:46	16.29	3.41	25.19	132.73	20.87	962.45	7.60
16:50:16	16.34	3.37	24.14	124.94	19.38	834.11	7.13
16:50:46	16.28	3.36	29.15	121.11	18.08	760.35	7.16
16:51:15	16.56	3.11	36.85	106.13	16.59	733.54	6.64
16:51:45	16.63	3.08	50.33	103.91	16.27	689.66	7.00
16:52:15	16.68	3.07	64.12	97.85	16.03	623.12	8.52
16:52:45	16.79	2.88	109.69	88.16	15.04	574.41	7.92
16:53:15	17.06	2.70	186.94	76.37	14.36	547.88	8.58
16:53:45	17.14	2.64	310.10	60.46	13.88	533.75	15.29
16:54:15	16.71	3.07	315.94	75.41	13.60	523.71	6.59
16:54:45	16.20	3.23	78.67	82.70	12.30	528.77	6.29
16:55:15	16.17	2.97	82.51	68.40	11.80	482.85	13.19
16:55:45	17.36	2.12	642.47	36.34	9.58	445.39	225.79
16:56:15	17.15	2.64	1802.22	56.40	11.68	426.67	46.32
16:56:45	16.46	3.02	240.92	68.39	11.47	428.28	18.79
16:57:15	16.24	3.13	75.39	69.60	10.94	408.47	12.52
16:57:45	16.31	3.06	66.41	66.50	10.42	370.41	9.79

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 08 09/27/90

09-27-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
16:58:15	16.31	3.06	62.81	64.57	10.29	350.31	8.38
16:58:45	16.33	3.03	66.15	62.22	10.26	352.79	8.05
16:59:15	16.45	2.92	70.79	59.57	10.07	378.12	7.78
16:59:45	16.56	2.90	72.57	57.65	10.02	382.33	8.26
17:00:14	16.58	2.89	72.36	57.51	9.90	388.25	7.52
17:00:44	16.20	3.62	284.32	57.36	19.26	373.45	11.80
17:01:14	14.87	4.10	7463.53	61.73	269.97	404.94	7.64
17:01:44	14.94	4.26	920.41	104.23	122.17	681.96	7.90
17:02:14	15.52	3.95	17.55	133.38	59.32	1030.53	7.48
17:02:44	15.46	3.98	10.56	155.70	40.62	1045.39	6.94
17:03:14	15.60	3.90	12.09	163.72	31.33	988.38	6.63
17:03:44	15.78	3.74	11.32	161.18	26.36	874.92	6.28
17:04:14	15.97	3.59	11.37	150.53	22.92	776.02	6.19
17:04:44	15.94	3.59	11.44	147.29	21.29	759.42	5.95
17:05:14	16.02	3.50	10.28	135.64	20.19	729.83	5.80
17:05:44	15.97	3.46	9.18	127.20	19.56	668.13	5.62
17:06:14	16.03	3.47	10.36	122.13	19.26	670.04	5.29
17:06:44	16.14	3.38	11.65	114.28	18.46	681.17	5.27
17:07:14	16.18	3.35	13.28	112.36	17.69	687.74	5.38
17:07:44	16.26	3.30	14.88	110.14	17.24	675.67	5.26
17:08:14	16.40	3.21	18.22	107.03	16.49	630.81	5.16
17:08:44	16.45	3.16	20.56	105.12	16.02	592.21	5.10
17:09:13	16.58	3.05	24.67	95.97	15.49	556.73	4.94
17:09:43	16.75	2.94	34.02	88.61	14.38	550.16	5.02
17:10:13	16.68	2.97	41.03	88.14	13.88	539.07	4.88
17:10:43	16.74	2.91	50.53	83.87	13.36	564.14	4.95
17:11:13	16.84	2.85	62.55	81.05	13.42	544.34	4.97
17:11:43	16.94	2.78	79.26	77.59	13.35	530.96	5.23
17:12:13	16.91	2.78	111.65	76.19	13.42	511.74	5.37
17:12:43	16.97	2.81	168.51	73.16	13.88	494.84	5.16
17:13:13	16.14	3.19	117.79	80.52	13.34	478.43	4.17
17:13:43	16.12	3.04	42.30	74.60	12.03	445.38	5.79
17:14:13	17.14	2.52	212.59	47.78	11.95	416.54	12.34
17:14:43	17.49	2.19	709.63	38.28	10.60	414.89	207.57
17:15:13	16.55	2.86	1389.09	64.07	13.00	412.44	28.53
17:15:43	16.02	3.42	181.44	73.20	13.14	405.65	16.21
17:16:13	13.61	5.47	2382.41	77.14	96.16	427.66	9.68
17:16:43	13.84	5.92	1696.48	91.97	99.16	377.55	7.08
17:17:13	13.24	6.26	318.71	102.54	59.39	495.51	6.53
17:17:43	13.80	5.66	185.11	117.90	53.14	695.53	5.89
17:18:13	14.31	5.18	58.72	134.80	47.97	776.97	5.48
17:18:42	14.71	4.76	17.29	152.82	42.18	742.80	5.04

CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 08 09/27/90

09-27-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
17:19:12	15.04	4.48	4.36	165.77	36.50	687.07	4.77
17:19:42	15.24	4.35	1.28	167.99	31.83	620.00	4.59
17:20:12	15.35	4.18	0.49	161.75	28.09	590.06	4.60
17:20:42	15.68	3.92	0.00	148.17	23.92	528.10	4.51
17:21:12	15.88	3.76	0.09	137.99	22.01	517.47	4.38
17:21:42	16.08	3.64	0.00	126.97	21.10	506.06	4.44
17:22:12	15.91	3.79	0.91	124.99	20.76	470.40	4.22
17:22:42	15.90	3.75	0.71	117.72	20.99	390.71	4.20
17:23:12	16.01	3.64	1.06	110.48	20.45	351.34	4.15
17:23:42	16.14	3.51	1.22	104.40	19.71	326.17	4.16
17:24:12	16.32	3.45	3.07	101.02	19.57	306.93	4.15
17:24:42	16.32	3.41	3.62	100.92	20.57	289.39	4.19
17:25:12	16.45	3.27	6.53	96.66	20.34	281.88	4.31
17:25:42	16.63	3.12	10.28	91.45	19.79	278.73	4.56
17:26:12	16.74	3.05	15.39	90.12	18.61	271.24	4.60
17:26:42	16.83	2.98	19.19	88.86	18.11	259.47	4.74
17:27:11	16.87	2.94	26.36	86.67	17.79	259.46	4.97
17:27:41	16.95	2.86	34.93	83.28	17.98	271.46	5.18
17:28:11	17.02	2.81	46.99	81.47	17.50	254.38	5.44
17:28:41	17.05	2.75	67.40	78.04	16.97	267.12	5.91
17:29:11	17.12	2.71	97.32	72.73	16.86	268.35	6.22
17:29:41	16.59	3.18	86.01	84.65	16.19	270.06	4.84
17:30:11	16.02	3.31	26.49	90.91	15.52	267.27	5.17
17:30:41	16.23	3.36	89.83	74.44	16.15	272.25	10.81
17:31:11	15.48	4.83	367.78	94.32	21.22	297.32	11.17
17:31:41	12.81	6.73	1043.58	137.02	54.78	402.71	8.45
17:32:11	12.15	6.63	1098.45	138.09	80.59	576.45	6.84
17:32:41	12.87	6.00	656.79	140.80	71.49	754.15	5.95
17:33:11	13.62	5.40	285.07	154.36	53.03	811.79	5.24
17:33:41	14.14	5.05	88.22	164.66	39.20	681.52	4.75
17:34:11	14.27	4.95	46.63	172.38	33.11	612.84	4.44
17:34:41	14.46	4.72	22.67	174.25	26.74	584.98	4.27
17:35:11	14.71	4.53	10.26	171.37	20.74	529.92	4.17
17:35:41	14.97	4.30	5.98	162.78	16.96	467.86	4.16
17:36:11	15.05	4.25	3.27	165.74	14.68	438.60	4.26
17:36:40	15.27	4.02	2.38	160.19	13.10	460.05	4.40
17:37:10	15.43	3.97	1.61	160.76	12.12	452.72	4.50
17:37:40	15.60	3.83	1.89	153.43	10.93	432.37	4.43
17:38:10	15.63	3.82	2.30	152.60	10.32	412.12	4.50
17:38:40	15.75	3.62	2.96	141.55	10.21	369.04	4.68
17:39:10	15.98	3.50	2.79	134.78	10.08	332.79	4.71
17:39:40	16.00	3.51	3.57	134.39	10.45	309.47	4.76

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 08 09/27/90

09-27-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
17:40:10	16.14	3.36	5.01	127.89	10.51	311.86	4.93
17:40:40	16.28	3.28	6.53	123.45	10.81	304.12	5.00
17:41:10	16.39	3.20	8.63	119.51	10.71	297.17	5.06
17:41:40	16.55	3.08	9.59	113.49	10.81	293.77	5.33
17:42:10	16.56	3.09	14.16	112.37	11.36	302.81	5.61
17:42:40	16.66	3.06	19.74	107.56	12.10	320.61	5.72
17:43:10	16.59	3.06	22.21	105.49	14.87	328.27	5.87
17:43:40	16.68	2.95	30.36	99.19	15.84	331.94	5.93
17:44:10	16.80	2.89	42.88	94.16	15.50	310.28	6.21
17:44:40	16.90	2.82	54.45	88.55	15.31	293.91	6.45
17:45:10	16.94	2.78	76.20	82.79	15.49	295.20	7.00
17:45:39	16.90	3.32	159.54	76.99	16.25	322.42	14.49
17:46:09	15.96	3.57	428.54	69.68	22.00	543.72	21.93
17:46:39	15.92	3.94	171.46	98.99	30.99	1173.86	8.56
17:47:09	15.14	4.51	71.39	129.55	32.57	1351.70	8.59
17:47:39	14.59	4.69	104.17	156.65	29.27	1252.79	8.47
17:48:09	14.65	4.56	79.36	173.82	24.49	1143.42	7.67
17:48:39	14.82	4.42	45.58	181.57	20.67	1087.34	6.99
17:49:09	14.93	4.34	29.67	184.09	18.01	921.11	6.57
17:49:39	15.04	4.28	20.92	187.77	15.95	772.33	6.25
17:50:09	15.11	4.25	15.05	186.05	15.23	707.01	6.12
17:50:39	15.18	4.12	11.24	180.00	14.47	670.40	5.89
AVERAGE	15.55	3.87	180.12	74.15	18.96	446.49	30.01
MINIMUM	7.89	1.70	0.00	8.82	1.89	177.16	4.15
MAXIMUM	18.39	10.44	7463.53	187.77	269.97	1699.59	253.84

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 9 09/28/90

09-28-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:00:03	16.76	2.38	82.94	15.88	0.00		13.52
11:00:33	16.65	2.42	74.94	16.26	0.00		6.52
11:01:03	16.82	2.34	63.71	15.95	0.00		6.97
11:01:33	17.01	2.10	92.72	15.25	0.00		156.78
11:02:03	15.47	4.59	353.63	40.16	2.25		43.44
11:02:33	11.84	7.21	501.95	87.48	17.14		19.41
11:03:02	12.56	6.19	251.43	113.16	10.16		9.54
11:03:32	14.05	4.91	32.34	126.93	5.79		8.36
11:04:02	14.50	4.39	1.37	133.10	10.51		7.52
11:04:32	14.72	4.15	0.51	127.19	15.60		7.46
11:05:02	14.86	3.99	2.46	114.28	16.74		6.32
11:05:32	14.90	3.92	3.66	112.59	16.47		6.40
11:06:02	14.92	3.84	5.14	109.22	17.46		6.18
11:06:32	15.14	3.63	11.45	94.69	18.26		7.06
11:07:02	15.41	3.43	32.88	78.72	18.11		7.38
11:07:32	15.73	3.18	76.24	60.39	15.48		8.43
11:08:02	15.89	3.04	172.97	51.78	12.25		9.44
11:08:32	16.06	2.91	242.88	46.09	10.14		12.71
11:09:02	16.21	2.80	402.35	35.78	8.95		74.00
11:09:32	16.04	2.89	458.29	37.03	9.10		14.81
11:10:02	16.14	2.84	388.64	32.39	7.96		63.72
11:10:32	16.04	2.87	469.96	32.68	8.57		15.51
11:11:02	15.92	2.95	335.46	34.44	7.53		13.62
11:11:32	15.98	2.93	285.56	34.52	7.07		14.62
11:12:02	15.98	2.90	303.50	32.43	6.55		13.49
11:12:31	15.97	2.92	260.05	28.38	6.52		10.87
11:13:01	15.98	2.90	229.66	27.94	6.56		12.92
11:13:31	16.03	2.86	233.95	26.69	6.55		10.45
11:14:01	16.03	2.87	208.04	25.44	6.66		13.78
11:14:31	16.04	2.87	221.51	22.95	6.79		13.75
11:15:01	15.94	2.88	209.97	22.10	6.98		30.48
11:15:31	15.68	4.02	341.12	55.54	7.30		30.17
11:16:01	11.81	7.00	303.35	152.46	14.23		6.14
11:16:31	13.32	5.36	106.74	207.22	17.22		4.72
11:17:01	14.24	4.43	4.46	206.23	24.01		4.43
11:17:31	14.61	4.04	0.00	176.68	25.94		4.49
11:18:01	14.92	3.76	1.06	137.49	26.51		5.68
11:18:31	15.12	3.56	8.60	105.35	25.37		5.99
11:19:01	15.29	3.44	22.97	85.63	24.31		7.47
11:19:31	15.45	3.34	43.30	76.90	22.73		8.62
11:20:01	15.49	3.30	55.97	73.50	22.03		9.48
11:20:31	15.53	3.26	67.95	70.33	21.35		9.78

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 9 09/28/90

09-28-90 TIME	O2 %V	CO2 %V	CO ppmV	NOx ppmV	SO2 ppmV	HCl ppmVw	THC ppmCw
11:21:01	15.58	3.21	81.64	67.49	20.99		10.00
11:21:31	15.61	3.21	89.01	68.33	21.18		9.63
11:22:00	15.56	3.22	79.32	69.14	22.28		10.65
11:22:30	15.64	3.17	82.36	67.98	23.23		10.30
11:23:00	15.72	3.12	102.00	62.85	21.97		11.33
11:23:34	15.70	3.11	124.25	60.71	20.53		11.95
11:24:04	15.89	3.03	134.75	59.75	20.01		12.42
11:24:34	15.87	3.00	134.02	58.87	20.19		11.79
11:25:04	15.89	2.99	140.28	57.80	20.05		11.99
11:25:34	15.81	3.04	150.80	58.26	19.81		12.12
11:26:04	15.86	2.98	144.42	56.96	19.89		11.56
11:26:34	15.93	2.96	154.03	55.79	19.60		11.65
11:27:04	16.01	2.92	159.09	55.53	19.73		11.13
11:27:34	16.03	2.88	161.42	54.63	19.96		11.06
11:28:04	16.03	2.89	159.19	54.71	19.81		10.76
11:28:34	15.97	2.94	150.84	56.06	20.11		10.10
11:29:04	15.94	2.96	129.00	57.42	20.37		9.81
11:29:34	15.93	2.98	120.22	57.49	20.70		10.50
11:30:04	15.71	3.05	119.40	58.16	21.30		38.69
11:30:34	14.98	4.58	384.56	97.04	18.91		10.92
11:31:04	11.92	6.93	277.04	169.12	19.08		2.73
11:31:34	12.44	5.97	104.03	209.80	17.67		2.19
11:32:04	13.64	4.82	17.64	234.54	26.62		2.02
11:32:33	14.07	4.43	0.40	231.93	33.59		1.27
11:33:03	14.24	4.26	0.00	223.58	33.86		1.73
11:33:33	14.65	3.97	0.00	207.48	33.39		1.66
11:34:03	14.81	3.83	0.00	199.20	34.26		1.63
11:34:33	14.70	3.95	0.00	208.33	35.50		1.91
11:35:03	14.46	3.98	0.00	210.35	36.14		2.12
11:35:33	14.69	3.88	0.00	198.99	35.46		2.14
11:36:03	14.74	3.82	0.00	189.56	35.72		2.23
11:36:33	15.00	3.66	0.00	171.29	34.89		2.49
11:37:03	15.08	3.59	0.00	159.01	34.51		2.29
11:37:33	15.17	3.54	0.00	153.46	34.57		2.15
11:38:03	15.24	3.50	0.00	141.42	34.58		2.00
11:38:33	15.24	3.48	0.00	134.79	34.68		1.92
11:39:03	15.32	3.45	0.00	130.63	34.35		2.26
11:39:33	15.06	3.57	0.00	135.83	34.39		2.80
11:40:03	15.27	3.43	0.00	124.81	33.80		2.46
11:40:33	15.43	3.34	0.00	119.28	33.24		2.51
11:41:02	15.40	3.37	0.95	117.18	33.23		2.36
11:41:32	15.36	3.37	0.59	117.99	33.69		2.60

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 9 09/28/90

09-28-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:42:02	15.43	6.16	1.39	111.37	33.56		3.18
11:42:32	15.30	3.42	1.94	114.42	33.78		2.93
11:43:02	15.42	3.32	2.01	110.25	33.62		2.39
11:43:32	15.53	3.26	2.70	104.33	32.85		2.45
11:44:02	15.53	3.25	3.31	103.72	32.60		2.96
11:44:32	15.61	3.20	3.83	100.26	31.92		2.99
11:45:02	15.58	3.22	4.10	97.79	31.74		3.94
11:45:32	14.91	4.59	57.30	103.14	30.50		1.79
11:46:02	12.24	6.51	108.69	181.52	38.31		1.60
11:46:32	12.92	5.57	96.11	205.13	42.86		1.82
11:47:02	14.64	4.28	23.07	212.87	44.15		2.20
11:47:32	15.30	3.74	0.00	184.85	42.41		2.34
11:48:02	15.10	3.89	0.00	191.58	40.82		2.35
11:48:32	14.44	4.15	0.00	219.82	37.99		1.22
11:49:02	14.37	4.16	0.00	222.60	34.78		1.29
11:49:32	14.48	4.11	0.00	218.31	34.33		1.28
11:50:02	14.46	4.12	0.00	220.59	33.22		1.61
11:52:20	14.82	4.09	0.00	218.16	34.14		1.38
11:52:50	14.76	3.87	0.00	206.37	32.83		1.37
11:53:20	14.91	3.76	0.00	197.77	32.10		1.25
11:54:05	14.97	3.70	0.00	189.18	32.03		1.43
11:54:35	14.89	3.75	0.00	190.72	32.71		1.49
11:55:05	15.00	3.69	0.00	184.74	32.37		1.17
11:55:35	15.04	3.65	0.00	180.50	31.78		1.48
11:56:05	14.90	3.72	0.00	182.89	31.99		1.31
11:56:35	15.12	3.59	0.00	172.70	31.84		1.29
11:57:05	14.93	3.76	0.00	185.71	32.57		1.05
11:57:35	14.83	3.76	0.00	184.01	33.13		1.05
11:58:04	15.06	3.61	0.00	175.94	33.16		1.21
11:58:37	15.07	3.62	0.00	184.69	34.67		1.05
11:59:07	15.20	3.52	0.00	167.54	35.04		1.26
11:59:37	15.26	3.45	0.00	154.09	33.79		1.49
12:00:07	15.21	3.52	0.00	148.38	32.04		2.51
12:00:36	15.24	3.61	7.68	127.66	32.89		2.43
12:01:06	11.97	7.88	53.61	193.90	36.34		0.37
12:01:36	10.25	8.16	41.98	186.39	35.19		1.45
12:02:06	13.92	4.97	23.17	238.37	20.58		1.52
12:02:36	15.10	3.98	0.00	209.51	24.16		1.21
12:03:06	15.45	3.69	0.00	190.46	32.10		1.54
12:03:36	15.54	3.65	0.00	179.48	35.88		1.68
12:04:06	14.54	4.06	0.00	231.94	36.26		1.01
12:04:36	14.88	3.80	0.00	360.35	32.10		0.60

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 9 09/28/90

09-28-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:05:06	14.91	3.72	0.00	200.58	31.40		0.66
12:05:36	15.06	3.62	0.00	187.15	32.61		0.83
12:06:06	15.02	3.60	0.00	180.57	33.66		0.87
12:06:36	15.15	3.54	0.00	172.25	33.98		0.73
12:07:06	14.92	3.66	0.00	173.45	35.23		1.63
12:07:36	14.94	3.65	0.00	169.11	35.76		1.46
12:08:06	14.85	3.69	0.00	169.58	36.54		1.10
12:08:36	14.77	3.73	0.00	169.02	36.96		1.65
12:09:06	14.92	3.59	0.00	159.15	36.65		1.18
12:09:36	15.23	3.43	0.00	148.80	35.58		0.88
12:10:01	15.27	3.42	0.00	145.13	35.64		1.35
12:10:16	15.21	3.43	0.00	145.22	36.27		1.37
12:10:31	15.28	3.39	0.00	142.63	36.27		0.95
12:10:46	15.34	3.39	0.00	145.93	35.86		0.68
12:11:01	15.27	3.41	0.00	149.95	35.97		1.14
12:15:09	15.12	3.51	0.00	127.77	37.50		1.32
12:15:39	13.78	5.80	43.71	150.67	42.88		0.15
12:16:09	13.15	5.40	64.73	206.49	48.89		0.15
12:16:39	14.69	4.20	9.31	249.33	44.93		0.26
12:17:09	15.16	3.73	0.00	235.48	48.58		0.35
12:17:39	15.43	3.53	0.00	199.56	49.25		0.65
12:18:09	15.67	3.47	0.00	173.84	49.36		0.53
12:18:39	14.93	3.80	0.00	215.10	48.51		0.17
12:19:09	14.74	3.88	0.00	222.78	44.52		0.54
12:19:39	14.61	3.97	0.00	227.28	43.40		0.50
12:20:09	14.41	4.08	0.00	225.94	43.91		0.82
12:20:39	14.47	3.96	0.00	214.27	43.80		0.85
12:21:09	14.57	3.89	0.00	205.17	44.16		1.33
12:21:39	14.60	3.88	0.00	205.03	44.62		1.44
12:22:09	14.61	3.85	0.00	198.15	45.52		0.84
12:22:38	14.83	3.70	0.00	185.60	45.43		0.53
12:23:08	14.89	3.71	0.00	184.64	45.22		0.27
12:23:38	14.95	3.62	0.00	182.37	45.74		0.08
12:24:08	15.03	3.59	0.00	177.21	45.73		0.22
12:24:38	15.15	3.50	0.00	172.27	45.49		0.19
12:25:08	15.19	3.49	0.00	176.52	46.42		0.20
12:25:38	15.20	3.53	0.00	181.13	46.03		0.33
12:26:08	14.89	3.70	0.00	191.45	46.81		0.99
12:26:23	14.90	3.74	0.00	187.47	47.26		1.08
12:26:38	14.78	3.75	0.00	183.25	46.52		0.59
12:26:53	14.80	3.74	0.00	179.20	46.41		0.63
12:27:08	14.82	3.71	0.00	175.89	45.87		0.97

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 9 09/28/90

09-28-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:27:23	14.89	3.67	0.00	171.07	45.38		0.31
12:27:38	14.91	3.68	0.00	171.56	44.97		0.39
12:27:53	14.80	3.71	0.00	172.30	44.93		1.14
12:28:08	14.83	3.71	0.00	170.44	44.97		0.89
12:28:23	14.84	3.68	0.00	167.21	44.96		1.10
12:28:38	14.90	3.67	0.00	165.31	44.73		0.60
12:28:53	14.85	3.67	0.00	166.68	44.91		0.57
12:29:08	14.87	3.68	0.00	167.63	44.99		0.74
12:29:23	14.91	3.70	0.00	170.71	45.35		0.87
12:29:38	14.77	3.73	0.00	177.70	46.87		0.91
12:29:52	14.89	3.65	0.00	174.64	48.13		0.94
12:30:07	15.01	3.66	0.00	173.41	47.39		0.81
12:30:22	14.95	3.56	0.00	164.85	46.18		0.80
12:30:37	15.28	3.94	2.61	116.99	45.18		0.00
12:30:52	13.53	7.85	19.55	185.37	49.13		0.00
12:31:07	10.07	9.26	27.35	239.53	67.94		0.00
12:31:22	9.52	8.52	25.95	222.89	68.73		0.00
12:31:37	12.21	6.09	23.86	218.54	54.83		0.00
12:31:52	14.02	4.84	13.30	222.33	36.38		0.04
12:32:07	14.68	4.25	0.74	226.99	27.48		0.15
12:32:22	15.17	3.87	0.00	218.44	26.69		0.06
12:32:37	15.48	3.54	0.00	193.89	28.60		0.52
12:32:52	15.68	3.42	0.00	182.19	30.94		0.19
12:33:07	15.86	3.32	0.00	170.61	33.80		0.17
12:33:22	15.87	3.26	0.00	158.19	36.41		0.48
12:33:37	15.95	3.20	1.12	143.37	38.46		0.28
12:33:52	15.71	3.52	1.89	172.05	40.00		0.00
12:34:07	15.22	3.61	0.00	189.82	40.80		0.00
12:34:22	15.08	3.62	0.00	191.68	40.30		0.21
12:34:37	15.14	3.63	0.00	187.55	39.29		0.00
12:34:52	15.09	3.58	0.00	181.64	38.77		0.00
12:35:07	15.22	3.57	0.00	177.83	38.56		0.00
12:35:22	15.12	3.57	0.00	176.05	38.32		0.00
12:35:36	15.09	3.60	0.00	174.44	38.66		0.71
12:35:51	15.07	3.59	0.00	172.59	39.03		0.00
12:36:06	15.11	3.62	0.00	173.16	39.34		0.27
12:36:21	15.02	3.68	0.00	175.69	39.90		0.28
12:36:36	14.87	3.72	0.00	180.19	40.47		0.28
12:36:51	14.93	3.62	0.00	174.68	40.99		0.00
12:37:06	15.11	3.56	0.00	170.26	40.49		0.00
12:37:21	15.20	3.45	0.00	162.27	39.87		0.00
12:37:36	15.37	3.49	0.00	160.14	39.18		0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 9 09/28/90

09-28-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:37:51	15.13	3.56	0.00	162.34	39.60		0.10
12:38:06	15.13	3.53	0.00	161.02	39.87		0.00
12:38:21	15.18	3.48	0.00	157.34	39.89		0.00
12:38:36	15.29	3.46	0.00	152.08	39.88		0.29
12:39:06	15.12	3.54	0.00	155.86	40.06		0.00
12:39:36	15.39	3.36	0.00	147.61	39.52		0.00
12:40:06	15.46	3.33	0.00	145.73	38.77		0.00
12:40:36	15.44	3.37	0.00	142.20	38.78		0.02
12:41:06	15.19	3.49	0.00	145.21	39.68		0.94
12:41:36	15.31	3.41	0.00	142.28	39.80		0.00
12:42:06	15.38	3.36	0.00	140.22	39.36		0.00
12:42:36	15.48	3.32	0.00	138.15	38.63		0.00
12:43:06	15.36	3.37	0.00	143.00	38.74		0.00
12:43:35	15.49	3.29	0.00	137.66	38.82		0.00
12:44:05	15.42	3.39	0.00	142.84	39.13		0.00
12:44:35	15.37	3.39	0.00	145.08	39.93		0.00
12:45:05	15.30	3.45	0.00	147.41	40.01	25.50	0.37
12:45:35	15.42	3.32	2.30	132.96	40.37	21.31	2.09
12:46:05	15.44	3.39	13.27	140.81	40.25	21.66	0.00
12:46:35	15.36	3.62	0.95	127.75	40.30	15.51	0.30
12:47:05	13.41	6.23	73.08	175.07	49.24	18.84	0.32
12:47:35	13.12	5.27	84.83	272.24	83.48	15.44	0.00
12:48:05	14.91	3.92	4.60	245.65	107.78	13.55	0.00
12:48:35	15.41	3.59	0.00	231.24	82.07	28.09	0.47
12:49:05	15.41	3.56	0.00	235.24	66.02	57.41	0.00
12:49:35	15.43	3.54	0.00	217.68	60.60	60.30	0.00
12:50:05	15.54	3.48	0.00	199.70	57.92	68.41	0.00
12:50:35	15.61	3.52	0.00	196.15	59.87	65.26	0.00
12:51:05	14.75	3.95	0.00	245.18	57.64	70.22	0.00
12:51:35	14.98	3.60	0.00	201.49	53.11	72.28	0.00
12:52:05	15.66	3.33	0.00	158.08	52.13	70.50	0.29
12:52:35	15.48	3.60	0.00	188.37	52.93	63.34	0.00
12:53:05	14.79	3.84	0.00	232.01	51.49	167.25	0.00
12:53:34	14.61	3.75	0.00	216.24	50.26	93.39	0.38
12:54:13	15.53	3.34	0.00	144.94	49.85	96.15	0.50
12:54:43	15.40	3.61	0.00	185.34	51.82	75.70	0.00
12:55:13	14.89	3.75	0.00	217.08	51.08	71.24	0.00
12:55:43	14.93	3.71	0.00	216.16	49.70	79.10	0.00
12:56:13	14.97	3.56	0.00	195.19	49.43	73.77	0.03
12:56:43	15.90	3.13	2.28	106.86	49.30	77.21	0.75
12:57:13	15.43	3.56	3.09	179.88	50.57	70.84	0.00
12:57:43	14.98	3.68	0.00	215.34	50.35	76.22	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 9 09/28/90

09-28-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:58:13	15.07	3.57	0.00	206.97	49.34	69.32	0.00
12:58:42	15.14	3.58	0.00	204.67	48.07	76.41	0.00
12:59:12	15.02	3.67	0.00	208.34	48.50	74.54	0.00
12:59:42	14.85	3.74	0.00	211.66	49.39	70.82	0.00
13:00:12	15.16	3.42	0.00	171.59	49.11	67.61	0.47
13:00:42	16.21	3.43	14.41	90.65	48.59	68.65	0.89
13:01:12	11.76	8.68	59.10	221.49	74.68	79.40	0.00
13:01:42	11.46	6.74	32.01	235.10	75.92	90.49	0.00
13:02:12	13.43	5.16	10.30	258.12	47.46	92.84	0.00
13:02:42	14.19	4.61	0.00	249.02	41.82	79.98	0.00
13:03:12	14.47	4.29	0.00	293.10	42.74	91.75	0.00
13:03:42	14.87	4.04	0.00	279.55	43.54	82.51	0.00
13:04:12	14.90	3.91	0.00	272.24	46.23	81.62	0.00
13:04:42	15.26	3.62	0.00	242.51	46.58	73.13	0.00
13:05:12	15.64	3.42	0.00	209.29	46.62	78.80	0.00
13:05:42	15.71	3.35	0.00	193.30	47.89	71.49	0.00
13:06:12	15.82	3.33	0.00	178.46	49.36	75.95	0.00
13:06:42	15.83	3.27	0.00	166.98	51.35	72.09	0.12
13:07:12	15.58	3.58	0.00	203.78	51.78	72.47	0.00
13:07:42	14.79	3.93	0.00	248.32	51.77	67.97	0.48
13:08:12	15.23	3.41	0.00	181.25	50.89	74.97	0.85
13:08:41	15.88	3.20	0.00	145.53	50.41	62.50	0.83
13:09:11	15.49	3.57	0.00	202.93	51.30	73.54	0.00
13:09:41	14.94	3.82	0.00	230.77	50.90	71.21	0.00
13:10:11	14.70	3.74	0.00	221.36	51.73	73.76	0.00
13:10:41	15.76	3.18	0.00	147.55	50.31	73.50	0.17
13:11:11	15.74	3.45	1.41	171.20	50.56	72.41	0.00
13:11:41	15.06	3.74	0.00	221.91	50.95	74.71	0.00
13:12:11	14.85	3.77	0.00	227.05	50.27	75.19	0.00
13:12:41	15.32	3.36	0.00	160.22	49.20	76.10	0.05
13:13:11	15.97	3.20	4.29	125.89	48.66	72.04	0.00
13:13:41	15.30	3.58	0.89	194.96	48.17	75.02	0.00
13:14:11	15.13	3.62	0.00	211.89	47.70	71.56	0.00
13:14:41	15.05	3.64	0.00	214.48	47.90	71.79	0.00
13:15:11	15.45	3.26	0.00	148.76	48.26	64.77	0.24
13:15:41	15.98	3.32	9.66	101.93	48.72	66.02	0.07
13:16:11	13.42	7.19	59.70	209.14	66.55	64.96	0.00
13:16:41	12.67	5.80	69.64	284.20	87.71	75.77	0.00
13:17:11	14.13	4.53	4.47	313.26	75.65	73.40	0.00
13:17:41	15.06	3.83	0.00	287.52	72.87	70.19	0.00
13:18:11	15.32	3.66	0.00	275.61	69.00	67.02	0.00
13:18:41	15.41	3.58	0.00	267.43	64.94	64.38	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 9 09/28/90

09-28-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:19:11	15.60	3.44	0.00	250.22	60.92	71.82	0.00
13:19:41	15.52	3.46	0.00	246.97	59.92	63.57	0.00
13:20:11	15.68	3.35	0.00	230.44	58.88	64.69	0.00
13:20:41	15.70	3.35	0.00	232.39	58.49	52.89	0.00
13:21:10	15.67	3.36	0.00	234.98	59.13	58.51	0.00
13:21:40	15.71	3.30	0.00	222.43	58.76	54.65	0.00
13:22:10	15.87	3.19	0.00	201.13	57.18	52.38	0.00
13:22:40	15.47	3.56	0.00	233.95	55.92	50.24	0.00
13:23:10	14.98	3.60	0.00	236.28	54.44	57.57	0.00
13:23:40	15.72	3.16	0.00	186.30	54.11	47.86	0.00
13:24:10	16.00	3.12	0.00	174.99	54.48	52.28	0.00
13:24:40	15.45	3.57	0.00	226.58	56.09	46.49	0.00
13:25:10	15.03	3.59	0.00	232.86	56.29	54.19	0.00
13:25:40	15.55	3.27	0.00	187.68	55.39	47.78	0.00
13:26:10	15.92	3.14	0.00	173.69	55.77	52.87	0.00
13:26:40	15.44	3.56	0.00	223.32	54.73	46.13	0.00
13:27:10	15.02	3.68	0.00	239.02	53.44	46.77	0.00
13:27:40	15.35	3.28	0.00	195.30	52.49	47.90	0.00
13:28:10	15.74	3.26	0.00	184.99	52.86	48.69	0.00
13:28:40	15.25	3.73	0.00	235.84	53.63	46.72	0.00
13:29:10	14.70	3.79	0.00	248.08	53.35	46.07	0.00
13:29:40	15.19	3.36	0.00	197.67	51.57	45.81	0.00
13:30:10	15.77	3.17	0.00	173.17	52.93	44.38	0.00
13:30:39	15.53	3.77	0.66	177.95	53.24	46.20	0.00
13:31:09	12.92	7.48	45.66	229.54	76.55	48.37	0.00
13:31:39	12.49	5.63	47.17	225.46	85.26	56.20	0.00
13:32:09	14.59	4.21	4.01	206.47	48.42	43.74	0.00
13:32:39	15.27	3.75	0.00	172.56	30.51	53.37	0.00
13:33:09	15.62	3.47	0.00	154.69	23.82	45.60	0.00
13:33:39	15.78	3.40	0.00	151.64	23.40	57.81	0.00
13:34:09	15.75	3.39	0.00	151.43	25.39	53.04	0.00
13:34:39	15.70	3.48	0.00	159.87	27.38	67.76	0.00
13:35:09	15.70	3.39	0.00	155.58	28.20	76.80	0.00
13:35:39	15.76	3.35	0.00	159.23	28.72	88.81	0.00
13:36:09	15.78	3.38	0.00	166.24	29.99	92.31	0.00
13:36:39	15.71	3.38	0.00	172.32	31.04	104.41	0.00
13:37:09	15.60	3.66	0.00	186.74	31.89	123.19	0.00
13:37:39	14.83	3.82	0.00	207.28	30.00	138.97	0.00
13:38:09	15.28	3.48	0.00	184.12	29.59	143.79	0.00
13:38:39	15.60	3.37	0.00	179.61	32.87	154.16	0.00
13:39:09	15.81	3.21	0.00	169.82	34.32	154.42	0.00
13:39:39	15.90	3.04	0.00	139.26	34.61	141.18	0.39

CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 9 09/28/90

09-28-90 TIME	O2 %V	CO2 %V	CO ppmV	NOx ppmV	SO2 ppmV	HCl ppmVw	THC ppmCw
13:40:08	16.65	2.47	30.22	44.75	29.79	124.18	0.54
13:40:38	17.35	2.20	48.61	18.11	23.42	100.96	0.00
13:41:08	17.70	2.07	43.30	11.93	18.02	102.06	0.00
13:41:38	17.73	2.03	38.56	10.78	15.53	86.05	0.00
13:42:08	17.70	2.05	22.61	11.83	14.60	94.78	0.00
13:42:38	17.87	1.96	27.18	11.69	14.04	83.83	0.00
13:43:08	17.85	1.95	26.77	12.06	12.97	80.66	0.00
13:43:38	17.79	1.97	26.19	12.67	12.85	65.81	0.00
13:44:08	17.87	1.94	21.12	14.41	12.59	72.79	0.00
13:44:38	17.85	1.97	11.41	15.67	12.43	66.28	0.00
13:45:08	16.20	2.98	17.28	77.97	20.90	72.92	0.00
13:45:38	15.00	4.16	9.35	161.32	59.17	97.44	1.39
13:46:08	11.75	7.07	116.15	177.57	64.74	98.77	0.00
13:46:38	15.31	4.45	60.36	132.33	49.63	99.87	0.00
13:47:08	17.04	2.82	5.94	51.79	36.94	74.03	0.00
13:47:38	17.51	2.24	24.60	16.53	30.96	61.63	0.00
13:48:08	17.60	2.25	25.82	19.07	25.19	47.95	0.00
13:48:38	15.29	3.56	12.89	183.79	50.81	63.54	0.00
13:49:08	14.66	3.95	0.00	246.09	73.17	71.22	0.00
13:49:38	14.58	3.97	0.00	249.23	62.15	72.49	0.00
13:50:08	14.64	3.90	0.00	246.12	55.42	67.16	0.00
13:50:38	15.60	3.41	0.00	189.54	51.69	67.86	0.00
13:51:07	15.73	3.36	0.00	178.75	52.43	57.27	0.00
13:51:37	14.81	3.80	0.00	231.08	52.87	61.64	0.00
13:52:07	14.68	3.88	0.00	240.94	51.08	55.40	0.00
13:52:37	15.38	3.47	0.00	192.36	49.69	61.31	0.00
13:53:07	15.95	3.20	0.42	155.01	49.31	50.15	0.00
13:53:37	15.14	3.57	0.00	208.54	49.30	54.22	0.00
13:54:07	14.92	3.73	0.00	228.85	49.15	50.90	0.00
13:54:37	15.16	3.56	0.00	205.27	49.11	48.41	0.00
13:55:07	16.00	3.12	0.00	148.26	48.74	45.18	0.00
13:55:37	15.45	3.45	1.32	187.84	48.86	44.84	0.00
13:56:07	14.87	3.76	0.00	229.15	49.81	49.75	0.00
13:56:37	14.89	3.66	0.00	220.28	50.42	45.42	0.00
13:57:07	15.86	3.21	0.00	156.20	50.09	52.37	0.00
13:57:37	15.96	3.04	3.63	128.53	50.29	46.44	0.00
13:58:07	17.40	2.18	15.92	29.94	37.53	46.33	0.00
13:58:37	17.90	1.84	12.33	14.69	21.51	30.57	0.00
13:59:07	18.04	1.78	4.67	15.09	15.96	36.66	0.00
13:59:37	16.03	3.10	8.01	109.53	26.67	32.26	0.00
14:00:07	15.15	3.57	0.36	178.68	56.97	46.75	0.00
14:00:37	15.03	4.03	0.00	164.06	60.94	40.43	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 9 09/28/90

09-28-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:01:06	11.04	7.86	32.43	215.31	75.86	54.72	0.00
14:01:36	14.81	4.90	54.37	146.02	80.83	49.10	0.00
14:02:06	17.22	2.98	180.22	67.76	54.15	41.30	86.59
14:02:36	17.22	2.68	880.68	54.81	46.19	38.51	15.71
14:03:06	16.86	2.86	322.10	67.84	40.68	44.47	1.45
14:03:36	16.85	2.95	7.76	64.91	35.74	35.48	0.06
14:04:06	14.59	4.50	23.76	178.68	47.40	42.24	0.07
14:04:36	13.67	4.84	58.45	250.59	69.93	48.69	0.00
14:05:06	14.22	4.57	13.12	291.96	64.19	51.68	0.00
14:05:36	14.32	4.50	0.00	292.90	59.36	47.96	0.00
14:06:06	14.35	4.49	0.00	292.29	57.54	49.65	0.00
14:06:36	14.42	4.41	0.00	295.14	57.40	46.99	0.00
14:07:06	14.36	4.47	0.00	298.92	57.11	48.12	0.00
14:07:36	14.28	4.47	0.00	300.92	57.24	49.50	0.00
14:08:06	14.53	4.29	0.00	286.08	57.00	46.25	0.00
14:08:36	14.70	4.16	0.00	277.56	55.66	58.02	0.00
14:09:06	14.97	3.97	0.00	266.89	54.13	46.46	0.00
14:09:36	14.97	3.94	0.00	264.46	53.35	54.68	0.00
14:10:06	14.96	3.99	0.00	267.28	54.25	52.93	0.00
14:10:35	14.86	4.00	0.00	264.91	55.54	57.71	0.00
14:11:05	15.07	3.86	0.00	251.80	54.84	49.27	0.00
14:11:35	15.07	3.84	0.00	250.15	54.23	56.80	0.00
14:12:05	15.19	3.75	0.00	243.55	54.03	53.31	0.00
14:12:35	15.20	3.77	0.00	245.77	53.81	57.45	0.00
14:13:05	15.26	3.70	0.00	238.24	54.52	51.95	0.00
14:13:35	15.21	3.75	0.00	240.10	54.11	55.88	0.00
14:14:05	15.26	3.71	0.00	234.70	54.78	56.42	0.00
14:14:35	15.24	3.73	0.00	231.94	54.09	56.29	0.00
14:15:05	15.23	3.69	0.00	229.20	54.36	57.36	0.00
14:15:35	15.36	3.56	0.00	216.24	53.35	53.93	0.00
14:16:05	15.29	4.17	40.57	161.99	54.72	58.90	0.00
14:16:35	16.72	2.93	220.26	94.40	58.19	49.70	192.47
14:17:05	17.73	2.22	1336.75	32.19	49.01	48.45	47.78
14:17:35	17.49	2.32	274.12	27.40	41.50	49.68	8.29
14:18:05	17.54	2.22	65.03	22.54	38.01	54.41	4.03
14:18:35	17.66	2.13	56.12	17.69	34.99	45.23	2.35
14:19:05	17.05	2.77	43.60	65.02	35.82	47.13	0.83
14:19:35	14.71	4.07	16.26	246.24	75.30	53.11	0.29
14:20:05	14.51	4.10	11.56	259.61	80.91	56.35	0.00
14:20:35	14.54	3.96	2.28	258.25	69.82	48.99	0.00
14:21:04	15.24	3.64	0.00	232.25	64.09	45.74	0.00
14:21:34	15.46	3.51	0.00	218.22	62.03	41.97	0.04

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 9 09/28/90

09-28-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:22:04	15.48	3.50	0.00	208.47	60.62	37.95	0.60
14:22:34	15.57	3.40	0.00	202.63	58.39	41.14	0.00
14:23:04	15.82	3.26	0.00	192.36	54.92	38.76	0.00
14:23:34	15.87	3.28	0.00	191.29	53.67	42.07	0.00
14:24:04	15.16	3.73	0.00	235.03	53.81	39.02	0.00
14:24:34	15.13	3.55	0.00	221.77	53.59	42.15	0.00
14:25:04	15.64	3.36	0.00	202.30	52.73	33.09	0.00
14:25:34	15.66	3.38	0.00	200.08	52.62	39.27	0.18
14:26:04	15.59	3.40	0.00	197.96	53.06	35.03	0.00
14:26:34	15.58	3.42	0.00	204.81	52.70	39.84	0.00
14:27:04	15.17	3.53	0.00	207.31	52.60	35.32	0.00
14:27:34	16.64	2.49	11.15	57.62	45.97	40.09	0.00
14:28:04	17.49	2.10	23.97	18.53	32.96	31.75	0.00
14:28:34	17.69	1.95	15.07	14.13	26.00	32.16	0.00
14:29:04	17.81	1.89	14.25	13.32	22.60	27.98	0.00
14:29:34	17.89	2.13	10.84	20.51	22.00	32.68	0.00
14:30:04	16.03	3.42	8.27	159.85	39.65	30.39	0.00
14:30:34	14.90	3.85	0.00	203.17	69.37	41.79	0.00
14:31:04	12.35	9.13	92.03	224.96	84.53	40.19	2.55
14:31:34	8.22	9.81	155.98	254.76	147.81	53.43	0.00
14:32:03	11.50	6.41	56.12	229.98	91.64	46.30	0.00
14:32:33	13.44	4.94	13.71	275.43	51.62	55.23	0.00
14:33:03	14.28	4.40	0.00	301.56	48.06	66.27	0.00
14:33:33	14.71	4.02	0.00	292.34	47.93	67.20	0.00
14:34:03	15.18	3.73	0.00	270.06	46.26	59.40	0.00
14:34:33	15.33	3.70	0.00	263.64	45.76	59.30	0.00
14:35:03	15.38	3.53	0.00	243.38	46.49	51.63	0.00
14:35:33	15.67	3.35	0.00	221.46	45.65	51.00	0.00
14:36:03	15.78	3.29	0.00	214.97	45.59	50.47	0.00
14:36:33	15.86	3.25	0.00	212.58	46.49	47.16	0.00
14:37:03	15.85	3.29	0.00	211.73	47.67	50.11	0.00
14:37:33	15.69	3.37	0.00	216.18	50.08	42.92	0.00
14:38:03	15.71	3.33	0.00	210.51	51.70	47.57	0.00
14:38:33	15.77	3.25	0.00	202.29	52.24	37.92	0.00
14:39:03	15.81	3.30	0.00	206.39	52.51	44.41	0.00
14:39:33	15.82	3.27	0.00	200.64	53.40	36.72	0.00
14:40:03	15.85	3.21	0.00	194.01	53.11	43.02	0.00
14:40:33	16.24	2.62	104.02	105.31	50.99	35.54	25.62
14:41:03	17.24	2.17	103.78	26.73	39.69	34.14	0.00
14:41:33	17.68	1.95	11.70	16.18	29.05	24.74	0.00
14:42:03	17.83	1.85	6.16	15.81	23.35	27.39	0.00
14:42:32	17.99	1.78	4.95	16.77	20.77	22.00	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 9 09/28/90

09-28-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:43:02	18.08	2.04	4.35	28.06	20.00	23.45	0.00
14:43:32	16.50	3.39	3.18	170.15	43.39	29.05	0.00
14:44:02	15.15	3.79	0.00	233.18	73.56	38.55	0.00
14:44:32	14.86	3.78	0.00	240.31	68.67	35.32	0.00
14:45:02	14.90	3.71	0.00	238.33	59.72	37.98	0.00
14:45:32	15.38	3.08	24.50	163.90	55.22	37.20	5.07
14:46:02	15.98	4.76	139.39	149.55	60.24	27.64	0.00
14:46:32	15.63	3.80	46.20	152.90	97.20	36.19	98.47
14:47:02	17.56	2.10	702.08	36.46	97.44	20.57	50.01
14:47:32	17.90	2.06	243.14	17.06	70.72	23.62	0.20
14:48:02	17.79	2.03	22.19	13.63	50.88	17.72	0.00
14:48:32	17.77	2.01	27.12	12.47	41.66	24.77	0.00
14:49:02	17.48	3.11	29.27	115.27	44.67	23.51	0.00
14:49:32	14.85	4.37	13.73	275.62	102.31	31.05	0.00
14:50:02	14.01	4.38	9.76	295.84	103.96	32.90	0.00
14:50:32	14.55	3.92	0.94	295.52	86.48	37.06	0.00
14:51:02	15.03	3.74	0.00	282.89	76.83	30.81	0.00
14:51:32	15.15	3.69	0.00	269.92	73.58	31.51	0.00
14:52:01	15.25	3.66	0.00	257.69	71.65	35.91	0.00
14:52:31	15.21	3.63	0.00	254.03	71.15	30.07	0.00
14:53:01	15.34	3.55	0.00	245.92	69.76	25.20	0.00
14:53:31	15.42	3.54	0.00	242.41	68.74	31.30	0.00
14:54:01	15.47	3.39	0.00	229.40	67.66	34.92	0.00
14:54:31	15.72	3.39	0.00	223.86	65.25	31.04	0.00
14:55:01	15.50	3.52	0.00	235.68	66.87	28.38	0.00
14:55:31	15.40	3.53	0.00	235.64	68.12	31.04	0.00
14:56:01	15.45	3.53	0.00	234.29	68.09	31.54	0.00
14:56:31	15.42	3.53	0.00	231.14	68.18	30.76	0.00
14:57:01	15.40	3.50	0.00	228.79	69.39	29.78	0.00
14:57:31	15.51	3.42	0.00	225.95	68.14	28.77	0.00
14:58:01	15.59	3.46	0.00	227.79	66.35	34.96	0.00
14:58:31	15.42	3.59	0.00	232.56	66.95	27.64	0.00
14:59:01	15.28	3.54	0.00	228.93	67.75	35.06	0.00
14:59:31	15.57	2.92	57.90	165.73	64.01	27.00	113.62
15:00:01	17.06	2.14	370.18	38.13	52.76	19.44	2.37
15:00:30	17.57	2.10	73.21	17.22	37.44	15.31	0.00
15:01:00	17.46	3.83	48.23	62.73	36.10	19.51	0.00
15:01:30	14.86	4.74	55.22	134.52	79.21	19.82	0.00
15:02:00	15.87	3.37	4.50	105.70	67.60	27.94	0.00
15:02:30	16.58	2.91	1.20	71.31	49.79	28.46	0.00
15:03:00	16.93	2.66	13.12	57.09	42.29	48.31	0.07
15:03:30	17.03	2.57	23.30	53.58	39.17	56.42	0.58

CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 9 09/28/90

09-28-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
15:04:00	17.12	2.56	28.48	53.38	37.82	70.28	0.97
15:04:30	17.12	2.46	36.88	45.67	36.12	60.96	1.83
15:05:00	17.27	2.28	44.69	38.73	32.82	54.30	1.73
AVERAGE	15.28	3.67	36.07	165.35	43.13	55.55	3.62
MINIMUM	8.22	1.78	0.00	10.78	0.00	13.55	0.00
MAXIMUM	18.08	9.81	1336.75	360.35	147.81	167.25	192.47

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:15:03	16.85	2.32	69.81	16.39	0.00		7.23
10:15:33	16.95	2.12	66.13	15.68	0.00		82.44
10:16:02	17.03	3.10	188.45	22.81	0.00		39.43
10:16:32	12.64	6.27	339.03	47.67	21.84		27.61
10:17:02	13.30	5.64	199.82	45.74	32.66		12.72
10:17:32	14.35	4.62	16.10	42.04	20.43		10.91
10:18:02	14.98	4.01	1.34	42.10	11.37		10.58
10:18:32	15.17	3.78	7.76	47.14	7.58		8.92
10:19:02	15.39	3.56	27.14	46.72	5.47		8.80
10:19:32	15.53	3.40	69.41	45.27	3.09		8.31
10:20:02	15.65	3.29	88.23	46.70	1.59		8.09
10:20:32	15.66	3.26	123.65	45.93	1.51		9.01
10:21:02	15.78	3.14	260.94	39.18	1.18		11.56
10:21:32	15.86	3.06	458.96	33.75	1.59		13.33
10:22:02	15.94	3.01	493.31	30.41	1.04		14.44
10:22:32	15.99	2.96	477.78	27.72	1.04		15.65
10:23:02	16.11	2.86	350.73	18.71	0.00		21.50
10:23:32	16.18	2.83	187.07	14.77	0.00		10.46
10:24:02	16.16	2.84	124.37	15.78	0.00		15.28
10:24:31	16.08	2.90	239.28	20.79	1.26		13.79
10:25:01	16.14	2.85	218.86	16.02	2.14		11.00
10:25:31	16.22	2.78	137.20	14.34	2.53		10.11
10:26:01	16.30	2.75	112.46	14.19	2.02		17.38
10:26:31	16.27	2.75	123.70	13.61	1.43		13.21
10:27:01	16.26	2.77	130.66	13.80	2.26		10.00
10:27:31	16.31	2.72	126.03	13.64	2.47		13.61
10:28:01	16.49	2.64	131.58	13.38	2.12		9.26
10:28:31	16.32	2.72	127.85	13.98	1.53		19.09
10:29:01	16.27	2.72	141.38	13.79	1.90		18.90
10:29:31	16.40	2.65	135.65	13.45	1.03		15.24
10:30:01	16.50	2.59	116.59	13.85	0.59		11.79
10:30:31	16.59	2.40	110.97	16.42	0.00		54.76
10:31:01	15.63	4.16	239.06	79.13	4.52		7.31
10:31:31	14.34	4.68	78.14	154.68	26.08		4.30
10:32:01	15.17	3.80	4.57	138.99	41.02		5.13
10:32:31	15.60	3.36	16.55	94.36	38.57		6.57
10:33:01	15.73	3.24	35.67	81.86	31.66		7.42
10:33:31	15.70	3.21	49.01	76.74	30.44		8.43
10:34:01	15.71	3.20	67.10	71.66	26.75		10.47
10:34:31	15.68	3.19	97.38	67.93	22.47		10.70
10:35:01	15.87	3.07	118.77	64.86	20.04		10.31
10:35:30	15.95	3.01	150.01	62.20	18.26		10.87

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:36:00	16.00	2.98	173.39	61.14	17.84		11.46
10:36:30	15.97	3.00	207.13	60.42	16.92		13.39
10:37:00	15.79	3.09	240.46	62.29	16.85		13.45
10:37:30	15.77	3.10	246.36	62.74	17.15		12.79
10:38:00	15.72	3.12	243.75	63.37	17.20		12.95
10:38:30	15.77	3.11	241.61	63.47	17.14		12.92
10:39:00	15.76	3.10	234.97	63.02	16.74		12.81
10:39:30	15.75	3.11	229.64	63.53	16.69		12.11
10:40:00	15.78	3.09	218.11	63.83	16.61		11.34
10:40:30	15.83	3.06	192.33	65.05	16.61		10.27
10:41:00	15.92	3.00	178.04	63.93	17.40		10.87
10:41:30	15.97	2.98	203.27	60.94	17.16		11.48
10:42:00	15.91	3.01	212.73	61.09	16.82		11.61
10:42:40	15.97	2.95	218.93	59.69	16.53		12.16
10:43:10	16.05	2.93	210.16	59.09	15.78		10.07
10:43:40	15.97	2.98	195.99	60.89	15.83		9.09
10:44:10	15.95	3.00	172.96	61.82	16.18		8.74
10:44:40	15.95	2.98	171.47	61.36	16.42		9.02
10:45:10	16.02	2.94	182.65	59.22	15.86		9.62
10:45:40	16.35	2.89	226.83	58.38	14.87		30.27
10:46:10	14.50	4.70	236.35	145.68	24.50		2.52
10:46:40	14.81	4.11	24.91	158.40	44.34		2.36
10:47:10	15.35	3.57	4.28	117.20	43.87		3.89
10:47:40	15.52	3.36	13.39	96.19	39.98		3.42
10:48:10	15.65	3.26	21.74	89.19	34.39		5.20
10:48:40	15.67	3.24	28.62	85.20	32.51		4.51
10:49:10	15.64	3.24	26.74	88.17	32.85		4.88
10:49:40	15.67	3.22	27.28	85.49	30.93		4.16
10:50:10	15.66	3.22	24.31	86.66	30.79		4.45
10:50:40	15.80	3.13	26.79	80.78	30.89		4.91
10:51:10	15.76	3.17	31.41	79.04	30.35		6.07
10:51:39	15.70	3.18	31.82	78.87	30.56		6.37
10:52:09	15.72	3.15	32.85	77.33	30.51		5.88
10:52:39	15.84	3.10	35.34	75.26	29.37		6.38
10:53:09	15.84	3.09	36.92	73.83	28.47		5.38
10:53:39	15.86	3.08	37.97	74.64	27.93		5.55
10:54:09	15.82	3.11	37.97	74.79	28.21		6.34
10:54:39	15.76	3.12	39.87	74.52	28.25		6.13
10:55:09	15.89	3.06	38.29	73.43	27.74		5.32
10:55:39	15.93	3.03	35.43	75.46	27.63		4.96
10:56:09	15.81	3.11	31.41	76.93	28.32		5.66
10:56:39	15.80	3.09	32.63	75.22	28.69		5.23

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
10:57:09	15.89	3.06	33.03	74.55	27.86		4.81
10:57:39	15.93	3.05	33.98	73.17	27.08		4.90
10:58:09	15.79	3.10	38.66	73.79	27.70		4.68
10:58:39	15.90	3.06	34.18	75.30	27.06		4.25
10:59:09	15.86	3.06	30.05	77.32	27.40		3.88
10:59:39	15.88	3.07	28.96	77.89	27.46		4.32
11:00:09	15.85	3.06	27.33	76.93	28.53		4.25
11:00:39	15.99	3.03	48.37	71.42	27.53		9.20
11:01:09	14.08	5.32	165.33	138.99	38.85		1.32
11:01:39	14.19	4.63	54.95	201.73	63.64		1.06
11:02:08	14.95	3.90	0.00	189.96	58.82		1.19
11:02:38	15.16	3.66	0.00	177.80	51.95		0.93
11:03:08	15.25	3.56	0.00	167.56	48.65		1.08
11:03:38	15.25	3.55	0.00	161.33	47.40		2.33
11:04:08	15.14	3.60	0.00	160.86	48.27		1.99
11:04:38	15.18	3.55	0.00	150.65	48.72		2.03
11:05:08	15.19	3.53	0.59	144.99	47.25		2.36
11:05:38	15.25	3.48	0.80	129.23	46.63		2.28
11:06:08	15.32	3.46	2.86	119.74	46.25		2.06
11:06:38	15.39	3.40	3.59	118.89	44.43		2.81
11:09:02	15.62	3.33	4.10	113.26	40.51		1.67
11:09:32	15.59	3.29	3.91	111.34	37.23		1.87
11:10:02	15.48	3.37	4.66	113.12	36.90		2.92
11:10:32	15.41	3.39	4.62	113.47	36.53		2.62
11:11:02	15.39	3.38	4.67	110.02	35.39		3.51
11:11:32	15.43	3.36	6.81	102.94	35.00		2.59
11:12:02	15.54	3.27	7.51	103.06	34.04		1.80
11:12:32	15.69	3.19	9.00	94.84	32.28		1.89
11:13:02	15.72	3.16	11.20	90.07	30.65		2.43
11:13:32	15.63	3.22	12.43	91.16	29.33		2.78
11:14:02	15.55	3.27	10.38	99.04	30.29		2.80
11:14:32	15.55	3.25	9.33	96.52	29.88		2.67
11:15:02	15.64	3.19	10.34	94.81	29.05		1.73
11:15:42	15.71	3.06	12.72	86.44	29.06		2.32
11:16:12	12.88	6.08	108.46	158.52	46.63		0.65
11:16:42	13.18	5.46	70.97	220.93	60.93		0.77
11:17:12	13.70	4.86	5.87	242.38	56.53		0.30
11:17:42	14.10	4.47	0.00	246.02	52.87		0.73
11:18:12	14.20	4.37	0.00	247.58	50.93		1.03
11:18:42	14.38	4.17	0.00	237.97	48.51		0.91
11:19:12	14.71	3.91	0.00	220.32	44.10		0.48
11:19:41	14.95	3.75	0.00	205.51	40.31		1.05

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:20:11	15.06	3.63	0.00	188.08	37.04		0.93
11:20:41	15.25	3.50	0.00	172.57	34.57		0.27
11:21:11	15.45	3.40	0.00	161.27	32.63		0.56
11:21:41	15.47	3.38	0.00	152.55	31.05		1.47
11:22:11	15.45	3.39	0.00	144.44	30.05		1.63
11:22:41	15.42	3.38	0.00	140.45	30.63		1.29
11:29:41	15.78	3.23	4.97	99.82	25.88	138.43	1.44
11:30:11	15.63	3.24	4.57	105.34	24.68	124.74	1.13
11:30:41	15.64	3.12	5.56	94.37	24.58	94.68	1.07
11:31:11	15.60	3.89	20.99	143.24	29.93	59.04	0.80
11:31:40	15.08	3.81	2.03	191.87	57.38	31.02	1.31
11:32:10	15.33	3.53	0.00	152.98	55.85	33.26	2.71
11:32:40	15.37	3.48	0.00	146.59	44.25	24.03	2.47
11:33:23	15.38	3.46	0.00	143.59	38.82	34.82	2.35
11:33:53	15.32	3.46	0.00	147.16	36.05	20.36	1.84
11:34:23	15.48	3.37	0.00	141.69	34.65	21.39	1.05
11:34:53	15.62	3.25	0.00	126.65	32.73	23.23	0.74
11:35:23	15.68	3.22	1.28	118.21	31.60	14.81	1.08
11:35:53	15.63	3.29	1.42	115.85	31.02	17.78	2.38
11:36:23	15.51	3.30	1.89	115.87	32.09	29.38	1.83
11:36:53	15.69	3.21	1.97	111.49	32.11	50.53	1.00
11:37:23	15.74	3.16	2.94	105.15	31.22	53.82	0.98
11:37:53	15.69	3.22	4.02	108.53	30.80	62.70	1.43
11:38:23	15.58	3.26	2.09	115.09	31.62	59.78	1.27
11:38:53	15.72	3.17	3.07	107.69	31.10	71.75	0.81
11:39:23	15.66	3.22	2.95	110.08	30.80	63.63	0.94
11:39:53	15.74	3.16	3.80	102.87	30.67	70.96	0.69
11:40:22	15.79	3.14	4.12	100.58	30.32	59.26	0.93
11:40:52	15.77	3.15	5.36	97.24	30.11	64.87	0.94
11:41:22	15.67	3.23	5.88	102.38	29.62	58.72	1.60
11:41:52	15.63	3.24	4.82	105.37	29.90	58.44	1.56
11:42:22	15.63	3.22	4.77	100.40	30.14	58.06	2.29
11:42:52	15.67	3.23	5.29	100.07	30.21	59.06	1.83
11:43:22	15.63	3.22	4.47	102.29	30.50	57.21	1.21
11:43:52	15.81	3.13	4.22	99.99	30.00	54.83	0.49
11:44:22	15.88	3.09	4.56	99.88	29.18	53.62	0.38
11:44:52	15.83	3.12	3.72	100.15	28.72	52.45	0.59
11:45:22	15.81	3.12	4.80	96.44	28.81	54.71	1.24
11:45:52	16.13	3.63	24.39	92.56	29.52	50.77	0.00
11:46:22	15.51	4.54	11.30	136.83	46.82	56.10	0.00
11:46:52	14.44	4.98	2.67	195.73	52.74	70.37	0.20
11:47:22	13.84	4.88	10.00	221.47	56.22	110.38	0.70

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
11:47:52	13.91	4.70	4.96	237.64	53.17	120.20	0.93
11:48:22	14.08	4.46	0.00	243.41	46.98	121.65	0.70
11:48:52	14.40	4.20	0.00	236.03	42.26	115.36	0.54
11:49:22	14.59	4.12	0.00	230.91	38.60	113.05	1.02
11:49:52	14.54	4.13	0.00	230.14	37.34	102.99	1.23
11:50:21	14.58	4.05	0.00	227.60	35.69	105.20	0.75
11:50:51	14.76	3.90	0.00	219.86	34.11	104.72	0.09
11:51:21	14.95	3.79	0.00	214.02	32.33	111.24	0.18
11:51:51	14.82	3.85	0.00	213.89	31.86	103.18	0.87
11:52:21	15.00	3.71	0.00	202.91	31.20	100.45	0.08
11:52:51	15.20	3.60	0.00	191.70	31.14	93.87	0.06
11:53:21	15.35	3.53	0.00	184.83	29.54	94.65	0.03
11:53:51	15.30	3.57	0.00	185.92	28.96	90.31	0.00
11:54:21	15.24	3.57	0.00	181.62	29.32	84.61	0.00
11:54:51	15.23	3.57	0.00	180.54	29.32	88.17	0.78
11:55:21	15.26	3.55	0.00	177.39	29.37	85.20	0.78
11:55:51	15.17	3.59	0.00	176.70	29.31	83.40	0.32
11:56:21	15.23	3.52	0.00	172.05	29.45	81.54	0.27
11:56:51	15.34	3.49	0.00	166.17	29.16	85.98	0.76
11:57:21	15.29	3.51	0.00	169.46	29.55	78.98	0.11
11:57:51	15.37	3.47	0.00	168.63	29.81	83.59	0.29
11:58:21	15.34	3.49	0.00	175.52	30.03	82.19	0.03
11:58:51	15.22	3.59	0.00	203.02	33.09	85.11	0.00
11:59:21	15.18	3.59	0.00	207.41	37.11	81.81	0.00
11:59:51	15.23	3.54	0.00	197.06	35.14	87.04	0.00
12:00:21	15.18	3.55	0.00	188.86	33.66	80.77	0.36
12:00:51	14.73	5.70	10.97	144.81	40.21	98.45	0.76
12:01:20	9.31	9.49	47.84	191.39	152.75	137.85	0.00
12:01:50	10.70	7.41	86.67	152.74	119.05	176.01	0.16
12:02:20	11.52	6.50	159.86	145.97	70.15	190.21	0.00
12:02:50	12.69	5.50	82.75	187.25	50.76	184.40	0.13
12:03:20	13.87	4.62	7.40	213.23	39.27	162.20	0.20
12:03:50	14.74	4.07	0.00	218.77	32.34	149.22	0.39
12:04:20	14.65	4.16	0.00	218.46	29.54	143.93	0.00
12:04:50	14.49	4.14	0.00	220.96	28.29	141.69	0.00
12:05:20	14.53	4.08	0.00	222.53	27.42	133.54	0.00
12:05:50	14.63	3.99	0.00	223.68	26.72	125.06	0.13
12:06:20	14.80	3.86	0.00	220.18	26.56	122.55	0.30
12:06:50	14.86	3.83	0.00	220.96	26.33	110.61	0.47
12:07:20	14.93	3.73	0.00	212.66	26.23	108.78	0.34
12:07:50	15.10	3.62	0.00	203.32	25.82	97.91	0.44
12:08:20	15.14	3.66	0.00	201.42	26.82	95.96	0.48

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:08:50	15.20	3.58	0.00	194.08	26.31	84.17	0.23
12:09:20	15.24	3.58	0.00	190.23	25.63	89.71	0.47
12:09:50	15.15	3.61	0.00	193.67	26.46	81.19	0.67
12:10:20	15.19	3.53	0.00	185.81	27.16	82.96	0.67
12:10:49	15.41	3.45	0.00	177.40	25.93	75.00	0.76
12:11:19	15.22	3.59	0.00	182.24	26.20	79.67	1.65
12:11:49	15.24	3.51	0.00	173.75	26.43	77.88	0.59
12:12:19	15.31	3.45	0.00	169.32	25.86	77.46	0.92
12:12:49	16.27	2.67	0.00	77.75	22.90	67.85	0.24
12:13:19	17.66	2.03	5.00	22.76	16.13	57.09	0.13
12:13:49	18.09	1.79	3.58	20.63	10.30	54.11	0.26
12:14:19	18.19	1.74	2.85	22.51	7.39	47.55	0.33
12:14:49	17.31	2.61	5.30	55.96	9.98	55.83	1.56
12:15:19	15.95	3.17	1.85	116.66	25.95	53.80	0.90
12:15:49	15.58	3.22	0.00	124.02	30.77	65.44	1.06
12:16:19	14.70	5.43	48.54	121.33	35.68	65.26	2.33
12:16:49	12.86	5.78	99.55	189.23	68.78	75.77	0.69
12:17:19	13.85	4.73	14.21	231.94	73.70	66.17	0.52
12:17:49	14.40	4.27	0.00	235.12	67.12	76.75	0.85
12:18:19	14.74	4.01	0.00	217.13	58.42	67.30	1.37
12:18:49	14.81	3.87	0.00	207.39	49.10	71.74	0.79
12:19:19	15.06	3.72	0.00	196.70	42.01	64.69	1.11
12:19:49	15.12	3.69	0.00	189.77	37.83	69.69	1.14
12:20:18	15.18	3.60	0.00	183.88	34.88	66.01	0.84
12:20:48	15.41	3.47	0.00	168.44	32.20	70.95	0.59
12:21:18	15.47	3.42	0.00	159.84	30.21	64.58	0.74
12:21:48	15.48	3.42	0.00	152.92	29.17	66.58	1.01
12:22:18	15.47	3.39	0.00	147.49	28.00	66.75	1.41
12:22:48	15.65	3.29	0.00	141.42	26.56	67.93	0.97
12:23:18	15.60	3.32	0.00	139.38	25.92	64.33	1.91
12:23:48	15.66	3.26	0.00	131.81	25.50	65.16	0.75
12:24:18	15.65	3.27	0.00	132.06	24.93	68.02	0.94
12:24:48	15.76	3.18	0.00	125.40	24.24	64.11	0.80
12:25:18	16.11	2.71	0.00	85.75	23.45	64.24	0.37
12:25:48	17.81	1.81	3.76	25.22	14.89	49.90	0.16
12:26:18	18.36	1.56	2.42	18.36	7.45	52.09	0.22
12:26:48	17.70	2.38	6.10	41.96	8.29	46.81	1.32
12:27:18	16.20	3.02	8.07	88.20	24.44	55.60	1.16
12:27:48	15.87	3.16	3.24	100.90	30.93	62.05	0.96
12:28:18	15.85	3.12	2.13	102.48	29.02	65.68	0.73
12:28:48	15.86	3.13	1.67	105.59	26.12	54.73	0.55
12:29:18	16.23	2.61	1.79	73.96	24.24	60.59	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:29:47	17.90	1.70	4.23	25.68	14.67	49.05	0.00
12:30:17	18.52	4.98	2.05	23.01	7.16	44.38	0.24
12:30:47	17.43	3.33	27.60	58.06	11.23	51.39	3.13
12:31:17	13.07	6.48	157.87	170.42	58.01	61.33	0.78
12:31:47	13.04	5.68	125.83	193.12	73.24	83.60	0.42
12:32:17	13.58	4.92	26.37	220.76	52.62	107.92	0.66
12:32:47	14.13	4.34	1.80	225.91	41.62	120.46	0.34
12:33:17	14.55	4.08	0.00	223.44	34.43	128.32	0.27
12:33:47	14.65	3.97	0.00	221.69	30.23	129.36	0.31
12:34:17	14.83	3.85	0.00	214.87	27.80	121.95	0.11
12:34:47	14.92	3.78	0.00	212.07	26.98	114.92	0.00
12:35:17	15.02	3.65	0.00	202.89	26.39	106.88	0.00
12:35:47	15.15	3.59	0.00	196.09	25.17	103.01	0.01
12:36:17	15.29	3.49	0.00	185.04	24.44	95.54	0.00
12:36:47	15.28	3.51	0.00	179.82	23.78	96.97	0.19
12:37:17	15.35	3.46	0.00	170.79	24.40	88.03	0.19
12:37:46	15.39	3.46	0.00	165.96	24.47	83.53	0.15
12:38:16	15.52	3.39	0.00	159.48	23.68	80.30	0.00
12:38:46	15.44	3.41	0.00	162.21	23.76	84.30	0.00
12:39:16	16.00	2.79	0.00	95.43	22.50	68.05	0.06
12:39:46	17.55	2.09	5.93	25.20	16.46	69.59	0.00
12:40:16	17.94	1.99	9.74	19.08	11.27	60.41	0.05
12:40:46	18.10	1.89	11.21	18.21	8.64	65.80	0.00
12:41:16	18.14	1.85	11.72	17.94	7.50	59.14	0.32
12:41:46	18.11	1.80	9.84	18.05	6.85	64.63	0.00
12:42:16	17.98	2.27	8.74	34.07	7.41	58.93	0.65
12:42:46	16.33	3.10	6.31	105.37	24.82	75.03	0.68
12:43:16	15.74	3.27	0.00	133.45	35.92	77.41	0.00
12:43:46	15.68	3.30	0.00	141.04	30.31	71.14	0.04
12:44:16	15.64	3.20	0.00	136.19	26.31	70.60	0.00
12:44:46	16.83	2.24	4.51	46.83	20.48	63.60	0.00
12:45:16	17.96	1.82	8.05	20.69	12.61	62.28	0.00
12:45:46	17.77	3.09	13.16	45.87	10.90	56.16	0.00
12:46:16	14.45	5.99	84.62	91.13	44.13	70.99	0.00
12:46:46	13.35	6.54	82.14	142.67	70.84	69.08	0.00
12:47:16	12.99	5.46	61.35	207.65	86.39	76.54	0.00
12:47:46	13.81	4.76	12.97	251.86	75.93	72.21	0.00
12:48:16	14.13	4.40	0.00	270.63	66.56	74.93	0.00
12:48:46	14.44	4.14	0.00	248.05	58.22	71.46	0.00
12:49:15	14.72	3.97	0.00	249.33	53.47	78.65	0.00
12:49:45	14.86	3.85	0.00	253.99	50.51	69.93	0.00
12:50:15	14.88	3.86	0.00	256.53	48.67	70.34	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
12:50:45	14.92	3.80	0.00	252.81	49.11	60.67	0.00
12:51:15	15.01	3.75	0.00	246.52	47.63	66.33	0.00
12:51:45	14.90	3.84	0.00	251.85	47.71	64.66	0.00
12:52:15	14.82	3.83	0.00	250.90	48.20	62.66	0.00
12:52:45	14.87	3.81	0.00	247.07	47.77	63.10	0.00
12:53:15	14.87	3.80	0.00	244.16	47.56	57.71	0.00
12:53:45	14.92	3.76	0.00	240.19	47.16	64.72	0.00
12:54:15	14.94	3.77	0.00	238.01	46.61	58.91	0.00
12:54:45	14.93	3.74	0.00	235.66	46.06	59.92	0.00
12:55:15	15.03	3.67	0.00	232.24	45.58	55.04	0.00
12:55:45	15.18	3.57	0.00	227.80	43.83	65.51	0.00
12:56:15	15.23	3.52	0.00	223.05	42.25	60.54	0.00
12:56:45	15.28	3.53	0.00	220.32	42.00	64.03	0.00
12:57:15	15.21	3.43	0.00	209.92	42.35	58.54	0.00
12:57:45	16.55	2.42	1.13	62.79	36.21	61.74	0.00
12:58:15	17.68	1.93	3.37	22.42	25.04	51.90	0.00
12:58:45	18.06	1.79	2.08	20.02	17.35	49.82	0.00
12:59:15	18.05	2.21	2.58	40.10	15.52	48.81	0.00
12:59:44	16.01	3.44	0.13	187.32	41.50	60.56	0.00
13:00:14	15.08	3.75	0.00	233.87	59.07	57.24	0.00
13:00:44	14.93	3.77	0.00	239.16	53.60	64.04	0.00
13:01:14	14.88	3.78	0.00	238.28	48.65	59.92	0.00
13:01:44	14.94	3.72	0.00	236.29	45.74	62.88	0.00
13:02:14	15.80	2.76	0.00	103.81	40.99	59.38	0.00
13:02:44	17.63	1.94	3.64	26.58	25.77	46.35	0.00
13:03:14	17.97	1.77	3.02	22.88	17.75	51.17	0.00
13:03:44	18.18	2.07	2.44	32.96	14.33	51.82	0.00
13:04:14	16.25	3.30	1.73	159.60	33.55	56.57	0.00
13:04:44	15.42	3.54	0.00	208.35	52.20	58.05	0.00
13:05:14	15.27	3.57	0.00	212.80	47.05	62.49	0.00
13:05:44	15.22	3.57	0.00	213.01	42.56	54.34	0.00
13:06:14	15.53	2.98	0.00	141.34	39.59	62.14	0.00
13:06:44	17.36	2.00	2.83	34.26	28.02	49.45	0.00
13:07:13	18.08	1.69	2.27	23.38	17.83	48.24	0.00
13:07:43	18.39	1.65	1.93	23.43	12.36	45.22	0.00
13:08:13	17.29	2.85	3.44	95.17	20.00	56.13	0.20
13:08:43	15.65	3.46	0.00	182.91	45.22	51.17	0.00
13:09:13	15.26	3.58	0.00	201.89	46.06	59.72	0.00
13:09:43	15.17	3.57	0.00	201.54	41.04	53.38	0.13
13:10:13	16.01	2.57	0.01	82.64	35.18	54.68	0.00
13:10:43	17.74	1.81	3.65	28.53	22.02	53.72	0.00
13:11:13	18.15	1.62	2.13	24.62	13.51	48.88	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-90 TIME	O2 %V	CO2 %V	CO ppmV	NOx ppmV	SO2 ppmV	HCl ppmVw	THC ppmCw
13:11:43	18.36	1.93	3.18	31.25	10.05	44.26	0.00
13:12:13	16.53	3.03	3.58	118.73	26.01	50.29	0.00
13:12:43	15.75	3.31	0.00	162.44	41.05	57.67	0.00
13:13:13	15.56	3.37	0.00	172.94	37.02	54.38	0.00
13:13:43	16.03	2.60	0.18	86.68	30.73	58.90	0.00
13:14:13	17.66	1.81	4.47	27.51	19.28	44.48	0.00
13:14:43	18.30	1.58	2.40	24.17	12.19	48.22	0.00
13:15:13	18.39	1.75	2.55	28.43	8.90	40.66	0.00
13:15:43	16.94	2.92	4.97	76.95	18.33	53.43	0.00
13:16:12	14.41	7.45	46.56	140.86	50.69	59.19	0.00
13:16:42	10.19	8.69	68.15	185.62	112.33	80.59	0.00
13:17:12	13.30	5.08	29.91	118.19	87.99	62.06	0.00
13:17:42	14.88	5.05	5.37	158.13	56.63	62.91	0.00
13:18:12	13.43	5.23	20.57	217.19	60.35	58.58	0.00
13:18:42	13.48	5.02	10.32	237.45	56.63	62.39	0.00
13:19:12	13.73	4.70	2.43	243.84	51.37	58.66	0.00
13:19:42	14.12	4.41	0.00	249.27	46.22	61.50	0.00
13:20:12	14.36	4.25	0.00	255.69	42.31	57.38	0.00
13:20:42	14.48	4.13	0.00	256.06	41.12	59.39	0.00
13:21:12	14.56	4.10	0.00	255.31	40.09	58.82	0.00
13:21:42	14.60	4.06	0.00	255.13	39.72	59.83	0.00
13:22:12	14.68	3.95	0.00	251.22	39.10	54.73	0.00
13:22:42	14.86	3.91	0.00	247.17	37.70	62.55	0.00
13:23:12	14.81	3.89	0.00	244.44	37.48	57.83	0.00
13:23:42	15.47	2.93	0.00	114.55	34.04	55.01	0.00
13:24:12	17.32	2.08	1.75	29.24	22.55	49.89	0.00
13:24:42	17.93	1.86	1.84	21.14	13.80	47.35	0.00
13:25:12	18.13	1.81	2.04	20.59	10.14	47.01	0.00
13:25:42	17.51	2.83	1.76	95.37	14.17	43.93	0.00
13:26:12	15.60	3.62	0.00	203.53	40.10	58.67	0.00
13:26:42	15.18	3.67	0.00	212.19	41.36	50.27	0.00
13:27:12	15.14	3.61	0.00	204.62	37.15	59.22	0.00
13:27:41	16.12	2.53	0.58	64.41	30.26	49.33	0.00
13:28:11	17.61	1.87	2.83	23.69	17.23	51.16	0.00
13:28:41	18.20	1.65	1.81	21.55	9.70	36.44	0.00
13:29:11	18.35	1.67	1.39	22.96	6.37	46.12	0.00
13:29:41	17.43	2.84	3.57	94.32	14.17	45.89	0.00
13:30:11	15.81	3.44	0.00	172.83	37.53	52.81	0.00
13:30:41	15.37	4.08	1.85	143.72	37.08	57.88	0.00
13:31:11	13.96	6.35	91.92	117.92	59.63	59.17	0.00
13:31:41	14.24	4.94	55.12	130.86	64.94	52.64	0.00
13:32:11	15.71	3.65	0.14	127.47	47.32	45.90	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

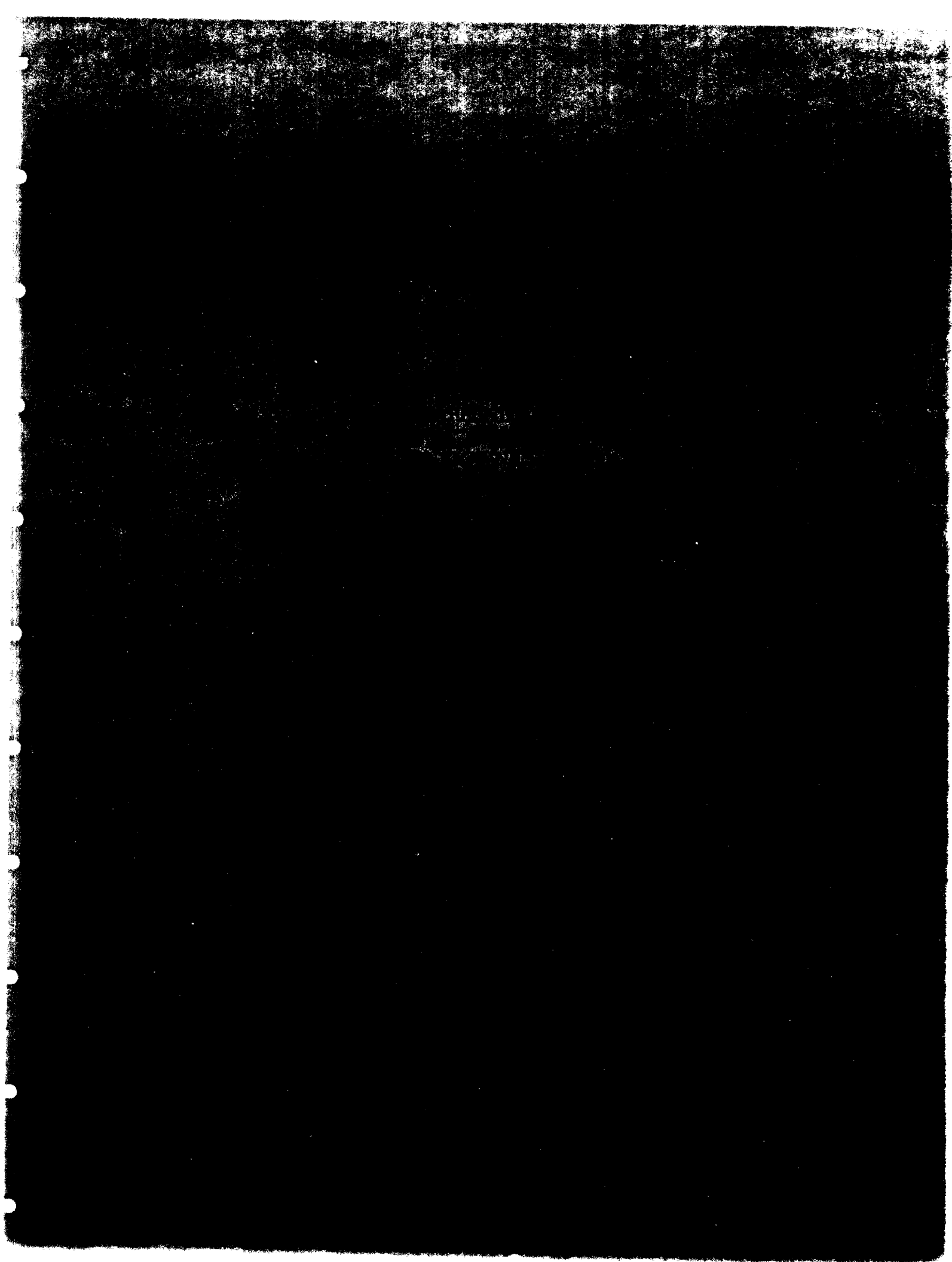
10-02-90	O2	CO2	CO	NOx	SO2	HC1	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:32:41	15.37	4.46	0.00	210.39	44.54	37.92	0.00
13:33:11	14.10	4.47	0.00	252.93	51.94	43.53	0.00
13:33:41	14.41	4.09	0.00	247.94	50.18	56.78	0.00
13:34:11	14.84	3.83	0.00	238.32	46.79	53.28	0.00
13:34:41	14.99	3.76	0.00	235.80	44.76	61.89	0.00
13:35:11	15.01	3.72	0.00	233.66	43.51	52.31	0.00
13:35:41	16.49	2.82	0.00	112.99	39.69	55.86	0.00
13:36:11	17.88	2.01	1.98	27.65	27.17	48.14	0.00
13:36:41	18.11	1.82	1.77	18.65	17.76	52.10	0.00
13:37:11	18.14	1.80	2.49	17.81	14.51	44.30	0.00
13:37:41	17.27	2.43	3.44	54.93	15.12	47.72	0.00
13:38:10	15.49	3.42	0.68	182.78	42.74	52.46	0.00
13:38:40	15.24	3.56	0.00	206.08	47.77	58.53	0.00
13:39:10	16.11	3.01	0.00	138.60	39.11	55.60	0.00
13:39:40	17.69	2.10	2.88	33.26	26.72	51.57	0.00
13:40:10	18.10	1.82	2.17	21.71	16.80	45.16	0.00
13:40:40	18.15	1.78	2.51	21.33	12.66	43.29	0.00
13:41:10	18.10	1.88	2.15	23.48	11.03	42.18	0.00
13:41:40	16.03	3.08	3.91	107.20	22.83	50.97	0.03
13:42:10	15.26	3.54	0.00	174.30	46.68	49.97	0.00
13:42:40	15.72	3.21	0.00	142.14	40.72	50.69	0.00
13:43:10	17.82	1.99	3.26	30.11	24.11	48.23	0.00
13:43:40	18.30	1.67	2.45	22.11	14.39	51.08	0.00
13:44:10	18.49	1.55	1.73	21.88	9.33	43.37	0.00
13:44:40	18.00	1.92	2.58	29.84	8.09	43.01	0.00
13:45:10	15.94	3.22	7.28	94.15	23.75	50.18	0.00
13:45:40	11.66	7.36	44.00	167.29	63.45	59.31	0.00
13:46:10	15.25	4.63	36.14	134.95	71.67	53.76	0.00
13:46:40	17.02	2.95	0.86	76.09	43.17	47.41	0.00
13:47:10	17.56	2.36	5.85	37.94	27.70	44.72	0.00
13:47:40	17.75	2.14	11.08	21.34	20.13	42.82	0.00
13:48:09	17.89	1.95	9.38	16.38	15.51	47.73	0.00
13:48:39	18.10	1.77	4.25	16.21	10.91	37.85	0.00
13:49:09	17.12	2.59	3.99	69.02	11.70	46.66	0.00
13:49:39	15.09	3.69	0.03	207.00	41.76	44.87	0.00
13:50:09	14.99	3.77	0.00	224.36	48.45	51.89	0.00
13:50:39	14.90	3.81	0.00	227.73	43.18	54.59	0.00
13:51:09	15.58	3.29	0.00	171.58	39.00	51.34	0.00
13:51:39	17.60	2.13	2.88	38.52	27.48	44.58	0.00
13:52:09	18.11	1.77	1.96	21.61	15.61	44.35	0.00
13:52:39	18.34	1.65	1.93	21.00	10.50	39.84	0.00
13:53:09	17.79	2.12	2.30	39.57	9.17	41.96	0.00

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
13:53:39	15.59	3.33	1.67	161.24	34.60	46.79	0.00
13:54:09	15.42	3.47	0.00	185.05	46.42	51.37	0.00
13:54:39	15.43	3.36	0.00	177.44	39.38	47.15	0.00
13:55:09	17.34	2.25	0.37	52.26	30.00	46.39	0.00
13:55:39	18.17	1.71	2.16	25.10	16.14	43.03	0.00
13:56:09	18.38	1.58	1.45	25.39	10.06	35.98	0.00
13:56:38	18.12	1.86	1.94	32.76	7.87	45.23	0.00
13:57:08	16.03	3.03	4.51	117.70	24.73	46.79	0.00
13:57:38	15.50	3.38	0.00	161.70	41.05	55.70	0.00
13:58:08	16.02	2.96	0.00	120.86	35.03	50.92	0.00
13:58:38	17.86	1.92	2.49	31.96	21.93	53.66	0.00
13:59:08	18.31	1.61	1.90	25.40	11.56	39.25	0.00
13:59:38	18.42	1.50	1.30	25.62	8.05	40.00	0.00
14:00:08	18.28	1.90	8.46	38.57	7.89	40.45	1.76
14:00:38	12.58	7.20	101.63	128.85	39.31	55.60	0.00
14:01:08	10.67	7.92	128.86	175.46	95.39	49.23	0.00
14:01:38	12.72	5.87	92.56	177.77	73.33	53.71	0.00
14:02:08	13.50	5.05	40.78	220.31	55.32	47.54	0.00
14:02:38	13.93	4.68	11.10	258.05	49.15	56.19	0.00
14:03:08	14.07	4.50	0.00	271.33	47.80	52.11	0.00
14:03:38	14.15	4.41	0.00	277.06	46.50	50.58	0.00
14:04:08	14.33	4.26	0.00	275.86	44.57	50.61	0.00
14:04:38	14.54	4.12	0.00	271.92	43.94	57.62	0.00
14:05:08	14.50	4.09	0.00	268.86	43.97	55.36	0.00
14:05:38	14.67	3.98	0.00	259.54	43.98	56.03	0.00
14:06:07	14.75	3.91	0.00	252.78	42.93	52.02	0.00
14:06:37	15.22	3.50	0.00	198.84	41.66	55.01	0.00
14:07:07	17.42	2.26	0.43	43.74	31.51	48.37	0.00
14:07:37	18.06	1.84	0.42	23.52	19.80	44.92	0.00
14:08:07	18.25	1.70	1.30	24.27	14.86	43.67	0.00
14:08:37	18.26	1.64	0.98	25.26	12.81	43.69	0.00
14:09:07	17.47	2.36	2.23	60.80	14.30	47.81	0.00
14:09:37	15.31	3.54	0.00	197.28	46.96	49.41	0.00
14:10:07	15.03	3.71	0.00	221.42	56.35	56.70	0.00
14:10:37	15.05	3.70	0.00	218.95	48.25	53.45	0.00
14:11:07	15.31	3.39	0.00	181.02	43.61	55.83	0.14
14:11:37	17.63	2.08	1.07	44.18	30.31	47.39	0.00
14:12:07	18.26	1.66	1.27	26.95	17.05	48.67	0.00
14:12:37	18.47	1.53	1.56	26.60	11.20	35.66	0.00
14:13:07	18.19	1.86	1.67	34.84	9.30	52.72	0.00
14:13:37	15.73	3.25	3.04	139.57	30.72	46.75	0.00
14:14:07	15.19	3.58	0.00	184.29	49.55	58.69	0.12

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-90	O2	CO2	CO	NOx	SO2	HCl	THC
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw
14:14:37	15.15	3.58	0.00	191.52	43.76	51.84	0.00
14:15:06	16.36	2.71	0.00	102.34	36.31	54.68	0.00
14:15:36	18.13	1.74	1.72	31.12	21.20	45.70	0.00
14:16:06	18.37	1.56	1.30	27.55	12.28	44.46	0.00
14:16:36	18.45	1.54	1.30	27.83	8.93	43.85	0.00
14:17:06	17.27	2.43	3.61	65.08	13.16	41.33	0.00
14:17:36	15.57	3.36	0.54	160.82	39.99	48.22	0.00
14:18:06	15.25	3.54	0.00	178.39	44.95	53.29	0.00
14:18:36	15.34	3.34	0.00	157.48	38.76	58.63	0.01
14:19:06	17.51	2.12	1.45	44.77	27.01	47.08	0.00
14:19:36	18.22	1.65	1.46	29.34	14.34	47.08	0.00
14:20:06	18.45	1.53	1.54	28.65	9.59	41.02	0.00
14:20:36	18.41	1.68	1.47	31.41	7.36	44.39	0.00
14:21:06	16.17	3.00	7.32	103.84	21.53	41.39	0.00
14:21:36	15.55	3.35	0.00	161.88	43.93	54.08	0.00
AVG	15.72	3.37	30.56	125.40	31.40	134.49	2.52
MIN	9.31	1.50	0.00	13.38	0.00	0.00	0.00
MAX	18.52	9.49	493.31	277.06	152.75	1870.51	82.44



CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HCl	THC	LCTmp	UCTmp
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
14:15:31	17.82	2.05	43.27	20.67	39.42	19.73	0.00	1503.13	1426.05
14:16:01	17.76	3.56	26.64	77.40	43.33	16.65	0.22	1558.98	1469.05
14:16:31	16.22	4.68	55.39	166.78	86.93	30.44	0.00	1545.39	1599.14
14:17:01	15.56	4.40	1.73	233.08	91.42	26.63	0.00	1452.17	1660.24
14:17:31	15.33	4.45	0.00	319.44	99.89	30.12	0.00	1414.65	1710.94
14:18:00	14.74	4.37	0.00	330.14	99.17	28.98	0.00	1411.78	1750.42
14:18:30	14.55	4.23	0.00	330.08	100.48	33.49	0.00	1412.47	1766.99
14:19:00	14.65	4.17	0.00	330.05	98.78	28.78	0.00	1413.18	1768.76
14:19:30	14.70	4.17	0.00	330.02	98.73	33.79	0.00	1420.18	1765.96
14:20:00	14.74	3.79	0.00	318.46	94.75	27.24	0.00	1426.29	1756.47
14:20:30	15.20	3.97	0.00	325.00	89.55	30.06	0.00	1422.37	1743.53
14:21:00	14.91	4.04	0.00	330.00	93.15	32.82	0.00	1427.48	1732.54
14:21:30	14.89	4.02	0.00	329.99	91.86	35.94	0.00	1430.16	1724.75
14:22:00	14.86	3.90	0.00	324.34	91.11	28.49	0.00	1438.27	1714.79
14:22:30	15.04	3.67	0.00	301.22	87.87	35.64	0.00	1441.86	1703.27
14:23:00	15.36	3.48	0.00	282.71	82.95	26.07	0.00	1444.66	1692.05
14:23:30	15.58	3.43	0.00	278.45	80.68	32.41	0.00	1441.95	1683.47
14:24:00	15.69	3.41	0.00	272.99	79.76	27.35	0.00	1447.85	1676.01
14:24:30	15.69	3.54	0.00	282.85	80.69	32.45	0.00	1452.88	1667.76
14:25:00	15.55	3.45	0.00	270.10	81.27	28.80	0.00	1455.22	1660.90
14:25:30	15.66	3.50	0.00	274.64	80.06	30.99	0.00	1455.64	1655.85
14:26:00	15.55	3.60	0.00	284.46	82.72	29.04	0.00	1455.23	1652.43
14:26:30	15.42	3.72	0.00	298.38	85.13	38.82	0.30	1460.72	1651.35
14:27:00	15.23	3.72	0.00	294.21	86.00	28.70	0.00	1462.69	1650.13
14:27:29	15.23	3.65	0.00	291.10	86.13	37.28	0.00	1466.26	1646.04
14:27:59	15.34	3.60	0.00	281.63	84.37	33.36	0.02	1470.57	1644.47
14:28:29	15.38	3.59	0.00	279.95	83.92	31.39	0.00	1474.69	1640.61
14:28:59	15.42	3.66	0.00	280.36	82.92	34.35	0.00	1476.51	1636.10
14:29:29	15.34	3.71	0.00	225.59	83.26	31.81	0.00	1487.45	1638.78
14:29:59	15.29	3.54	0.00	271.02	81.85	34.65	0.00	1509.15	1644.97
14:30:29	15.53	3.59	0.00	267.88	79.14	30.01	0.00	1507.53	1641.17
14:30:59	15.46	3.58	0.00	272.08	81.00	34.55	0.00	1508.99	1640.14
14:31:29	15.49	3.62	0.00	275.19	80.81	29.89	0.00	1512.70	1638.95
14:31:59	15.47	3.51	0.00	262.71	79.79	37.72	0.00	1512.02	1635.76
14:32:29	15.59	3.58	0.00	273.50	78.72	31.62	0.00	1516.16	1638.31
14:32:59	15.49	3.63	0.00	272.83	79.67	35.93	0.00	1518.68	1637.89
14:33:29	15.46	3.42	0.00	247.91	78.44	30.67	65.42	1560.81	1613.21
14:33:59	15.90	2.10	374.17	62.01	69.56	22.74	185.79	1568.08	1480.87
14:34:29	17.62	2.18	379.70	38.90	59.44	6.45	5.63	1525.87	1445.76
14:34:59	17.60	2.26	54.93	31.43	50.70	16.13	1.78	1520.14	1405.63
14:35:29	17.56	2.22	13.24	24.44	42.62	12.87	0.89	1516.50	1377.91
14:35:59	17.62	2.16	8.60	20.24	37.18	22.88	0.32	1510.60	1355.28

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HCl	THC	LCTmp	UCTmp
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
14:36:29	17.69	2.14	6.89	17.85	34.11	18.06	0.23	1505.72	1337.15
14:36:59	17.73	2.07	5.44	16.13	32.45	22.89	0.05	1498.18	1324.60
14:37:28	17.81	2.03	4.15	15.10	31.10	14.36	0.00	1489.23	1313.73
14:37:58	17.87	1.93	3.60	14.23	29.76	24.40	0.00	1484.34	1304.88
14:38:28	18.00	2.02	3.09	14.66	28.97	20.34	0.02	1495.77	1302.38
14:38:58	17.81	3.28	4.62	145.72	55.41	23.03	0.23	1513.35	1364.82
14:39:28	16.07	3.75	0.00	249.19	117.24	28.32	0.00	1527.69	1479.85
14:39:58	15.35	3.81	0.00	263.73	100.26	31.30	0.00	1534.31	1576.39
14:40:28	15.08	3.70	0.00	260.82	82.74	32.92	0.00	1545.36	1632.24
14:40:58	15.28	2.88	56.59	175.24	71.91	24.36	121.87	1584.80	1571.08
14:41:28	16.52	1.91	442.33	37.32	59.68	17.95	33.45	1537.28	1484.77
14:41:58	17.81	1.99	108.91	20.34	42.16	4.04	0.63	1519.69	1424.34
14:42:28	17.87	1.93	5.03	15.52	32.84	13.64	0.00	1497.34	1383.49
14:42:58	18.01	1.84	0.91	14.17	28.68	12.01	0.00	1491.77	1353.24
14:43:28	18.11	1.82	1.12	13.66	26.77	19.75	0.00	1486.72	1329.89
14:43:58	18.17	1.83	0.00	14.01	26.04	10.35	0.00	1480.10	1312.75
14:44:28	18.16	1.81	3.93	14.10	25.62	20.87	0.00	1478.95	1294.91
14:44:58	18.16	2.60	4.25	66.19	32.19	18.19	0.15	1511.39	1323.29
14:45:28	17.00	3.55	0.00	215.47	86.62	29.25	0.00	1529.33	1419.88
14:45:57	15.71	3.66	0.00	244.52	91.30	27.56	0.00	1545.28	1516.00
14:46:27	15.33	3.67	0.00	247.71	76.38	28.33	0.00	1558.29	1576.80
14:46:57	15.32	2.60	0.00	88.20	62.36	21.82	0.00	1548.18	1542.89
14:47:27	16.77	2.06	2.99	23.49	42.89	25.68	0.00	1524.38	1475.36
14:47:57	17.59	1.87	0.17	14.62	31.44	15.14	0.00	1507.20	1420.32
14:48:27	17.92	1.86	0.00	15.00	27.20	26.73	0.00	1494.33	1378.32
14:48:57	18.06	1.81	0.00	14.94	25.15	19.87	0.00	1483.01	1346.99
14:49:27	18.10	1.72	0.00	15.25	23.93	23.00	0.00	1471.37	1323.25
14:49:57	18.21	1.71	0.00	15.85	22.90	7.70	0.00	1461.92	1305.48
14:50:27	18.31	2.07	0.00	27.92	24.00	19.46	0.00	1507.88	1305.72
14:50:57	17.70	3.25	0.00	164.08	64.17	26.30	0.00	1531.23	1372.61
14:51:27	16.13	3.58	0.00	227.80	90.39	27.41	0.00	1550.66	1467.25
14:51:57	15.49	3.40	0.00	194.52	74.87	31.83	0.00	1561.16	1508.10
14:52:27	15.78	2.32	2.52	43.43	54.80	25.69	0.00	1539.60	1466.52
14:52:57	17.14	1.92	1.71	16.51	35.84	22.25	0.00	1511.42	1413.00
14:53:27	17.83	1.81	0.00	15.80	27.24	20.25	0.00	1490.64	1370.39
14:53:57	18.05	1.74	0.00	16.78	23.93	20.77	0.00	1478.88	1338.32
14:54:27	18.17	1.74	0.00	17.44	22.29	18.95	0.00	1469.55	1314.05
14:54:57	18.23	1.71	0.00	18.11	21.67	22.28	0.00	1462.06	1293.50
14:55:27	18.30	2.02	0.00	27.04	21.85	17.91	0.00	1509.33	1293.51
14:55:56	17.80	3.19	0.00	142.65	55.91	21.81	0.00	1539.43	1351.34
14:56:26	16.22	3.50	0.00	204.54	82.05	19.94	0.00	1561.35	1436.39
14:56:56	15.63	2.98	0.00	140.32	65.71	26.29	0.00	1557.88	1463.24

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HCl	THC	LCTmp	UCTmp
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
14:57:26	16.38	2.05	2.52	27.51	44.60	19.74	0.00	1529.10	1423.57
14:57:56	17.56	1.77	0.00	15.71	29.17	20.45	0.00	1505.00	1379.14
14:58:26	18.07	1.71	0.00	17.14	23.19	13.08	0.00	1485.85	1343.39
14:58:56	18.21	1.69	0.00	18.21	21.08	22.04	0.00	1472.37	1316.22
14:59:26	18.33	1.71	0.00	19.24	19.91	12.43	0.00	1463.63	1295.36
14:59:56	18.26	1.67	0.00	19.90	19.23	23.50	0.00	1473.30	1279.57
15:00:26	18.35	2.49	0.00	62.20	25.40	16.59	0.00	1528.99	1298.01
15:00:56	17.13	3.29	0.00	168.01	68.28	27.23	0.00	1553.95	1371.42
15:01:26	16.01	3.35	0.00	185.94	68.82	22.33	0.00	1568.55	1436.71
15:01:56	15.86	2.35	0.83	49.42	50.00	23.01	0.00	1544.05	1420.32
15:02:26	17.13	1.91	2.72	17.44	32.27	21.52	0.00	1514.20	1378.47
15:02:56	17.79	1.83	0.00	16.38	24.22	16.61	0.00	1493.39	1341.84
15:03:26	18.03	1.83	0.00	18.37	21.34	14.79	0.00	1479.41	1314.04
15:03:56	18.10	1.72	0.00	19.30	19.67	15.20	0.00	1470.60	1292.47
15:04:26	18.26	1.66	0.00	19.86	18.01	21.25	0.00	1464.05	1275.29
15:04:55	18.31	1.63	0.00	20.48	17.18	12.70	0.00	1479.54	1262.19
15:05:25	18.40	2.67	1.40	68.78	25.44	20.04	0.00	1529.39	1284.00
15:05:55	16.85	3.58	0.00	180.66	72.52	21.09	0.00	1556.10	1358.24
15:06:25	15.60	3.12	0.00	138.12	68.16	32.38	0.00	1558.86	1400.94
15:06:55	16.14	2.22	4.35	29.25	43.90	17.30	0.00	1533.44	1376.48
15:07:25	17.29	1.98	0.53	16.94	28.44	20.08	0.00	1509.34	1341.12
15:07:55	17.75	1.88	0.00	18.43	22.24	17.27	0.00	1491.40	1311.82
15:08:25	17.95	1.76	0.00	18.87	19.24	19.20	0.00	1479.69	1288.84
15:08:55	18.15	1.68	0.00	35.68	17.50	12.65	0.00	1469.14	1270.53
15:09:25	18.30	1.69	0.00	32.29	16.58	6.29	0.00	1462.50	1258.09
15:09:55	18.31	1.95	0.00	27.09	16.78	0.00	0.00	1515.42	1254.54
15:10:25	17.85	3.15	3.53	115.81	45.73	0.00	0.36	1549.42	1304.52
15:10:55	16.23	3.33	0.00	165.31	69.53	0.00	0.00	1569.00	1373.88
15:11:25	15.86	2.39	1.19	56.06	49.82	5.62	0.00	1547.78	1374.87
15:11:55	17.08	1.91	3.12	17.73	30.12	12.28	0.00	1522.09	1342.82
15:12:25	17.76	1.77	0.00	16.48	21.70	11.47	0.00	1501.57	1312.39
15:12:55	18.07	1.67	0.00	17.42	18.07	15.79	0.00	1488.33	1287.69
15:13:25	18.23	1.66	0.00	18.99	16.49	13.45	0.00	1476.50	1268.52
15:13:55	18.30	1.63	0.00	19.72	15.53	16.02	0.00	1465.93	1253.86
15:14:25	18.37	1.59	0.00	20.33	14.76	14.28	0.00	1468.33	1237.91
15:14:55	18.40	2.28	0.41	43.20	18.32	15.53	0.00	1527.63	1253.16
15:15:25	17.38	3.15	0.67	134.97	56.08	18.90	0.00	1556.51	1317.49
15:15:55	16.16	3.04	0.00	135.62	59.74	27.10	0.00	1560.37	1366.39
15:16:25	16.29	2.07	3.27	30.02	38.34	13.09	0.00	1536.22	1350.74
15:16:55	17.52	1.76	0.00	16.73	23.52	18.24	0.00	1511.63	1319.15
15:17:24	18.04	1.68	0.00	18.02	18.11	9.16	0.00	1492.12	1292.24
15:17:54	18.23	1.64	0.00	20.14	15.66	16.70	0.00	1477.15	1270.54

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HC1	THC	LCTmp	UCTmp
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
15:18:24	18.33	1.59	0.00	20.60	14.55	13.89	0.00	1463.82	1253.73
15:18:54	18.37	1.57	0.00	21.83	13.72	18.82	0.00	1454.46	1239.41
15:19:24	18.42	2.11	0.54	35.61	15.75	9.93	0.00	1523.70	1243.99
15:19:54	17.65	3.01	3.56	113.65	45.74	21.23	0.00	1559.40	1295.94
15:20:24	16.38	2.93	0.00	120.35	53.55	21.66	0.00	1559.54	1340.99
15:20:54	16.45	2.00	0.00	29.18	33.34	22.90	0.00	1530.54	1329.49
15:21:24	17.60	1.71	0.00	19.09	20.65	15.69	0.00	1503.41	1302.25
15:21:54	18.09	1.62	0.00	20.26	16.10	16.49	0.00	1482.02	1278.42
15:22:24	18.37	1.56	0.00	21.90	14.10	13.54	0.00	1464.40	1259.07
15:22:54	18.46	1.49	0.00	22.98	12.86	14.55	0.00	1451.71	1242.96
15:23:24	18.47	1.51	0.00	24.32	12.03	15.58	0.00	1480.48	1229.51
15:23:54	18.52	2.47	4.15	55.91	20.55	15.66	0.00	1541.31	1249.93
15:24:24	17.13	3.10	1.16	126.55	50.94	19.32	0.00	1568.54	1304.88
15:24:54	16.21	2.43	0.00	58.06	42.02	15.40	0.00	1544.52	1318.95
15:25:24	17.08	1.90	0.00	20.74	24.35	19.80	0.00	1513.97	1297.68
15:25:54	17.81	1.72	0.00	20.18	17.06	11.95	0.00	1488.93	1274.07
15:26:24	18.17	1.58	0.00	22.20	14.16	22.74	0.00	1469.76	1254.60
15:26:54	18.42	1.59	0.00	23.85	12.66	8.56	0.00	1455.87	1238.36
15:27:24	18.38	1.55	0.00	24.45	11.90	17.87	0.00	1449.62	1225.87
15:27:53	18.44	2.13	0.86	37.38	13.58	11.33	0.00	1527.49	1229.48
15:28:23	17.57	3.21	8.83	107.73	41.65	27.72	0.00	1564.41	1273.34
15:28:53	16.04	2.94	0.00	97.52	51.24	22.57	0.00	1550.75	1305.42
15:29:23	16.40	1.90	0.02	25.47	29.08	20.45	0.00	1515.81	1292.53
15:29:53	17.73	1.66	0.00	20.94	18.05	15.02	0.00	1489.27	1269.83
15:30:23	18.19	1.57	0.00	21.85	14.35	14.27	0.00	1470.01	1250.57
15:30:53	18.43	1.50	0.00	22.66	12.67	11.94	0.00	1455.37	1233.85
15:31:23	18.50	1.52	0.00	23.79	11.67	12.88	0.00	1459.44	1221.52
15:31:53	18.52	2.19	1.94	38.17	14.16	16.65	0.29	1530.90	1225.74
15:32:23	17.49	3.14	9.91	100.09	40.46	19.69	0.00	1569.57	1270.63
15:32:53	16.15	2.79	0.00	83.18	46.50	26.35	0.00	1550.21	1297.59
15:33:23	16.59	1.99	0.00	25.15	26.89	18.14	0.00	1518.29	1284.39
15:33:53	17.59	1.80	0.00	21.79	17.53	19.48	0.00	1494.06	1263.82
15:34:23	17.99	1.69	0.00	23.10	14.20	13.49	0.00	1474.48	1245.86
15:34:53	18.22	1.63	0.00	24.73	12.54	15.90	0.00	1459.35	1231.24
15:35:23	18.28	1.56	0.00	25.14	11.64	12.70	0.00	1463.84	1218.35
15:35:53	18.44	2.22	1.94	39.39	14.09	17.96	0.00	1538.90	1223.61
15:36:23	17.41	2.95	10.86	89.02	39.25	22.76	0.00	1576.48	1267.05
15:36:52	16.39	2.53	0.00	66.63	42.17	26.09	0.00	1544.41	1285.06
15:37:22	16.92	1.84	0.00	25.00	23.90	17.86	0.00	1507.77	1271.31
15:37:52	17.81	1.64	0.00	23.25	15.27	18.05	0.00	1479.39	1252.06
15:38:22	18.22	1.48	0.00	23.29	12.11	16.23	0.00	1457.46	1234.74
15:38:52	18.45	1.43	0.00	24.23	10.57	18.69	0.00	1443.49	1220.97

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HCl	THC	LCTmp	UCTmp
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
15:39:22	18.59	1.94	0.00	33.05	11.04	17.45	0.00	1523.80	1216.98
15:39:52	17.78	3.06	12.48	82.65	29.83	19.36	0.00	1569.70	1248.87
15:40:22	16.23	2.97	2.08	89.90	43.74	25.84	0.00	1551.58	1277.20
15:40:52	16.34	1.99	0.00	27.34	26.70	18.25	0.00	1513.30	1267.90
15:41:22	17.55	1.62	0.00	22.32	15.89	19.81	0.00	1481.10	1249.11
15:41:52	18.22	1.46	0.00	22.91	11.93	9.74	0.00	1457.54	1231.27
15:42:22	18.52	1.41	0.00	23.74	10.36	17.08	0.00	1445.70	1217.17
15:42:52	18.67	1.80	0.00	30.38	10.51	9.43	0.00	1526.87	1213.86
15:43:22	18.02	2.82	13.24	71.88	26.44	24.45	0.00	1575.91	1243.75
15:43:52	16.56	2.75	3.61	75.28	38.85	21.45	0.00	1551.78	1268.81
15:44:22	16.66	1.84	1.69	26.08	23.36	19.53	0.00	1511.60	1259.41
15:44:52	17.82	1.57	0.00	23.44	14.35	14.32	0.00	1478.59	1240.70
15:45:22	18.32	1.45	0.00	23.46	11.29	15.57	0.00	1458.87	1224.30
15:45:51	18.46	1.43	0.00	24.59	9.88	9.53	0.00	1442.72	1211.16
15:46:21	18.59	1.76	0.00	30.53	9.94	10.88	0.00	1525.86	1205.97
15:46:51	18.08	2.68	14.47	60.84	23.00	17.45	0.00	1577.22	1231.54
15:47:21	16.77	2.67	6.03	70.15	36.15	18.62	0.00	1552.42	1257.95
15:47:51	16.77	1.82	1.77	26.11	22.42	21.57	0.00	1509.42	1250.37
15:48:21	17.84	1.55	0.00	23.33	13.46	14.09	0.00	1477.36	1233.82
15:48:51	18.36	1.48	0.00	25.00	10.60	18.59	0.00	1456.56	1218.63
15:49:21	18.29	1.48	0.00	26.52	9.42	11.07	0.00	1442.71	1206.59
15:49:51	18.56	1.98	0.00	34.04	9.93	16.13	0.00	1534.28	1204.70
15:50:21	17.76	2.96	16.25	70.51	24.41	18.42	0.00	1579.34	1232.05
15:50:51	16.34	2.63	6.52	62.81	34.77	26.42	0.00	1543.71	1253.64
15:51:21	16.76	1.81	0.00	26.64	20.22	11.96	0.00	1501.39	1244.91
15:51:51	17.85	1.57	0.00	24.97	12.46	15.92	0.00	1468.94	1229.23
15:52:21	18.31	1.41	0.00	24.05	9.63	10.23	0.00	1448.05	1214.53
15:52:51	18.62	1.41	0.00	25.35	8.40	11.89	0.00	1469.61	1202.06
15:53:21	18.65	2.18	4.04	37.37	11.45	12.65	0.00	1559.57	1209.55
15:53:51	17.45	2.71	17.78	64.63	26.36	17.88	0.00	1578.75	1237.30
15:54:21	16.69	2.10	6.08	35.54	26.24	19.98	0.00	1525.71	1242.80
15:54:50	17.51	1.57	0.00	24.41	14.36	15.78	0.00	1484.03	1228.85
15:55:20	18.25	1.39	0.00	23.95	9.93	18.56	0.00	1456.37	1213.58
15:55:50	18.53	1.35	0.00	24.33	8.27	10.60	0.00	1435.59	1201.24
15:56:20	18.68	1.58	0.00	28.74	7.69	18.03	0.00	1523.93	1195.50
15:56:50	18.32	2.57	15.76	48.12	16.69	13.57	0.00	1581.25	1214.69
15:57:20	16.90	2.53	15.21	57.02	27.77	25.64	0.00	1552.15	1238.72
15:57:50	16.93	1.68	2.41	25.27	18.31	18.11	0.00	1502.54	1232.81
15:58:20	18.01	1.43	0.00	23.40	10.64	19.28	0.00	1468.70	1217.71
15:58:50	18.49	1.36	0.00	24.20	8.11	13.42	0.00	1447.82	1204.70
15:59:20	18.68	1.34	0.00	25.06	7.10	16.14	0.00	1470.56	1188.49
15:59:50	18.68	2.14	3.77	35.32	9.74	10.38	0.00	1559.79	1199.25

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HCl	THC	LCTmp	UCTmp
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
16:00:20	17.46	2.87	22.97	62.26	22.76	27.01	0.00	1573.88	1224.91
16:00:50	16.42	2.09	10.44	32.90	22.36	22.63	0.00	1521.34	1229.92
16:01:20	17.47	1.59	0.00	25.15	12.20	17.69	0.00	1483.10	1217.03
16:01:50	18.18	1.45	0.00	25.17	8.51	13.30	0.00	1457.60	1202.96
16:02:20	18.43	1.41	0.00	25.59	7.04	7.51	0.00	1442.68	1190.86
16:02:50	18.60	1.70	0.00	30.87	6.82	15.02	0.00	1528.10	1184.93
16:03:20	18.10	2.76	20.77	47.10	15.03	16.28	0.00	1583.43	1203.33
16:03:50	16.58	2.65	23.14	52.21	24.94	25.65	0.00	1545.96	1223.39
16:04:19	16.72	1.75	3.53	25.99	15.94	19.22	0.00	1498.73	1216.78
16:04:49	17.92	1.48	0.00	25.22	9.43	14.68	0.00	1467.84	1203.27
16:05:19	18.38	1.41	0.00	25.89	7.37	14.83	0.00	1446.37	1191.56
16:05:49	18.47	1.47	0.00	28.45	6.35	19.66	0.00	1492.81	1183.51
16:06:19	18.49	2.50	9.38	38.10	10.62	14.60	0.00	1574.47	1192.99
16:06:49	16.98	2.70	31.04	49.40	21.12	24.22	0.00	1565.27	1214.91
16:07:19	16.67	1.81	9.98	26.33	17.67	14.49	0.00	1509.27	1215.16
16:07:49	17.83	1.42	0.00	23.65	9.94	14.60	0.00	1471.58	1202.77
16:08:19	18.49	1.29	0.00	23.67	7.25	6.34	0.00	1447.34	1191.42
16:08:49	18.66	1.29	0.00	24.64	6.01	16.36	0.00	1480.48	1182.22
16:09:19	18.76	2.17	4.86	32.44	8.79	9.63	0.00	1570.33	1189.31
16:09:49	17.46	2.62	26.86	49.81	18.38	25.79	0.00	1572.41	1210.76
16:10:19	16.78	1.84	11.22	27.00	18.30	16.34	0.00	1514.74	1214.87
16:10:49	17.83	1.48	0.00	24.47	10.10	18.35	0.00	1478.33	1202.86
16:11:19	18.39	1.39	0.00	25.51	7.28	10.81	0.00	1453.28	1191.22
16:11:49	18.59	1.30	0.00	24.46	5.95	14.82	0.00	1464.48	1181.54
16:12:19	18.78	1.97	1.45	30.89	7.25	7.59	0.00	1558.32	1182.33
16:12:49	17.70	2.62	27.63	43.53	15.91	19.42	0.36	1580.27	1202.99
16:13:19	16.78	1.95	21.46	28.12	17.73	19.56	0.00	1520.22	1209.98
16:13:49	17.70	1.49	0.00	24.12	10.27	14.91	0.00	1479.56	1199.94
16:14:18	18.39	1.36	0.00	24.45	7.08	11.72	0.00	1454.71	1188.83
16:14:48	18.58	1.34	0.00	24.88	5.84	10.34	0.00	1454.72	1179.11
16:15:18	18.67	2.01	0.15	32.35	6.40	12.27	0.00	1549.17	1179.55
16:15:48	17.64	2.76	25.84	43.68	13.83	11.83	0.00	1581.79	1197.73
16:16:18	16.54	2.27	26.75	34.25	18.17	19.40	0.00	1529.32	1207.35
16:16:48	17.24	1.60	2.54	24.89	10.84	14.80	0.00	1486.13	1198.51
16:17:18	18.16	1.43	0.00	25.66	7.36	17.95	0.00	1457.00	1186.96
16:17:48	18.52	1.36	0.00	25.61	5.85	7.95	0.00	1451.17	1178.60
16:18:18	18.68	1.94	0.00	31.80	6.17	19.35	0.00	1547.08	1177.97
16:18:48	17.75	2.81	23.50	39.68	12.90	11.37	0.00	1580.88	1195.19
16:19:18	16.45	2.37	25.85	35.59	17.88	21.54	0.00	1531.21	1209.12
16:19:48	17.09	1.61	2.66	24.60	11.38	11.07	0.00	1487.34	1201.23
16:20:18	18.12	1.42	0.00	25.34	7.52	5.80	0.00	1459.27	1189.38
16:20:48	18.51	1.35	0.00	25.36	5.86	12.39	0.00	1451.09	1180.08

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HCl	THC	LCTmp	UCTmp
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
16:21:18	18.68	1.82	0.00	31.18	6.00	13.26	0.00	1542.89	1178.29
16:21:48	17.89	2.65	21.36	36.24	12.22	10.50	0.00	1580.99	1192.86
16:22:18	16.70	2.39	28.94	36.27	18.03	19.68	0.00	1533.85	1205.85
16:22:48	17.07	1.63	4.52	24.58	11.82	18.19	0.00	1491.19	1198.19
16:23:18	18.10	1.44	0.00	25.31	7.62	12.16	0.00	1462.32	1186.05
16:23:48	18.48	1.35	0.00	25.03	5.97	17.47	0.00	1448.76	1173.41
16:24:17	18.67	1.75	0.00	31.02	5.85	10.00	0.00	1535.48	1173.57
16:24:47	18.04	2.65	16.95	34.47	11.41	15.83	0.14	1582.68	1187.05
16:25:17	16.68	2.52	26.94	38.58	18.09	23.10	0.00	1538.95	1204.39
16:25:47	16.86	1.67	5.41	24.90	12.72	23.20	0.00	1493.66	1199.14
16:26:17	18.01	1.43	0.00	24.88	7.83	14.81	0.00	1464.56	1186.19
16:26:47	18.44	1.34	0.00	24.66	6.00	17.97	0.00	1448.93	1172.50
16:27:17	18.63	1.68	0.00	30.54	5.78	10.04	0.00	1535.81	1171.44
16:27:47	18.05	2.57	16.93	31.15	10.82	20.99	0.61	1587.36	1184.69
16:28:17	16.80	2.41	31.39	34.13	16.62	17.52	0.00	1541.67	1198.77
16:28:47	17.03	1.63	7.12	24.27	11.57	19.77	0.00	1495.34	1193.37
16:29:17	18.06	1.41	0.00	25.03	7.40	9.23	0.00	1464.73	1181.39
16:29:47	18.48	1.33	0.00	24.91	5.89	15.29	0.00	1444.61	1171.42
16:30:17	18.71	1.68	0.00	30.99	5.65	10.40	0.00	1535.02	1169.05
16:30:47	18.10	2.69	17.97	33.77	10.82	20.10	0.00	1586.46	1183.52
16:31:17	16.64	2.51	32.21	38.30	17.35	20.35	0.00	1538.52	1197.73
16:31:47	16.86	1.64	6.09	24.84	12.50	17.58	0.00	1492.74	1192.92
16:32:17	18.07	1.35	0.00	24.13	7.44	13.67	0.00	1463.95	1181.83
16:32:47	18.56	1.31	0.00	24.65	5.71	10.94	0.00	1446.72	1170.98
16:33:17	18.71	1.66	0.00	30.16	5.60	13.13	0.00	1540.04	1168.64
16:33:47	18.17	2.41	18.65	29.94	10.61	15.92	0.00	1588.07	1181.66
16:34:17	17.01	2.21	31.28	31.08	16.26	16.69	0.00	1537.46	1196.62
16:34:46	17.26	1.52	5.52	22.62	11.21	13.59	0.00	1495.67	1190.61
16:35:16	18.26	1.35	0.00	24.03	6.83	12.22	0.00	1465.20	1179.09
16:35:46	18.63	1.32	0.00	25.27	5.47	9.70	0.00	1448.78	1169.47
16:36:16	18.69	1.64	0.00	30.40	5.01	12.99	0.00	1533.97	1165.95
16:36:46	18.17	2.64	16.29	30.58	9.91	8.68	0.00	1588.82	1179.28
16:37:16	16.71	2.45	34.63	33.42	14.98	17.52	0.00	1541.53	1192.87
16:37:46	16.99	1.53	6.93	22.86	10.53	12.33	0.00	1494.36	1187.22
16:38:16	18.23	1.32	0.00	23.56	6.68	14.48	0.00	1463.86	1176.24
16:38:46	18.60	1.28	0.00	24.20	5.13	3.47	0.00	1448.37	1163.98
16:39:16	18.76	1.73	0.00	31.52	5.24	15.95	0.00	1538.94	1165.34
16:39:46	18.06	2.64	17.36	28.25	9.88	11.88	0.00	1588.86	1179.49
16:40:16	16.70	2.37	32.61	30.45	14.03	20.27	0.00	1537.06	1191.01
16:40:46	17.08	1.55	5.77	22.90	9.85	14.65	0.00	1492.17	1184.73
16:41:16	18.22	1.29	0.00	22.70	6.46	9.00	0.00	1461.26	1173.73
16:41:46	18.73	1.23	0.00	22.92	5.01	6.61	0.00	1454.15	1164.69

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HC1	THC	LCTmp	UCTmp
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
16:42:16	18.83	1.75	0.00	30.59	5.32	9.07	0.00	1548.64	1164.68
16:42:46	18.00	2.49	17.87	26.81	9.84	15.59	0.00	1590.34	1181.27
16:43:16	16.93	2.22	27.34	28.30	14.11	13.47	0.00	1531.87	1189.60
16:43:46	17.29	1.52	3.53	23.21	9.39	14.63	0.00	1488.89	1182.49
16:44:16	18.29	1.28	0.00	22.60	6.06	7.29	0.00	1459.33	1171.23
16:44:46	18.71	1.22	0.00	22.60	4.83	10.09	0.00	1458.59	1153.30
16:45:16	18.90	1.89	0.00	29.35	5.60	8.29	0.00	1559.61	1164.05
16:45:46	17.83	2.63	22.01	27.75	10.53	16.14	0.00	1584.68	1180.96
16:46:15	16.71	2.09	27.16	25.27	13.04	9.99	0.00	1523.53	1187.94
16:46:45	17.50	1.41	1.87	22.10	8.06	13.27	0.00	1481.89	1179.25
16:47:15	18.45	1.24	0.00	22.18	5.43	7.82	0.00	1453.69	1169.14
16:47:45	18.83	1.22	0.00	22.82	4.51	10.89	0.00	1471.23	1162.01
16:48:15	18.89	2.01	0.17	28.41	5.87	6.48	0.00	1571.03	1165.84
16:48:45	17.64	2.47	23.37	24.93	10.33	16.67	0.00	1580.82	1182.20
16:49:15	16.94	1.80	20.95	21.05	11.50	8.93	0.00	1518.05	1187.76
16:49:45	17.92	1.33	0.00	21.19	6.86	13.41	0.00	1476.43	1176.87
16:50:15	18.61	1.24	0.00	22.25	4.97	8.33	0.00	1449.31	1167.50
16:50:45	18.75	1.26	0.00	23.60	4.09	8.58	0.00	1483.68	1164.25
16:51:15	18.83	1.99	1.01	27.15	5.66	10.11	0.00	1575.38	1168.46
16:51:45	17.64	2.38	22.77	23.20	9.75	15.09	0.00	1575.11	1182.76
16:52:15	17.06	1.72	18.36	19.87	10.33	13.23	0.00	1513.04	1185.68
16:52:45	17.99	1.32	0.00	21.16	6.32	16.17	0.00	1474.00	1175.51
16:53:15	18.59	1.22	0.00	21.95	4.51	7.74	0.00	1446.16	1166.93
16:53:45	18.79	1.26	0.00	23.66	3.85	6.15	0.00	1484.29	1160.39
16:54:15	18.75	2.12	2.56	25.63	6.19	12.11	0.00	1583.54	1168.82
16:54:45	17.56	2.40	23.95	24.00	9.92	14.40	0.00	1566.46	1181.66
16:55:15	17.03	1.69	16.19	20.35	9.86	19.66	0.00	1507.69	1181.30
16:55:45	18.00	1.33	0.00	21.99	5.77	12.18	0.00	1471.07	1172.55
16:56:15	18.58	1.23	0.00	22.30	4.38	15.69	0.00	1445.67	1164.11
16:56:44	18.76	1.29	0.00	24.28	3.45	2.72	0.00	1485.30	1157.91
16:57:14	18.73	2.24	2.92	28.45	5.57	13.04	0.00	1579.69	1164.96
16:57:44	17.32	2.54	23.40	17.35	8.68	15.33	0.00	1569.67	1180.86
16:58:14	16.83	1.75	14.73	19.36	7.90	16.24	0.00	1507.87	1180.98
16:58:44	17.89	1.39	0.00	22.73	5.17	6.26	0.00	1469.94	1171.48
16:59:14	18.51	1.30	0.00	23.56	3.99	13.33	0.00	1444.26	1162.10
16:59:44	18.68	1.43	0.00	27.08	3.40	7.16	0.00	1498.27	1156.70
17:00:14	18.48	2.40	4.68	27.85	5.88	17.33	0.00	1584.39	1167.41
17:00:44	17.06	2.64	24.99	22.52	9.36	15.40	0.00	1558.86	1182.49
17:01:14	16.68	1.76	12.85	21.19	8.23	17.23	0.00	1503.01	1182.63
17:01:44	17.87	1.39	0.00	23.05	5.03	10.42	0.00	1466.15	1172.32
17:02:14	18.47	1.24	0.00	22.34	3.75	12.91	0.00	1441.49	1162.54
17:02:44	18.83	1.48	0.00	27.73	3.56	9.39	0.00	1518.97	1159.98

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 06 09/25/90

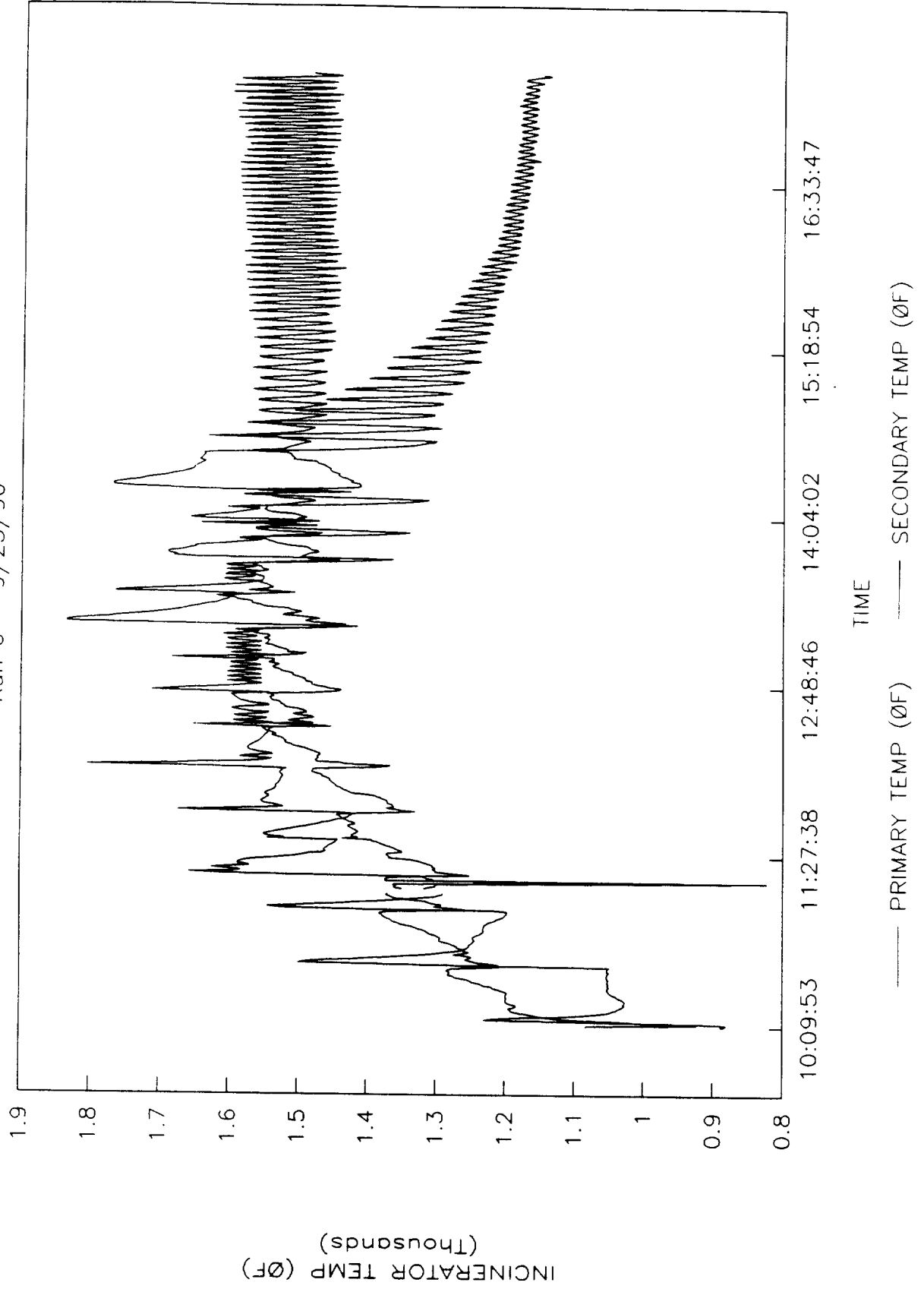
09-25-199	O2	CO2	CO	NOx	SO2	HCl	THC	LCTmp	UCTmp
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
17:03:14	18.44	2.44	7.15	24.47	6.45	12.52	0.00	1593.39	1170.02
17:03:44	17.01	2.48	25.82	18.04	9.00	16.74	0.00	1546.42	1181.35
17:04:14	16.91	1.64	9.94	21.06	6.91	12.34	0.00	1494.66	1179.38
17:04:44	18.09	1.36	0.00	23.09	4.46	10.06	0.00	1460.11	1168.78
17:05:14	18.37	1.29	0.00	23.04	3.56	5.15	0.00	1448.21	1161.97
17:05:44	18.75	1.74	0.00	30.55	3.58	10.35	0.00	1538.45	1158.85
17:06:14	18.01	2.61	11.24	21.23	6.89	11.71	0.00	1594.15	1170.79
17:06:43	16.72	2.35	25.18	17.79	8.66	16.53	0.00	1534.61	1181.12
17:07:13	17.09	1.53	4.27	20.92	5.96	6.89	0.00	1485.93	1176.58
17:07:43	18.23	1.33	0.00	22.80	3.99	14.83	0.00	1454.05	1167.66
17:08:13	18.64	1.30	0.00	23.43	3.16	5.17	0.00	1459.69	1157.30
17:08:43	18.76	2.02	0.00	33.06	4.05	14.49	0.00	1556.47	1162.23
17:09:13	17.59	2.69	12.56	19.84	7.23	10.29	0.00	1588.83	1177.93
17:09:43	16.55	2.09	19.54	17.08	7.82	19.21	0.00	1522.05	1184.96
17:10:13	17.45	1.45	0.00	21.32	4.96	8.38	0.00	1476.60	1176.11
17:10:43	18.33	1.23	0.00	21.41	3.55	5.43	0.00	1446.66	1166.17
17:11:13	18.75	1.26	0.00	23.36	3.04	2.69	0.00	1489.86	1159.72
17:11:43	17.85	2.05	1.65	27.39	4.98	8.63	0.00	1583.14	1168.08
17:12:13	16.81	2.37	16.05	14.23	7.54	10.98	0.00	1577.01	1180.34
17:12:43	18.19	1.71	12.77	17.19	6.80	12.47	0.00	1506.82	1177.89
17:13:13	18.75	1.32	0.00	21.28	4.39	4.77	0.00	1465.55	1167.71
17:13:43	18.95	1.20	0.00	21.32	3.40	8.49	0.00	1441.91	1158.16
17:14:13	18.42	1.51	0.00	28.08	3.30	4.92	0.00	1532.57	1156.86
17:14:43	16.90	2.26	5.21	24.53	5.96	7.62	0.00	1600.88	1168.62
17:15:13	16.93	2.29	19.30	14.38	7.86	11.35	0.00	1553.66	1177.43
17:15:43	18.49	1.49	7.50	17.98	6.27	2.45	0.00	1492.54	1171.03
17:16:13	18.94	1.22	0.00	20.41	3.79	6.94	0.00	1457.16	1163.15
17:16:43	18.95	1.21	0.00	21.98	3.02	0.00	0.00	1452.07	1156.76
17:17:13	18.18	1.67	0.00	28.63	3.43	0.37	0.00	1549.14	1157.66
17:17:43	16.86	2.35	9.88	18.87	6.68	0.00	0.00	1599.54	1171.01
17:18:13	17.33	2.06	21.40	14.46	8.05	0.90	0.00	1532.64	1176.45
17:18:42	18.67	1.36	1.58	18.71	5.21	0.00	0.00	1480.23	1168.00
17:19:12	18.97	1.17	0.00	20.26	3.42	3.23	0.00	1449.50	1160.01
17:19:42	19.07	1.16	0.00	21.28	2.64	0.00	0.00	1467.21	1149.57
17:20:12	17.86	1.89	0.02	29.15	3.88	0.41	0.00	1568.87	1159.58
17:20:42	16.83	2.39	13.59	17.27	6.78	0.00	0.00	1588.99	1174.43
17:21:12	17.59	1.83	19.06	15.40	7.43	0.00	0.00	1514.86	1173.74
17:21:42	18.70	1.31	0.00	19.86	4.62	0.00	0.00	1470.52	1165.45
17:22:12	18.99	1.17	0.00	20.71	3.03	0.00	0.00	1442.11	1156.85
17:22:42	18.79	1.30	0.00	25.00	2.63	0.00	0.00	1470.72	1138.39
17:23:12	17.78	1.77	1.26	27.66	4.11	0.00	0.42	1484.00	1149.59
17:23:42	19.38	0.88	0.00	18.50	4.71	0.00	0.00	1432.16	1127.34

CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 06 09/25/90

09-25-199	O2	CO2	CO	NOx	SO2	HC1	THC	LCTmp	UCTmp
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
17:24:12	20.15	0.57	0.00	18.28	4.03	0.00	0.00	1404.79	1106.59
17:24:42	20.26	0.51	0.00	18.60	3.71	0.00	0.00	1384.22	1086.51
17:25:12	20.31	0.50	0.00	18.30	3.64	0.00	0.00	1369.29	1069.63
17:25:42	20.32	0.49	0.00	18.31	3.62	0.00	0.00	1355.47	1053.94
17:26:12	20.35	0.47	0.00	17.50	3.32	0.00	0.00	1344.53	1041.36
17:26:42	20.34	0.47	0.00	17.18	3.03	0.00	0.00	1334.67	1029.82
17:27:12	20.36	0.45	0.00	16.89	2.95	0.00	0.00	1325.80	1019.24
17:27:41	20.36	0.45	0.00	16.93	2.76	0.00	0.00	1318.54	1010.62
17:28:11	20.38	0.44	0.00	16.62	2.45	0.00	0.00	1309.95	1001.34

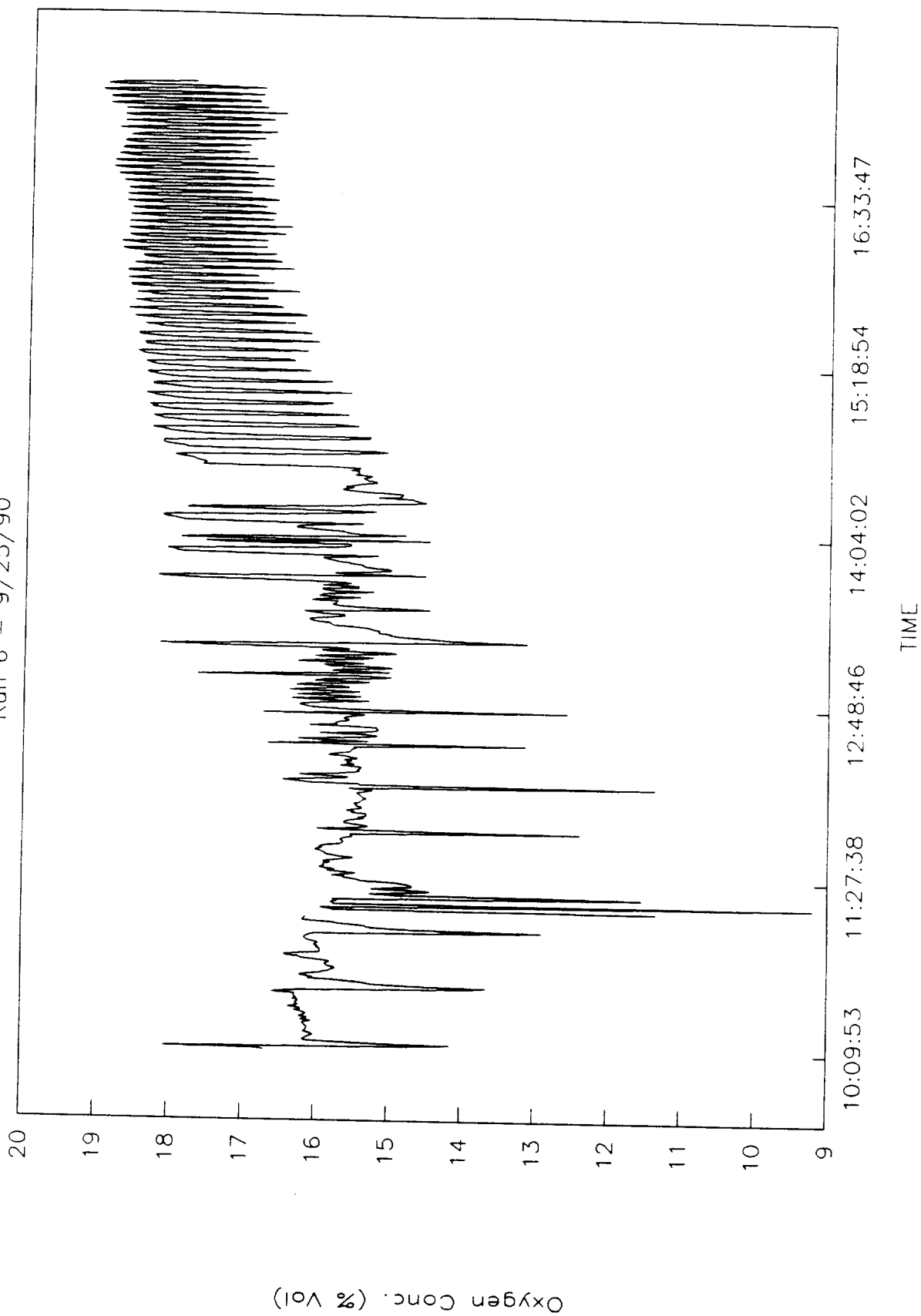
INCINERATOR TEMPERATURES

Run 6 - 9/25/90



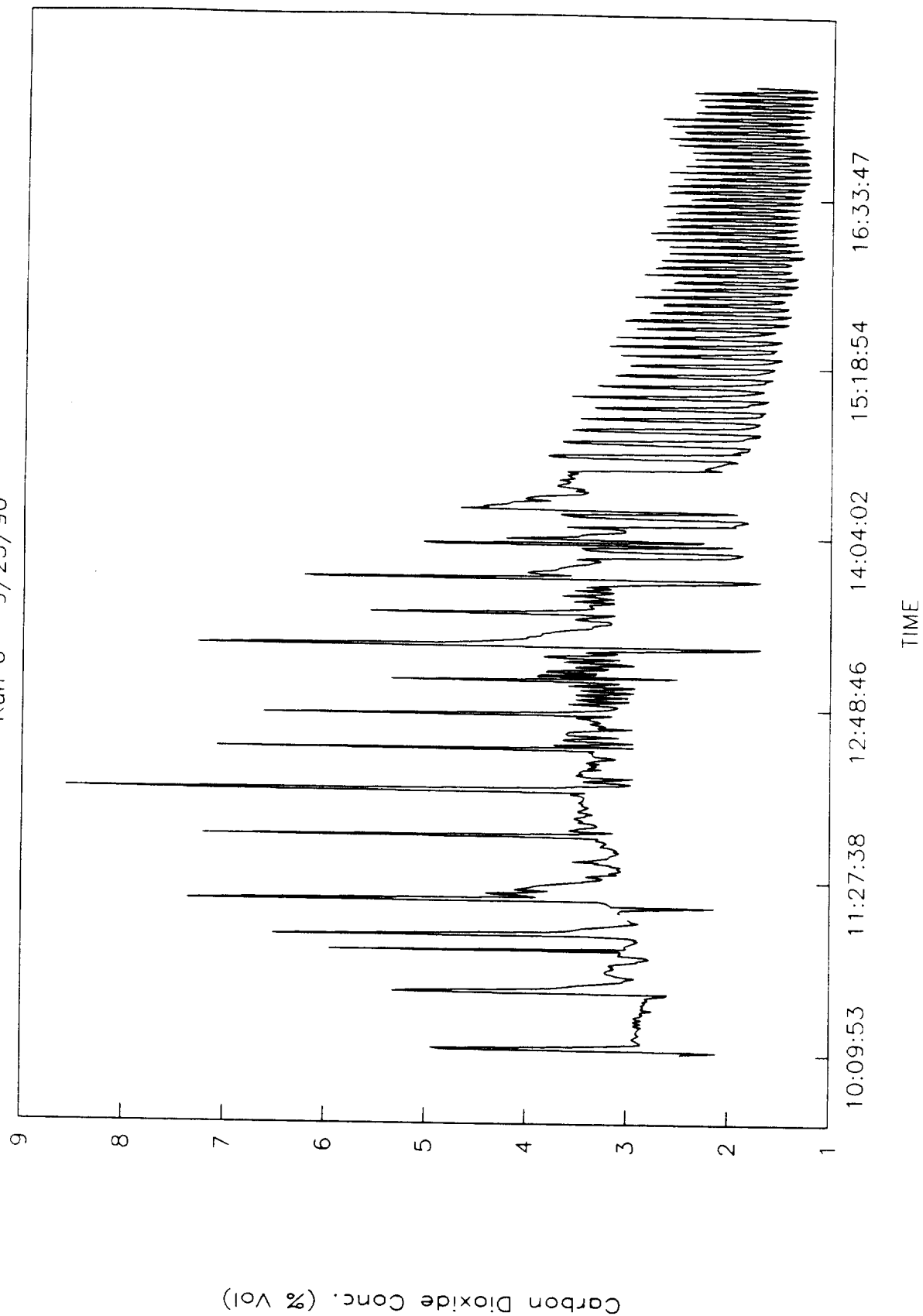
OXYGEN CONCENTRATION

Run 6 -- 9/25/90



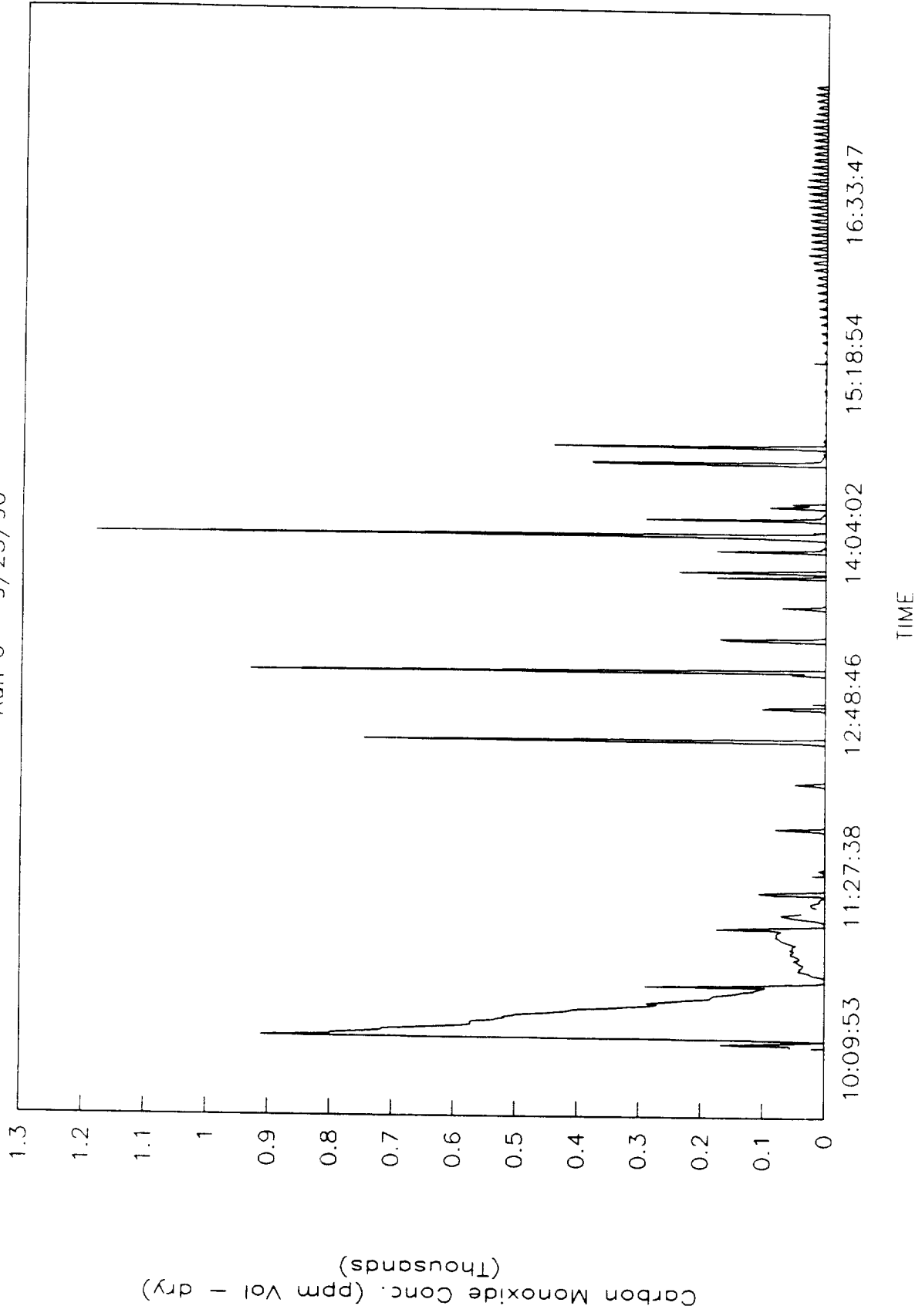
CARBON DIOXIDE CONCENTRATION

Run 6 - 9/25/90



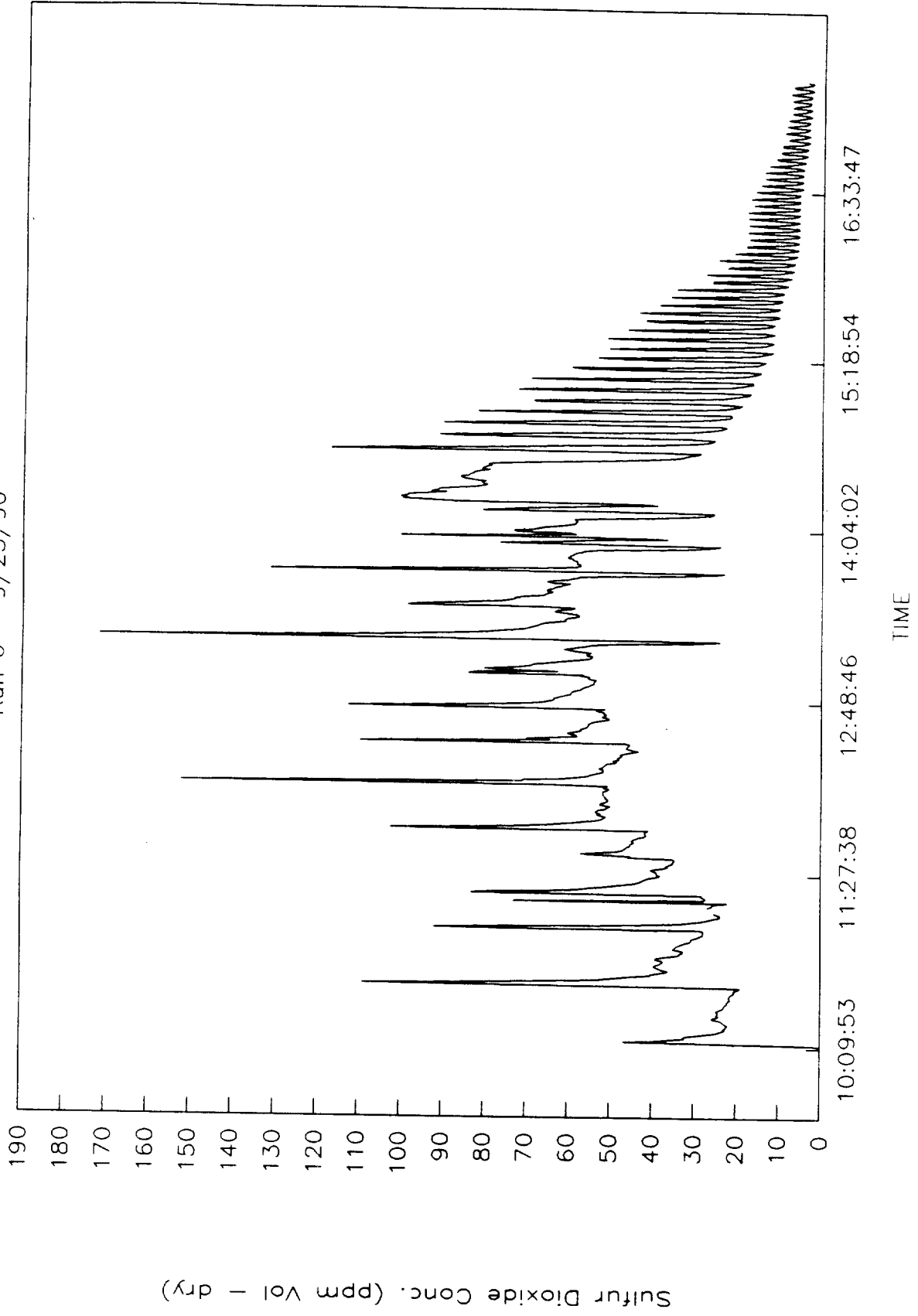
CARBON MONOXIDE CONCENTRATION

Run 6 - 9/25/90



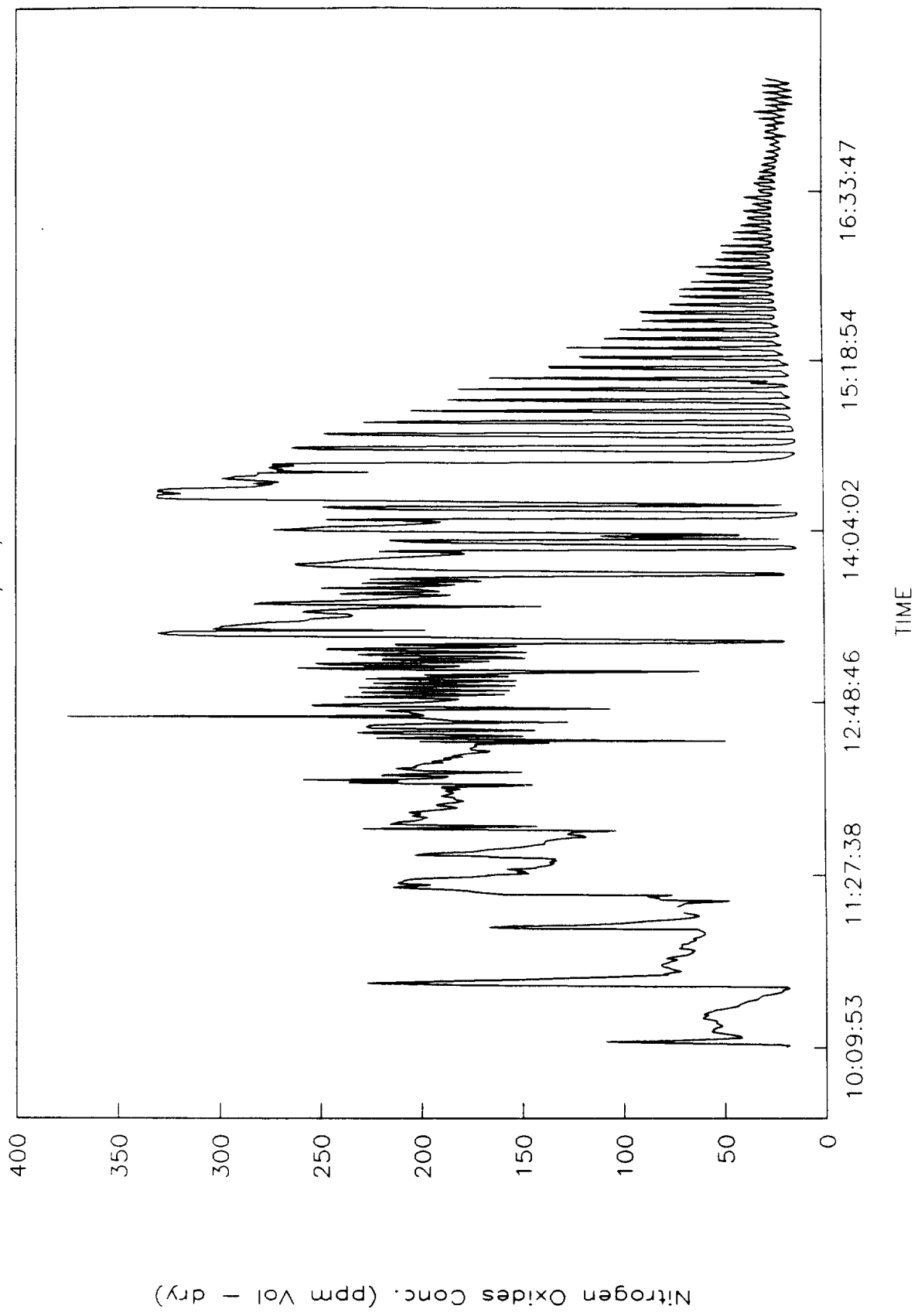
SULFUR DIOXIDE CONCENTRATION

Run 6 - 9/25/90



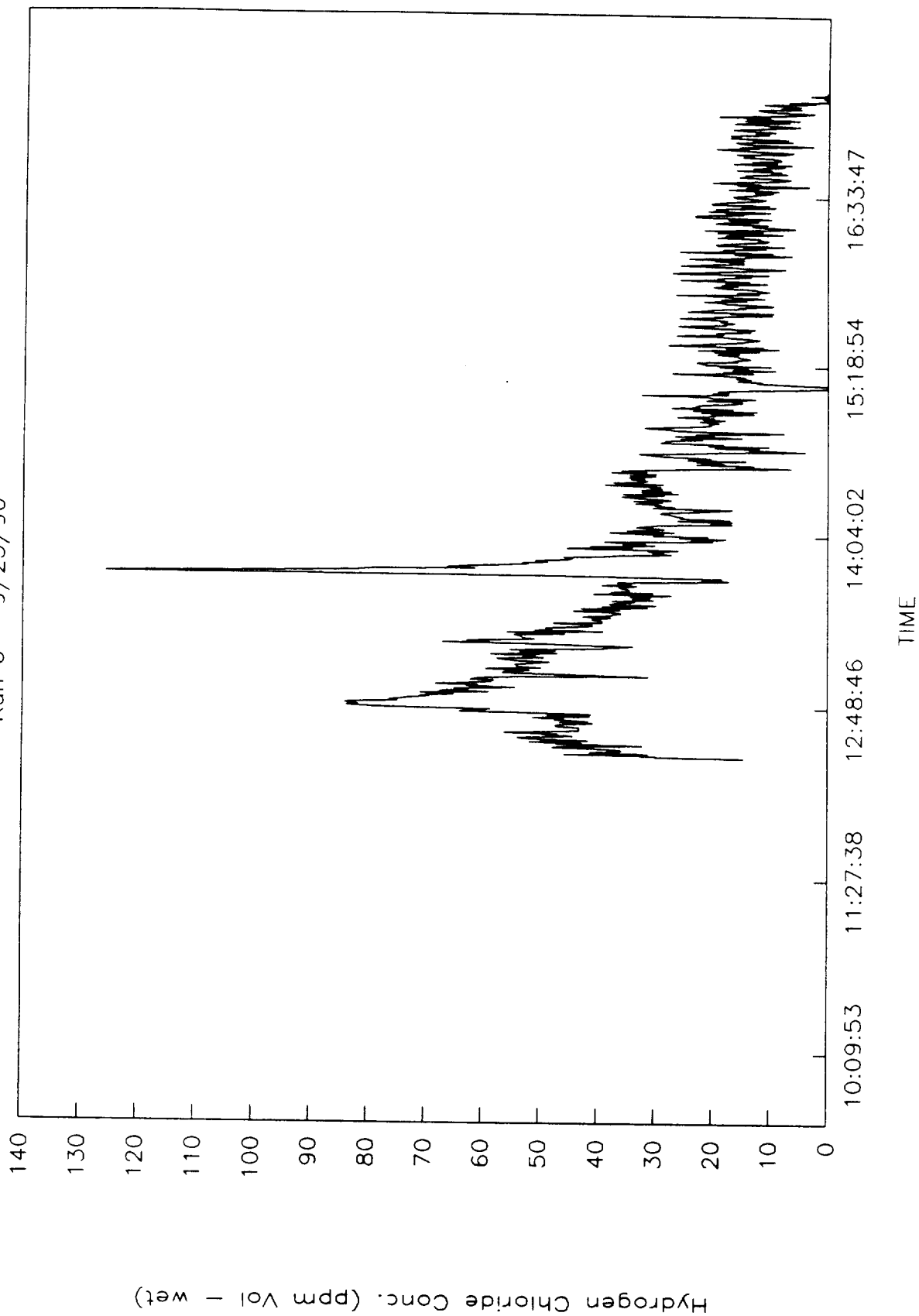
NITROGEN OXIDES CONCENTRATION

Run 6 - 9/25/90



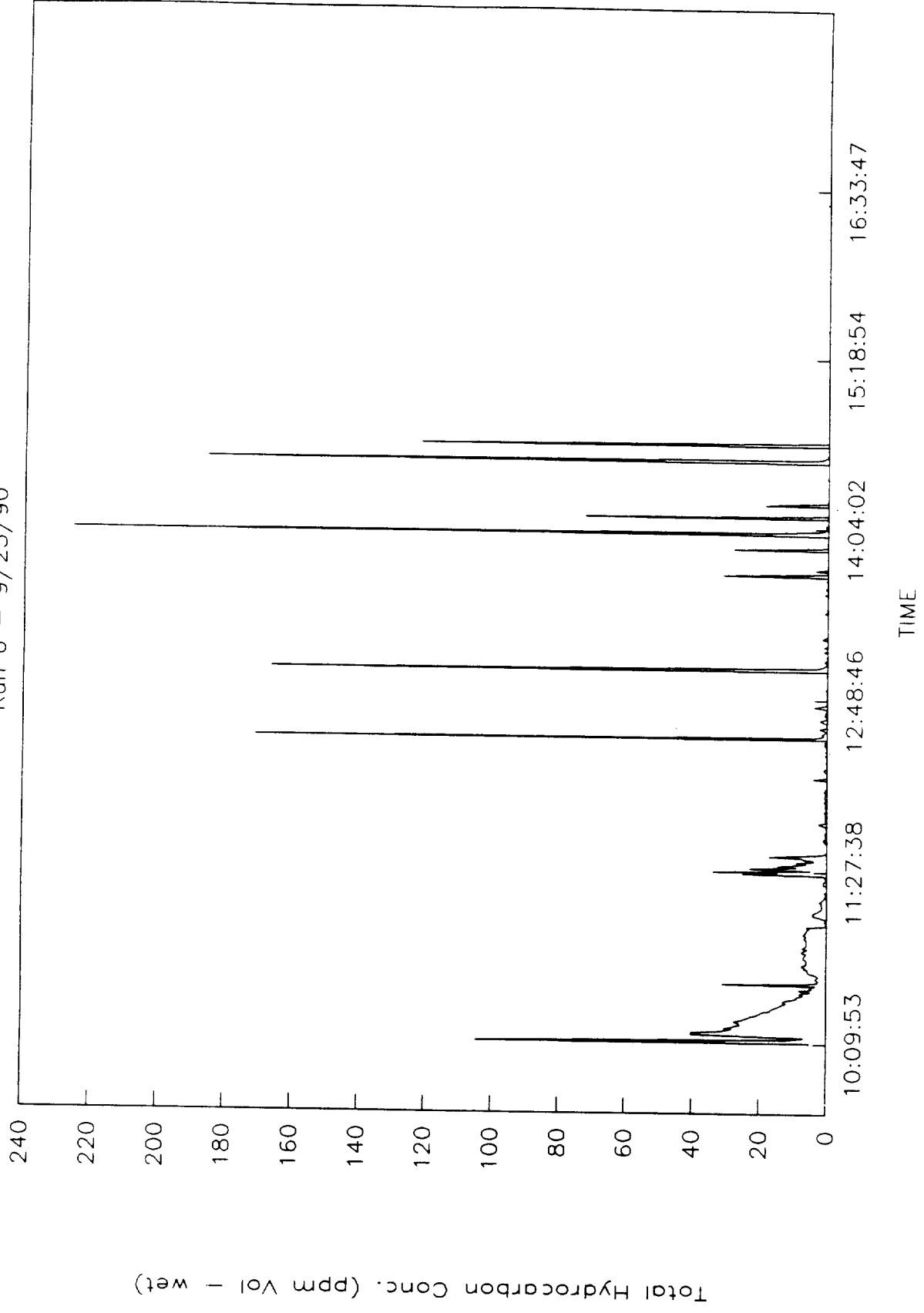
HYDROGEN CHLORIDE CONCENTRATION

Run 6 - 9/25/90



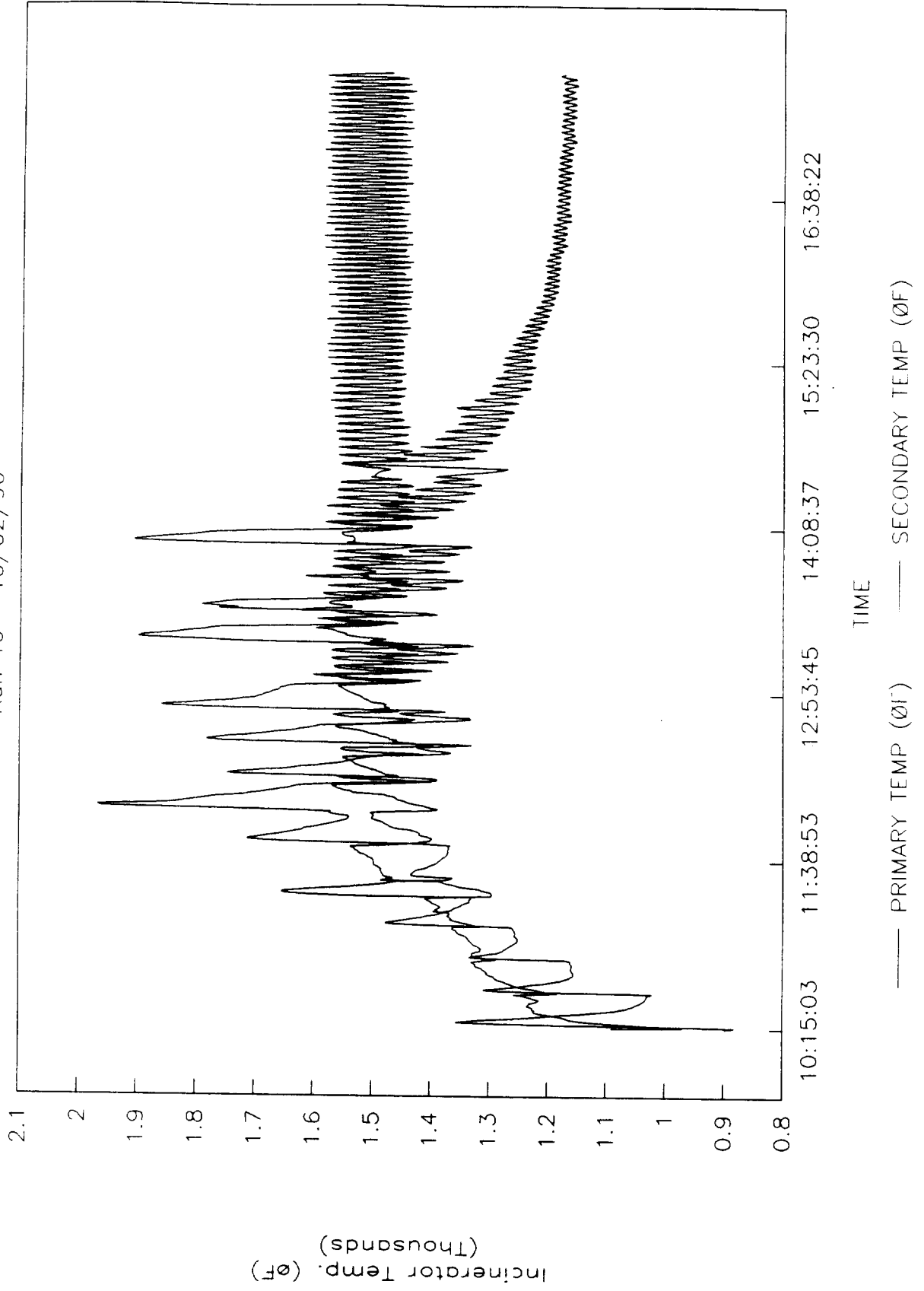
TOTAL HYDROCARBON CONCENTRATION

Run 6 - 9/25/90



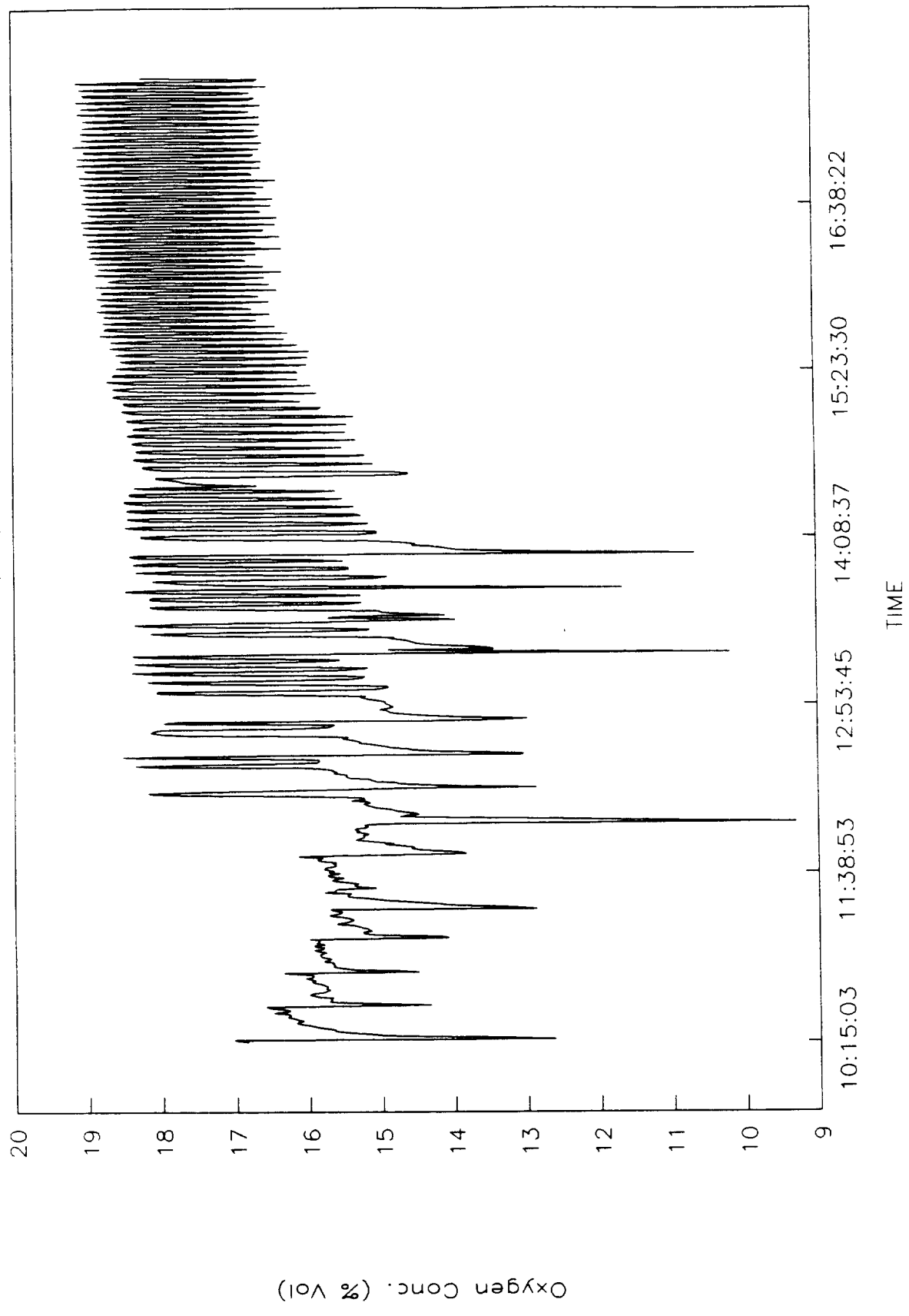
INCINERATOR TEMPERATURES

Run 10 10/02/90



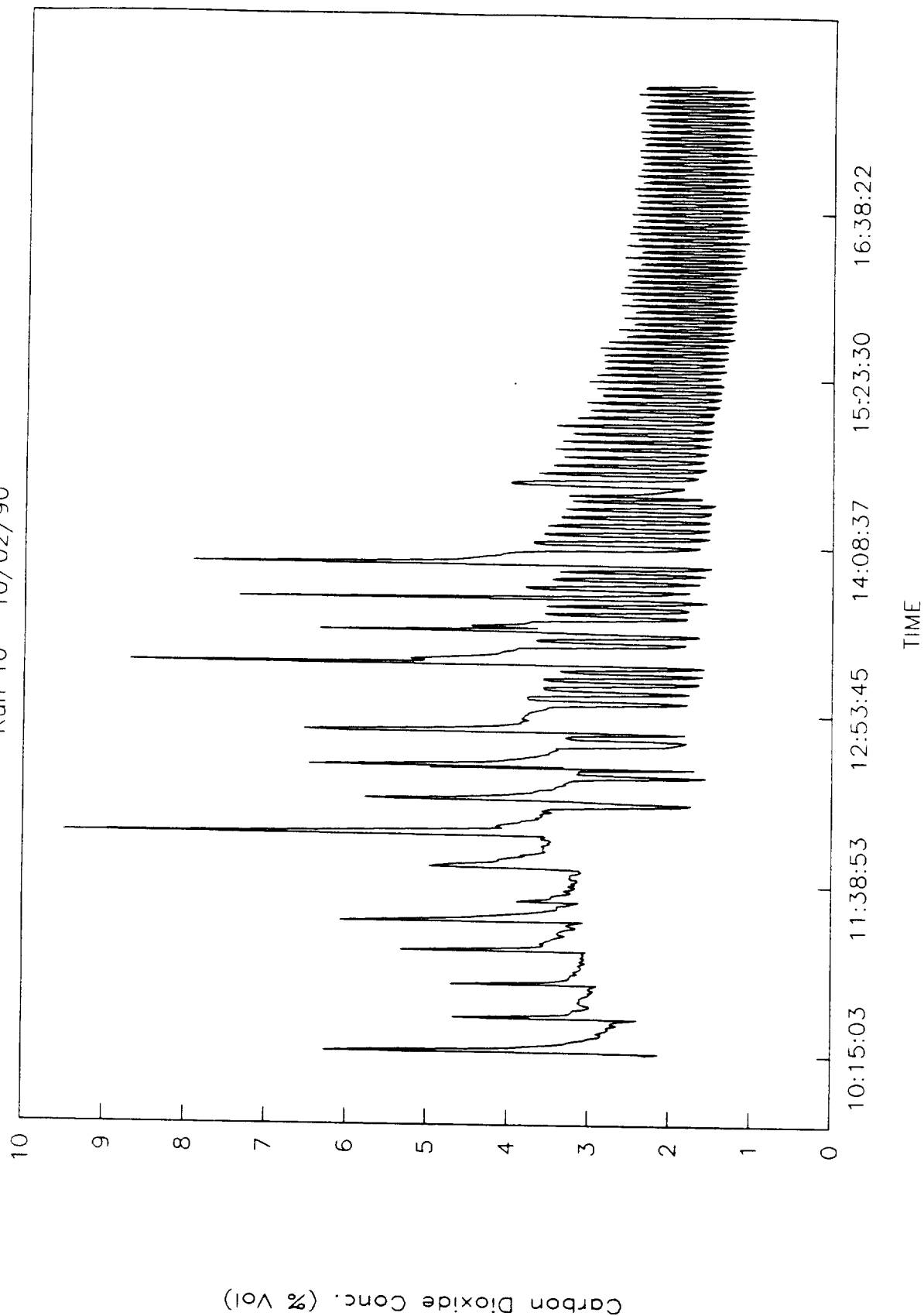
OXYGEN CONCENTRATION

Run 10 10/02/90



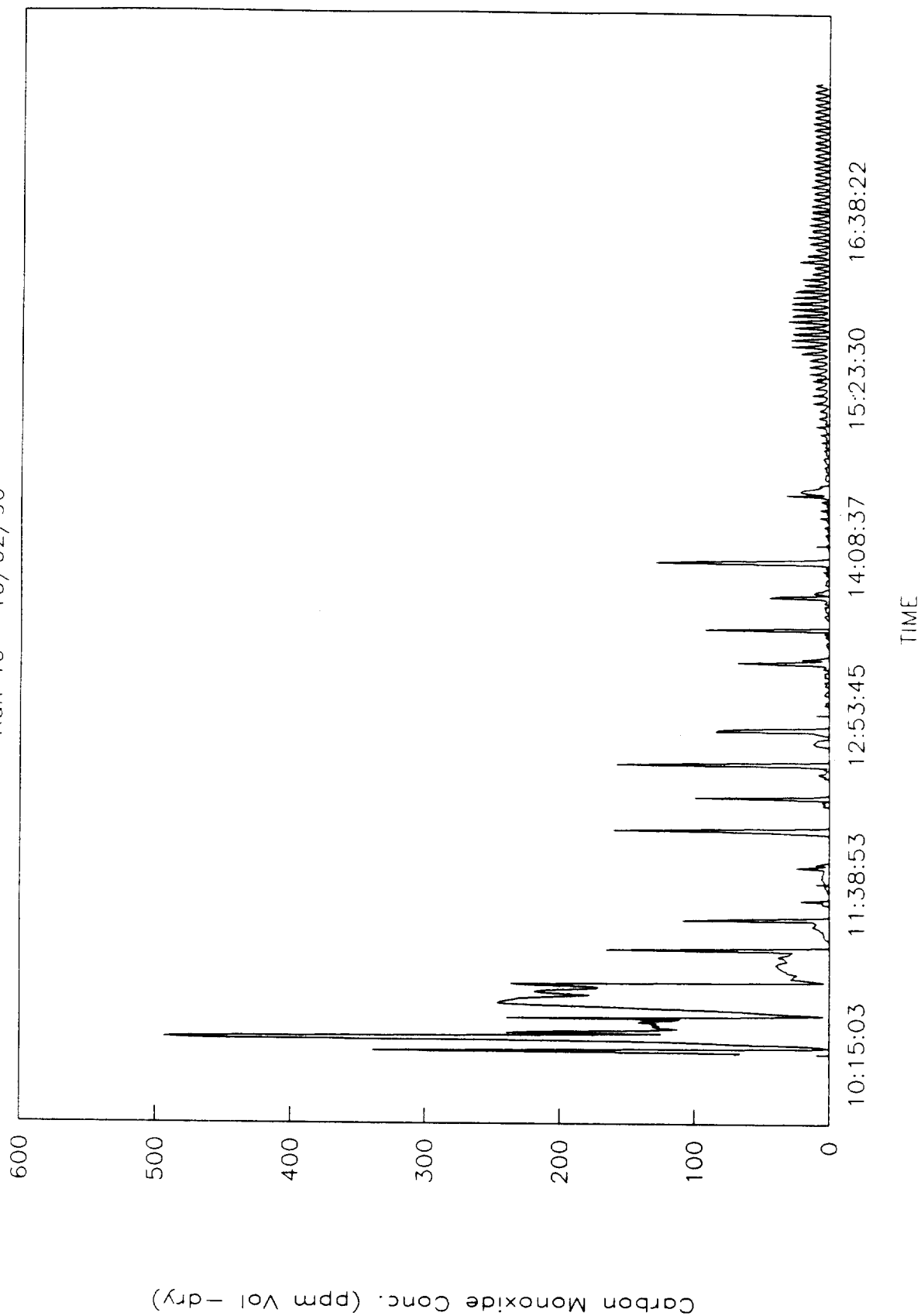
CARBON DIOXIDE CONCENTRATION

Run 10 10/02/90



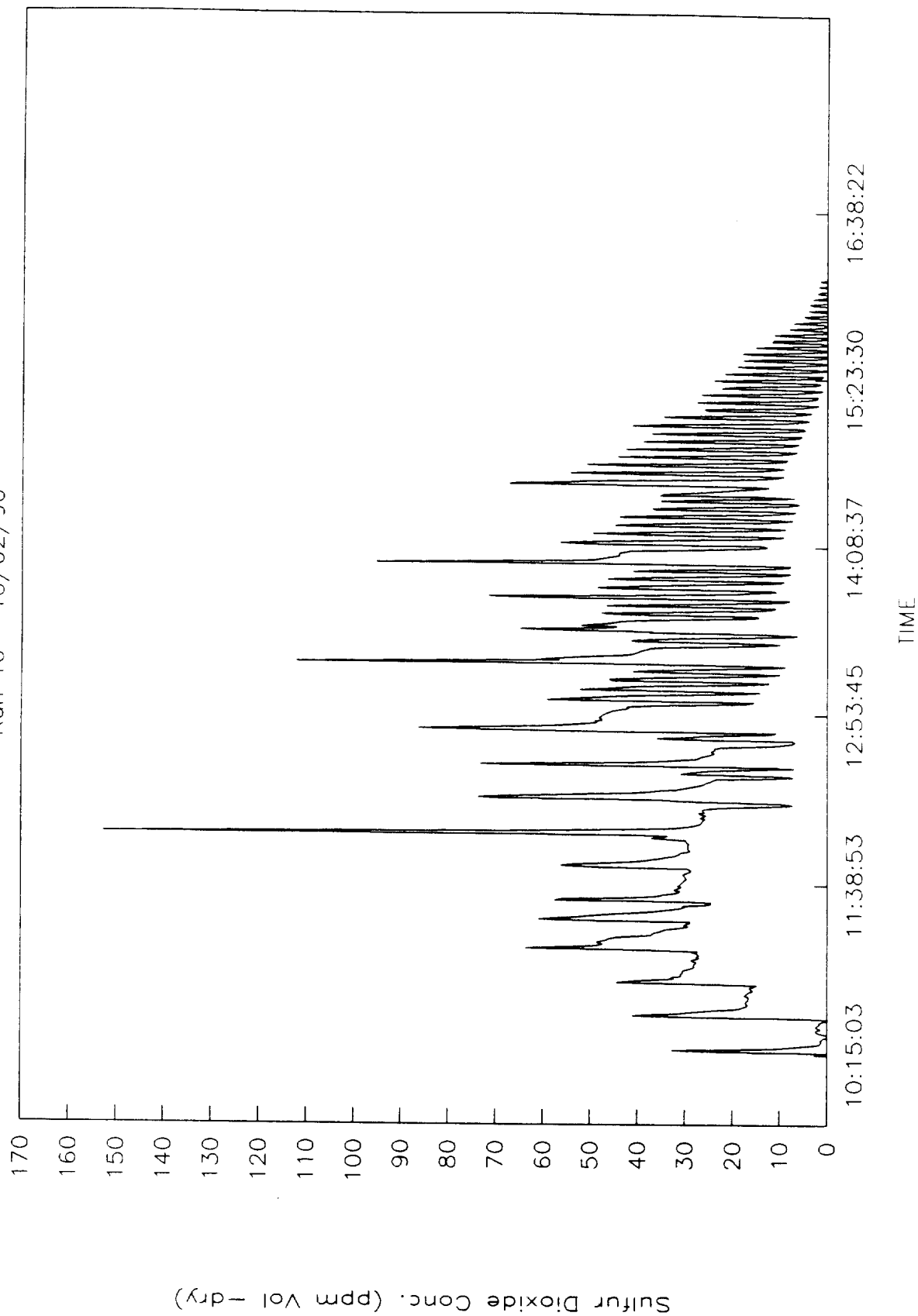
CARBON MONOXIDE CONCENTRATION

Run 10 10/02/90



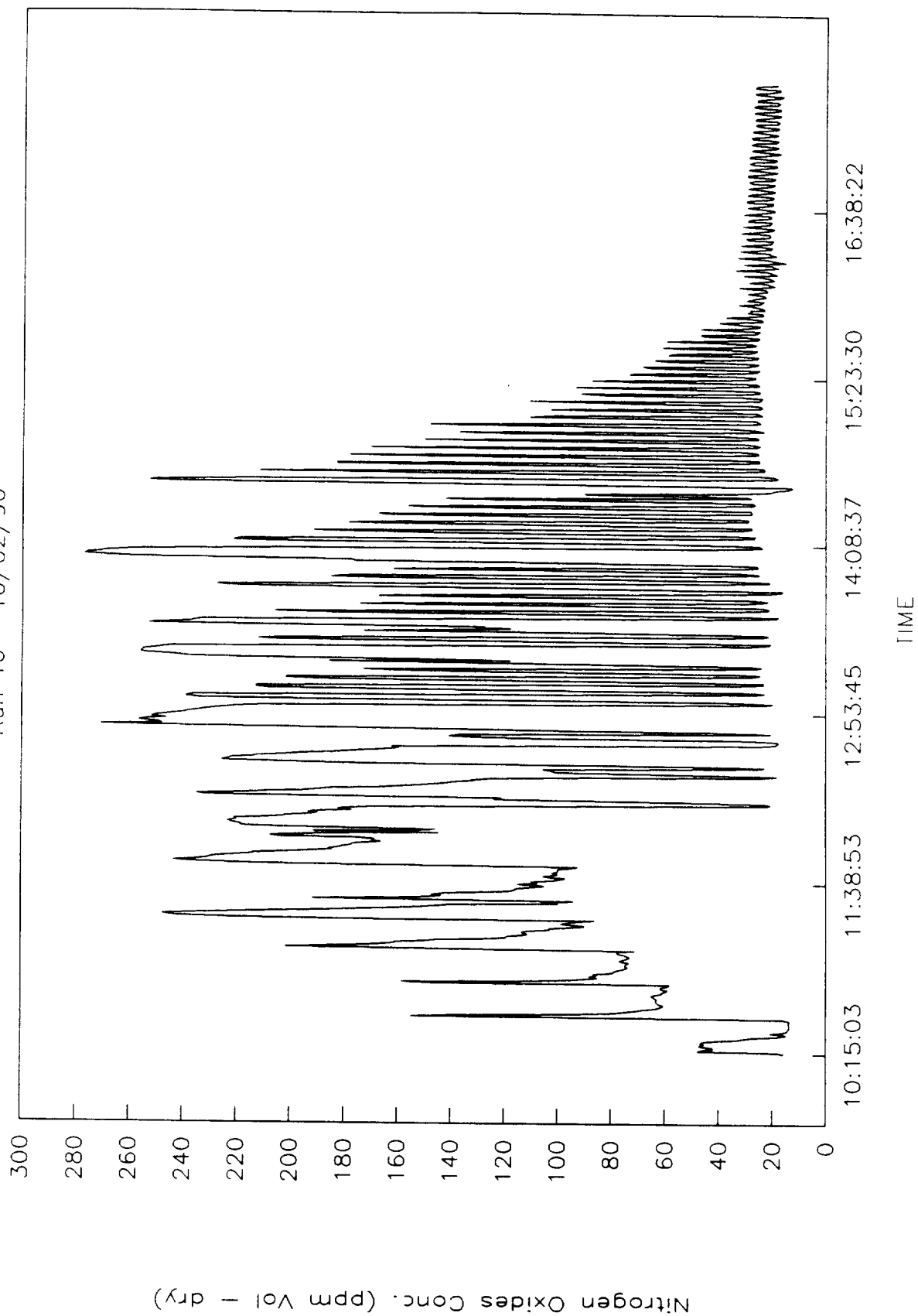
SULFUR DIOXIDE CONCENTRATION

Run 10 10/02/90



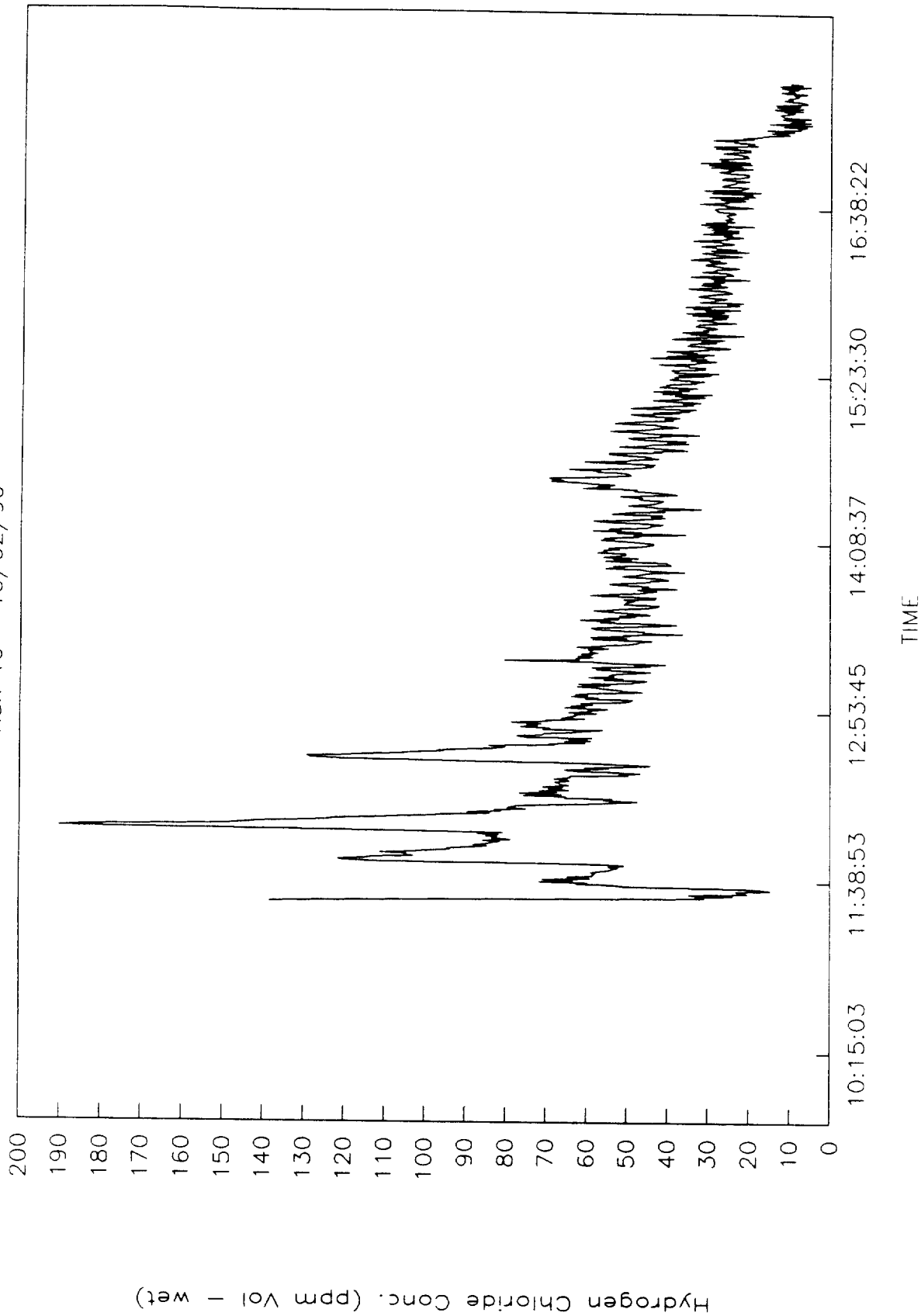
NITROGEN OXIDES CONCENTRATION

Run 10 10/02/90

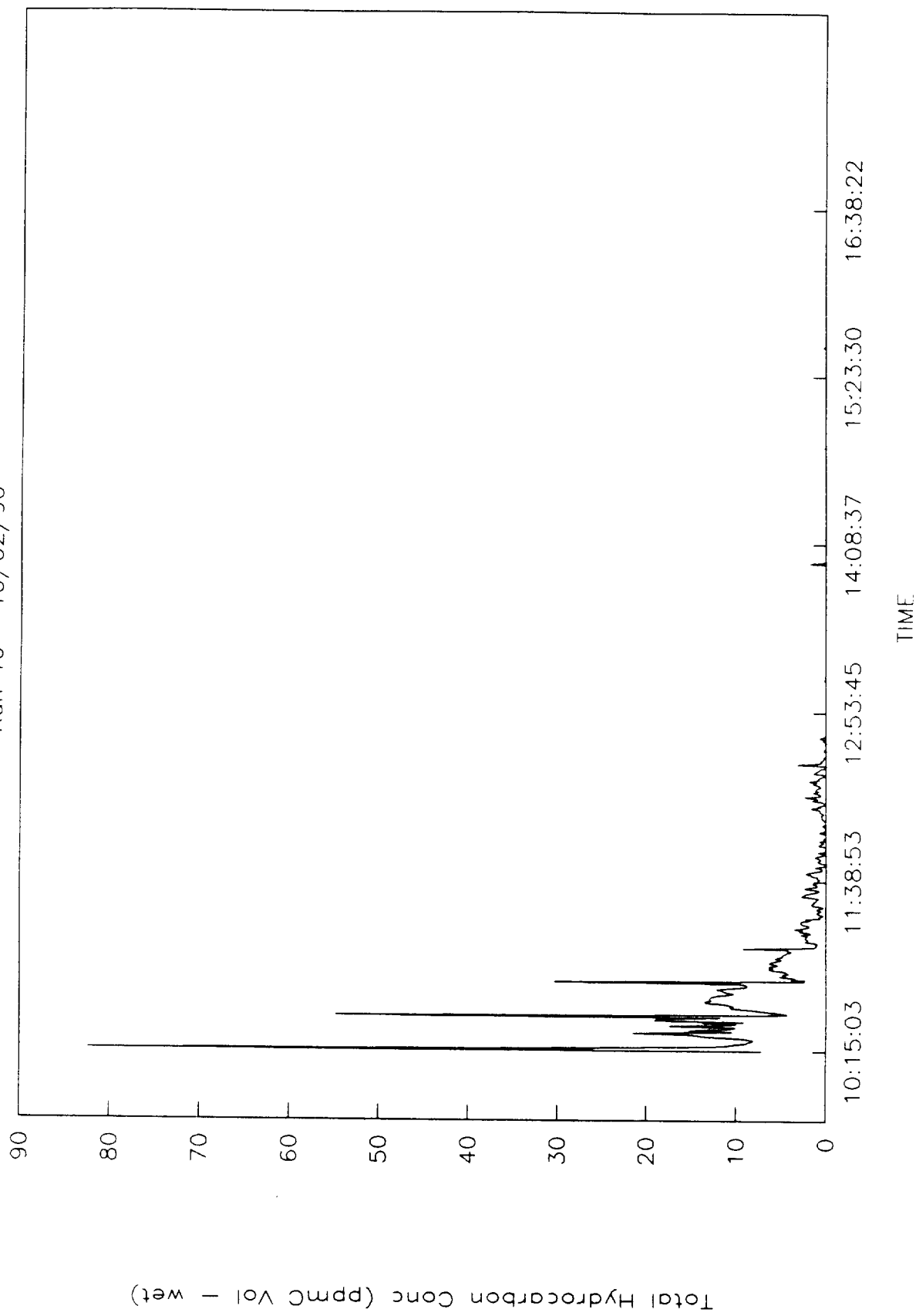


HYDROGEN CHLORIDE CONCENTRATION

Run 10 10/02/90



Run 10 10/02/90



CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-19902	CO2	CO	NOx	SO2	HC1	THC	LCTmp	UCTmp	
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
14:22:06	15.34	3.38	0.00	167.28	40.22	51.89	0.0	1551	1458
14:22:36	17.19	2.25	0.74	54.74	28.42	47.99	0.0	1498	1425
14:23:06	18.19	1.65	1.82	27.75	14.48	41.06	0.0	1458	1379
14:23:36	18.43	1.53	1.50	27.46	9.23	42.82	0.0	1438	1350
14:24:06	18.49	1.52	1.36	28.13	6.90	31.80	0.0	1465	1327
14:24:36	16.95	2.58	6.95	70.07	12.86	42.92	0.0	1526	1347
14:25:05	15.74	3.21	2.52	140.99	36.33	44.39	0.0	1561	1395
14:25:35	15.50	3.32	0.00	156.08	36.86	50.24	0.0	1560	1430
14:26:05	16.89	2.35	0.29	64.63	26.92	44.74	0.0	1505	1409
14:26:35	18.12	1.69	2.32	27.92	15.03	43.00	0.0	1458	1372
14:27:05	18.41	1.52	1.29	26.50	8.58	42.27	0.0	1433	1340
14:27:35	18.41	1.47	1.41	27.06	6.03	41.25	0.0	1442	1316
14:28:05	17.57	2.20	4.31	45.99	7.12	45.95	0.0	1515	1318
14:28:35	15.93	3.07	5.84	119.50	27.94	47.54	0.0	1557	1362
14:29:05	15.60	3.23	0.00	141.96	35.18	46.57	0.0	1554	1398
14:29:35	16.96	2.30	0.74	58.91	25.41	52.13	0.0	1498	1382
14:30:05	18.17	1.65	2.75	27.74	13.30	45.71	0.0	1453	1350
14:30:35	18.35	1.63	7.65	31.95	7.01	37.98	0.0	1482	1329
14:31:05	16.96	3.28	32.16	89.48	14.51	41.18	0.0	1505	1374
14:31:35	16.67	3.25	3.76	89.97	35.28	43.62	0.0	1497	1394
14:32:05	17.38	2.53	13.27	34.91	34.31	48.60	0.0	1498	1373
14:32:35	17.62	2.25	21.50	20.74	28.01	47.96	0.0	1495	1347
14:33:05	17.70	2.16	21.03	19.79	24.82	61.33	0.0	1493	1327
14:33:35	17.74	2.09	19.12	18.54	21.67	54.72	0.0	1490	1308
14:34:05	17.85	1.97	13.03	14.20	19.34	57.72	0.0	1484	1294
14:34:35	18.04	1.85	7.52	12.41	15.13	53.35	0.0	1472	1279
14:35:04	18.06	1.85	5.56	13.75	12.51	58.74	0.0	1485	1271
14:35:34	16.51	3.07	7.52	115.23	21.50	60.67	0.0	1510	1327
14:36:04	14.74	3.93	0.74	243.30	67.27	69.16	0.0	1530	1427
14:36:34	14.61	4.00	0.00	252.82	65.68	65.94	0.1	1545	1499
14:37:04	14.59	3.98	0.00	249.88	55.05	68.77	0.0	1556	1547
14:37:34	14.81	3.67	0.00	215.40	50.18	69.52	0.0	1538	1553
14:38:04	17.14	2.32	1.49	50.93	37.23	57.93	0.0	1501	1486
14:38:34	17.91	1.88	2.93	19.06	20.36	54.15	0.0	1483	1424
14:39:04	18.13	1.74	2.51	17.76	13.28	49.14	0.0	1465	1377
14:39:34	18.23	1.67	2.78	19.69	10.49	49.94	0.0	1444	1341
14:40:04	18.23	1.88	2.70	25.56	9.31	51.08	0.0	1495	1327
14:40:34	15.94	3.22	2.59	146.77	27.46	57.80	0.0	1542	1379
14:41:04	15.07	3.65	0.00	211.72	54.31	56.95	0.0	1560	1445
14:41:34	15.61	3.12	0.00	147.07	48.48	64.75	0.0	1518	1450
14:42:04	17.60	2.00	2.38	32.55	29.57	52.32	0.0	1466	1405
14:42:34	18.18	1.66	2.11	23.01	15.90	47.37	0.0	1452	1360

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-19902	CO2	CO	NOx	SO2	HC1	THC	LCTmp	UCTmp	
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
14:43:04	18.35	1.60	2.31	22.76	11.25	43.83	0.0	1435	1331
14:43:34	18.34	1.57	1.88	23.55	9.24	45.91	0.0	1457	1307
14:44:04	17.32	2.51	4.06	66.22	12.30	43.33	0.0	1526	1323
14:44:34	15.41	3.47	0.55	182.99	42.21	54.90	0.0	1561	1386
14:45:04	15.18	3.39	0.00	182.78	50.81	60.97	0.0	1542	1421
14:45:33	17.37	2.13	1.57	48.31	33.29	50.76	0.0	1483	1389
14:46:03	18.07	1.74	2.75	25.10	17.33	48.79	0.0	1455	1353
14:46:33	18.30	1.63	2.60	24.77	10.97	42.66	0.0	1440	1322
14:47:03	18.33	1.60	2.47	25.07	8.70	45.68	0.0	1453	1298
14:47:33	18.03	2.01	4.33	38.12	8.42	44.51	0.0	1519	1298
14:48:03	15.98	3.12	3.49	142.12	28.66	51.29	0.0	1560	1349
14:48:33	15.50	3.34	0.00	178.11	44.30	54.66	0.0	1560	1396
14:49:03	16.72	2.37	0.00	74.07	33.92	54.85	0.0	1502	1383
14:49:33	18.04	1.74	2.66	26.54	17.88	41.69	0.0	1463	1347
14:50:03	18.30	1.60	2.04	24.92	10.31	43.77	0.0	1457	1317
14:50:33	18.37	1.55	1.97	25.79	7.60	35.28	0.0	1441	1293
14:51:03	18.26	1.83	2.74	32.73	6.53	41.13	0.0	1510	1284
14:51:33	16.10	3.08	4.09	117.89	21.62	44.31	0.0	1561	1328
14:52:03	15.32	3.45	0.00	170.31	42.47	52.34	0.2	1566	1379
14:52:33	16.45	2.51	0.00	74.69	34.31	46.07	0.0	1526	1369
14:53:03	17.95	1.80	3.40	26.24	17.99	44.09	0.0	1482	1337
14:53:33	18.28	1.62	2.08	24.65	10.28	35.07	0.0	1452	1310
14:54:03	18.44	1.52	1.99	25.67	7.45	40.44	0.0	1437	1285
14:54:33	18.34	1.77	1.88	31.08	6.11	35.61	0.0	1509	1276
14:55:03	16.32	2.94	5.77	93.75	18.79	45.16	0.0	1562	1312
14:55:32	15.45	3.35	0.12	150.08	38.91	48.54	0.0	1561	1356
14:56:02	16.69	2.35	0.56	60.75	31.95	49.95	0.0	1504	1347
14:56:32	18.08	1.70	2.92	25.54	16.27	41.76	0.0	1464	1319
14:57:02	18.36	1.57	1.70	24.98	9.16	42.14	0.0	1449	1293
14:57:32	18.27	1.51	1.96	26.43	5.98	32.40	0.0	1452	1272
14:58:02	17.98	2.03	3.56	39.82	5.46	46.06	0.0	1522	1272
14:58:32	15.97	3.11	6.88	116.63	24.50	47.46	0.0	1568	1318
14:59:02	15.43	3.23	0.00	137.13	37.16	54.62	0.0	1556	1352
14:59:32	17.18	2.12	1.93	43.94	25.72	46.46	0.0	1513	1334
15:00:02	18.23	1.61	2.77	23.14	12.59	44.02	0.0	1477	1305
15:00:32	18.42	1.52	1.83	24.73	6.83	42.21	0.0	1452	1280
15:01:02	18.45	1.49	2.39	26.87	4.69	37.60	0.0	1454	1261
15:01:32	17.99	2.05	3.76	37.49	5.27	42.68	0.0	1517	1264
15:02:02	15.98	3.16	10.14	110.37	24.85	43.21	0.0	1556	1307
15:02:32	15.34	3.44	0.65	147.83	41.17	53.37	0.0	1568	1354
15:03:02	16.02	2.75	0.92	93.59	34.16	49.46	0.0	1533	1359
15:03:32	17.85	1.79	3.48	28.15	18.94	45.27	0.0	1493	1327

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-19902	CO2	CO	NOx	SO2	HC1	THC	LCTmp	UCTmp	
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
15:04:01	18.35	1.57	2.11	24.27	9.11	38.87	0.0	1468	1298
15:04:31	18.46	1.50	2.35	25.44	5.68	41.07	0.0	1455	1274
15:05:01	18.51	1.48	1.96	26.06	3.91	37.31	0.0	1468	1253
15:05:31	17.63	2.34	6.28	48.84	5.76	39.85	0.0	1539	1267
15:06:01	15.83	3.19	7.76	110.67	26.37	44.73	0.0	1575	1310
15:06:31	15.78	2.91	1.53	100.88	34.57	49.42	0.0	1540	1329
15:07:01	17.73	1.83	2.96	30.98	19.59	37.40	0.0	1493	1306
15:07:31	18.38	1.52	2.02	23.74	8.40	43.90	0.0	1461	1281
15:08:01	18.47	1.49	1.96	25.16	4.84	34.86	0.0	1449	1260
15:08:31	18.49	1.48	1.67	25.84	3.35	36.71	0.0	1485	1246
15:09:01	17.38	2.46	7.54	55.14	8.09	33.26	0.0	1558	1264
15:09:31	16.06	3.02	6.87	102.81	25.26	49.45	0.0	1572	1301
15:10:01	16.62	2.33	3.10	61.19	25.97	43.06	0.0	1517	1303
15:10:31	18.13	1.63	2.93	25.96	12.19	40.39	0.0	1476	1281
15:11:01	18.51	1.44	2.02	23.72	5.43	33.77	0.0	1457	1259
15:11:31	18.63	1.42	1.69	24.26	3.21	36.54	0.0	1446	1238
15:12:01	18.56	1.63	2.39	27.65	1.81	32.09	0.0	1512	1232
15:12:31	16.77	2.75	12.22	70.68	11.57	37.97	0.0	1567	1261
15:13:00	15.84	3.06	5.85	110.75	27.53	43.95	0.0	1559	1299
15:13:30	17.05	2.08	3.19	44.62	21.61	37.93	0.0	1492	1293
15:14:00	18.24	1.58	2.43	24.92	9.47	36.18	0.0	1467	1272
15:14:30	18.46	1.46	2.40	24.29	4.30	31.14	0.0	1454	1252
15:15:00	18.63	1.39	1.62	23.69	2.27	38.51	0.0	1453	1231
15:15:30	18.29	1.88	3.82	32.29	2.04	29.20	0.0	1531	1233
15:16:00	16.43	2.86	12.98	81.30	15.54	41.60	0.0	1576	1267
15:16:30	15.91	2.86	5.28	91.57	26.62	36.75	0.0	1535	1293
15:17:00	17.55	1.88	3.99	33.30	16.80	43.79	0.0	1485	1279
15:17:30	18.35	1.49	2.45	24.95	7.01	34.94	0.0	1461	1258
15:18:00	18.61	1.39	1.83	24.71	2.68	37.53	0.0	1446	1240
15:18:30	18.71	1.45	1.87	27.20	1.15	32.82	0.0	1497	1228
15:19:00	17.25	2.51	10.33	55.29	6.89	42.29	0.0	1564	1247
15:19:30	16.09	2.95	9.62	93.55	22.33	40.04	0.0	1563	1279
15:20:00	16.94	2.06	5.46	44.22	19.86	40.60	0.0	1503	1276
15:20:30	18.31	1.49	3.15	25.76	8.15	33.12	0.0	1465	1256
15:21:00	18.63	1.37	2.46	24.81	3.26	34.44	0.0	1451	1238
15:21:30	18.62	1.40	1.85	25.94	1.47	31.25	0.0	1463	1224
15:22:00	17.98	2.16	6.21	39.27	2.62	35.79	0.0	1547	1231
15:22:30	16.10	3.04	12.79	87.52	17.78	39.95	0.0	1575	1267
15:23:00	16.11	2.58	5.61	67.08	23.87	37.71	0.0	1516	1281
15:23:30	17.80	1.72	4.15	29.24	12.00	38.72	0.0	1473	1264
15:23:59	18.43	1.47	2.39	26.30	4.46	29.65	0.0	1452	1246
15:24:29	18.58	1.40	2.35	26.26	1.52	37.67	0.0	1454	1230

CENTRAL CAROLINA HOSPITAL
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10-02-19902	CO2	CO	NOx	SO2	HCl	THC	LCTmp	UCTmp	
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
15:24:59	18.27	1.94	4.12	34.56	0.91	27.57	0.0	1536	1230
15:25:29	16.30	2.94	14.57	73.38	13.77	38.72	0.0	1581	1263
15:25:59	15.97	2.72	7.44	70.88	21.72	37.84	0.0	1527	1279
15:26:29	17.73	1.73	4.70	30.47	11.93	39.32	0.0	1476	1263
15:26:59	18.42	1.44	2.42	26.04	3.94	31.04	0.0	1451	1244
15:27:29	18.52	1.33	1.89	25.02	0.51	30.91	0.0	1451	1225
15:27:59	18.37	1.85	2.85	32.29	0.00	34.97	0.0	1533	1226
15:28:29	16.47	2.84	15.14	65.79	11.43	34.96	0.0	1578	1257
15:28:59	15.96	2.73	10.04	68.16	19.12	42.40	0.0	1524	1271
15:29:29	17.63	1.75	5.14	29.97	11.14	33.90	0.0	1479	1258
15:29:59	18.35	1.46	2.10	26.15	3.33	32.53	0.0	1455	1241
15:30:29	18.58	1.36	1.95	25.36	0.00	28.38	0.0	1449	1225
15:30:59	18.43	1.80	3.24	31.49	0.00	34.73	0.0	1532	1222
15:31:29	16.50	2.85	14.82	59.61	9.07	30.52	0.0	1581	1249
15:31:59	15.93	2.74	12.69	63.73	17.82	44.72	0.0	1530	1265
15:32:29	17.61	1.75	5.65	29.77	11.08	31.22	0.0	1478	1252
15:32:59	18.41	1.41	2.88	25.88	2.80	40.39	0.0	1450	1235
15:33:28	18.66	1.32	1.79	25.47	0.00	28.74	0.0	1455	1222
15:33:58	18.29	1.95	4.53	33.46	0.00	36.94	0.0	1538	1221
15:34:28	16.50	2.86	21.29	58.81	9.48	33.06	0.0	1577	1246
15:34:58	16.09	2.59	16.00	55.20	18.01	40.49	0.0	1519	1258
15:35:28	17.83	1.64	6.20	28.47	9.42	33.00	0.0	1470	1243
15:35:58	18.52	1.37	2.14	26.02	1.91	29.53	0.0	1444	1228
15:36:28	18.66	1.32	2.09	25.89	0.00	24.73	0.0	1471	1216
15:36:58	17.98	2.20	7.14	37.00	0.18	30.23	0.3	1553	1221
15:37:28	16.29	2.90	28.53	60.89	11.03	35.48	0.0	1572	1245
15:37:58	16.49	2.26	18.06	42.56	15.15	34.37	0.0	1503	1248
15:38:28	18.06	1.51	5.51	27.42	5.92	34.64	0.0	1462	1233
15:38:58	18.54	1.32	1.84	26.12	0.36	28.29	0.0	1439	1219
15:39:28	18.81	1.35	2.01	27.89	0.00	32.06	0.0	1499	1209
15:39:58	17.57	2.41	12.61	39.36	1.53	26.42	0.0	1569	1221
15:40:28	16.23	2.80	28.67	59.42	11.64	39.25	0.0	1555	1242
15:40:58	17.10	1.87	13.97	32.38	11.35	34.69	0.0	1492	1238
15:41:28	18.42	1.35	2.75	25.76	2.75	32.40	0.0	1455	1222
15:41:58	18.75	1.23	1.34	25.06	0.00	21.49	0.0	1445	1208
15:42:28	18.72	1.61	1.81	30.31	0.00	34.53	0.0	1534	1204
15:42:58	16.96	2.58	24.47	45.14	4.81	30.34	0.0	1583	1225
15:43:28	16.40	2.44	27.59	46.74	11.30	36.59	0.0	1524	1236
15:43:57	17.85	1.57	8.98	27.00	6.09	30.02	0.0	1474	1225
15:44:27	18.58	1.30	1.38	25.22	0.00	31.57	0.0	1445	1212
15:44:57	18.77	1.24	2.29	24.96	0.00	27.91	0.0	1467	1201
15:45:27	18.25	2.00	4.43	32.55	0.00	28.77	0.0	1556	1205

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10-02-19902	CO2	CO	NOx	SO2	HCl	THC	LCTmp	UCTmp	
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
15:45:57	16.67	2.67	25.69	46.64	5.99	33.34	0.0	1564	1227
15:46:27	16.82	2.03	20.36	32.90	8.08	33.10	0.0	1497	1228
15:46:57	18.21	1.41	3.75	25.09	1.42	32.50	0.0	1457	1215
15:47:27	18.66	1.26	1.84	24.54	0.00	23.36	0.0	1437	1202
15:47:57	18.76	1.53	1.72	30.33	0.00	27.92	0.0	1520	1197
15:48:27	17.22	2.48	15.34	35.33	1.09	29.83	0.0	1577	1212
15:48:57	16.46	2.42	30.83	40.07	7.12	33.14	0.0	1526	1224
15:49:27	17.76	1.55	11.99	24.64	3.46	25.76	0.0	1473	1214
15:49:57	18.64	1.26	1.67	23.45	0.00	29.24	0.0	1442	1202
15:50:27	18.84	1.22	1.55	24.19	0.00	25.41	0.0	1472	1192
15:50:57	18.22	2.02	5.28	31.11	0.00	34.21	0.0	1563	1198
15:51:27	16.73	2.61	27.78	37.40	3.46	25.17	0.0	1558	1214
15:51:57	16.96	1.88	24.77	27.07	4.92	35.86	0.0	1493	1215
15:52:27	18.35	1.32	3.58	23.34	0.00	26.22	0.0	1453	1202
15:52:57	18.79	1.21	1.68	23.75	0.00	30.90	0.0	1437	1192
15:53:26	18.74	1.57	2.04	29.48	0.00	22.40	0.0	1532	1190
15:53:56	17.16	2.47	15.14	27.81	0.20	34.17	0.0	1580	1204
15:54:26	16.49	2.30	28.16	28.52	3.95	29.74	0.0	1516	1213
15:54:56	17.90	1.49	9.40	23.02	0.08	36.00	0.0	1466	1203
15:55:26	18.62	1.24	1.63	23.40	0.00	22.61	0.0	1435	1192
15:55:56	18.84	1.28	1.80	25.82	0.00	25.61	0.0	1487	1185
15:56:26	17.90	2.21	7.73	28.24	0.00	21.61	0.0	1565	1195
15:56:56	16.63	2.64	28.03	32.81	2.81	32.36	0.0	1562	1210
15:57:26	16.89	1.90	24.75	25.22	3.77	28.71	0.0	1496	1210
15:57:56	18.27	1.35	4.36	23.55	0.00	28.43	0.0	1456	1198
15:58:26	18.77	1.20	1.80	23.42	0.00	25.64	0.0	1439	1188
15:58:56	18.78	1.53	1.79	29.80	0.00	29.53	0.0	1522	1185
15:59:26	17.25	2.51	11.02	27.15	0.00	32.69	0.0	1580	1200
15:59:56	16.37	2.41	26.95	27.02	3.15	32.27	0.0	1518	1209
16:00:26	17.75	1.51	10.61	22.70	0.55	29.15	0.0	1469	1202
16:00:56	18.57	1.24	2.64	22.97	0.00	24.22	0.0	1437	1187
16:01:26	18.86	1.29	1.32	25.33	0.00	25.33	0.0	1488	1184
16:01:56	17.85	2.32	6.42	29.48	0.00	26.33	0.0	1570	1194
16:02:26	16.47	2.65	25.61	26.09	2.06	30.86	0.0	1547	1207
16:02:56	17.13	1.71	19.82	21.74	1.51	35.19	0.0	1481	1203
16:03:26	18.39	1.30	3.97	22.32	0.00	29.96	0.0	1448	1193
16:03:56	18.68	1.20	1.30	22.65	0.00	25.55	0.0	1454	1184
16:04:25	18.53	1.85	2.96	32.65	0.00	32.00	0.0	1547	1187
16:04:55	16.88	2.61	12.95	21.48	0.03	27.42	0.0	1576	1203
16:05:25	16.55	2.14	19.04	19.30	1.85	31.67	0.0	1504	1207
16:05:55	18.04	1.39	5.09	21.01	0.00	26.27	0.0	1458	1196
16:06:25	18.72	1.19	1.81	21.93	0.00	29.02	0.0	1439	1183

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10-02-19902	CO2	CO	NOx	SO2	HCl	THC	LCTmp	UCTmp	
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
16:06:55	18.87	1.54	2.13	28.83	0.00	20.03	0.0	1520	1183
16:07:25	17.25	2.51	9.28	24.07	0.00	29.57	0.0	1582	1197
16:07:55	16.31	2.45	19.90	19.26	1.62	26.34	0.0	1521	1208
16:08:25	17.64	1.52	8.73	19.89	0.00	34.69	0.0	1467	1199
16:08:55	18.54	1.21	1.89	21.43	0.00	24.00	0.0	1435	1188
16:09:25	18.82	1.31	0.96	25.12	0.00	24.74	0.0	1497	1182
16:09:55	17.80	2.28	5.56	30.82	0.00	26.06	0.0	1574	1193
16:10:25	16.55	2.58	13.08	18.44	0.00	31.86	0.0	1544	1207
16:10:55	17.08	1.71	9.45	19.13	0.00	28.30	0.0	1480	1203
16:11:25	18.43	1.24	2.78	21.10	0.00	28.54	0.0	1442	1191
16:11:55	18.87	1.16	1.05	22.06	0.00	22.61	0.0	1468	1182
16:12:25	18.35	2.03	3.48	33.88	0.00	26.28	0.0	1558	1187
16:12:54	16.80	2.55	10.86	24.64	0.00	28.71	0.0	1567	1201
16:13:24	16.87	1.83	11.10	17.77	0.00	31.19	0.0	1493	1200
16:13:54	18.35	1.21	2.94	19.53	0.00	30.52	0.0	1449	1187
16:14:24	18.94	1.09	1.13	20.24	0.00	25.74	0.0	1446	1177
16:14:54	18.76	1.72	3.08	30.90	0.00	30.09	0.0	1537	1178
16:15:24	17.20	2.41	12.57	23.63	0.00	27.45	0.0	1586	1190
16:15:54	16.67	2.35	22.27	15.15	0.32	34.70	0.0	1530	1196
16:16:24	18.39	1.46	10.26	19.66	0.00	30.81	0.0	1473	1187
16:16:54	18.92	1.15	1.72	20.84	0.00	27.83	0.0	1436	1176
16:17:24	18.90	1.23	1.77	23.67	0.00	21.97	0.0	1489	1170
16:17:54	16.98	2.20	5.46	32.90	0.00	28.76	0.0	1564	1181
16:18:24	16.31	2.60	16.81	23.05	0.00	29.65	0.0	1576	1196
16:18:54	17.41	1.96	15.11	18.58	0.00	32.10	0.0	1503	1194
16:19:24	18.74	1.28	3.91	20.58	0.00	20.17	0.0	1459	1183
16:19:54	18.98	1.12	1.55	21.08	0.00	29.83	0.0	1445	1175
16:20:24	18.34	1.53	1.85	28.23	0.00	23.35	0.0	1528	1175
16:20:54	16.66	2.39	7.13	32.19	0.00	28.25	0.0	1586	1191
16:21:24	16.73	2.31	10.35	23.69	0.00	28.53	0.0	1519	1198
16:21:54	18.45	1.42	5.67	20.29	0.00	32.14	0.0	1466	1188
16:22:24	18.96	1.12	1.20	20.24	0.00	27.48	0.0	1437	1172
16:22:54	18.77	1.32	1.41	24.80	0.00	23.91	0.0	1509	1171
16:23:23	16.88	2.26	6.76	31.96	0.00	26.76	0.0	1570	1183
16:23:53	16.33	2.58	14.87	25.79	0.00	27.55	0.0	1570	1194
16:24:23	17.68	1.82	12.77	20.41	0.00	34.23	0.0	1498	1192
16:24:53	18.79	1.20	2.54	20.15	0.00	25.70	0.0	1454	1180
16:25:23	19.03	1.06	0.87	19.82	0.00	26.33	0.0	1447	1171
16:25:53	18.19	1.64	1.89	29.01	0.00	21.79	0.0	1534	1173
16:26:23	16.58	2.43	9.36	29.96	0.00	26.61	0.0	1584	1185
16:26:53	16.55	2.42	16.27	22.89	0.00	24.53	0.0	1539	1195
16:27:23	18.23	1.52	7.95	20.83	0.00	31.73	0.0	1478	1185

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
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10-02-19902	CO2	CO	NOx	SO2	HC1	THC	LCTmp	UCTmp	
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
16:27:53	18.90	1.16	1.50	20.96	0.00	22.93	0.0	1444	1175
16:28:23	19.02	1.14	0.96	21.79	0.00	29.30	0.0	1484	1164
16:28:53	17.38	2.03	4.30	31.74	0.00	22.81	0.0	1560	1176
16:29:23	16.40	2.54	12.91	28.32	0.00	29.67	0.0	1581	1189
16:29:53	17.18	2.04	13.22	22.10	0.00	25.52	0.0	1510	1189
16:30:23	18.67	1.26	4.17	19.93	0.00	30.72	0.0	1463	1178
16:30:53	19.05	1.06	0.97	19.48	0.00	19.05	0.0	1441	1164
16:31:23	18.67	1.37	1.82	25.05	0.00	32.44	0.0	1517	1165
16:31:53	16.77	2.34	7.43	31.21	0.00	25.86	0.0	1578	1178
16:32:23	16.36	2.52	14.90	25.81	0.00	31.22	0.0	1556	1190
16:32:53	17.88	1.69	10.01	21.07	0.00	23.92	0.0	1490	1185
16:33:23	18.81	1.20	1.91	20.66	0.00	25.64	0.0	1452	1175
16:33:53	18.95	1.10	1.46	20.35	0.00	26.38	0.0	1455	1167
16:34:23	18.00	1.75	2.83	29.49	0.00	24.37	0.0	1542	1170
16:34:53	16.60	2.45	10.85	28.90	0.00	25.36	0.0	1586	1183
16:35:22	16.64	2.33	14.07	24.38	0.00	25.61	0.0	1529	1191
16:35:52	18.35	1.44	6.63	20.63	0.00	26.00	0.0	1474	1182
16:36:22	18.87	1.15	2.00	20.54	0.00	23.56	0.0	1442	1168
16:36:52	18.99	1.18	0.91	22.07	0.00	24.16	0.0	1488	1168
16:37:22	17.30	2.08	4.94	30.79	0.00	28.22	0.0	1563	1176
16:37:52	16.44	2.52	12.85	27.12	0.00	27.93	0.0	1576	1187
16:38:22	17.27	1.94	12.95	21.54	0.00	28.88	0.0	1503	1187
16:38:52	18.78	1.22	3.49	19.27	0.00	27.95	0.0	1459	1176
16:39:22	19.04	1.07	0.97	19.68	0.00	19.29	0.0	1443	1166
16:39:52	18.52	1.46	1.96	25.34	0.00	26.23	0.0	1523	1165
16:40:22	16.77	2.35	7.54	29.61	0.00	25.81	0.0	1580	1177
16:40:52	16.42	2.46	13.80	26.38	0.00	32.58	0.0	1549	1187
16:41:22	17.99	1.60	8.25	20.65	0.00	25.52	0.0	1485	1182
16:41:52	18.85	1.18	1.52	20.01	0.00	26.24	0.0	1448	1173
16:42:22	18.99	1.09	1.38	19.91	0.00	21.20	0.0	1460	1165
16:42:52	17.61	1.95	3.39	29.83	0.00	27.53	0.0	1551	1173
16:43:21	16.63	2.42	10.08	29.77	0.00	20.64	0.0	1585	1184
16:43:51	16.74	2.26	12.32	25.88	0.00	30.38	0.0	1526	1189
16:44:21	18.39	1.39	5.26	20.20	0.00	18.76	0.0	1471	1180
16:44:51	18.92	1.10	1.18	19.67	0.00	21.36	0.0	1436	1171
16:45:21	19.02	1.18	0.77	21.61	0.00	19.43	0.0	1495	1165
16:45:51	17.37	2.06	4.74	29.46	0.00	29.68	0.0	1562	1174
16:46:21	16.54	2.46	11.51	29.16	0.00	17.28	0.0	1577	1186
16:46:51	17.25	1.94	10.74	23.99	0.00	31.53	0.0	1505	1185
16:47:21	18.68	1.23	3.25	19.59	0.00	22.14	0.0	1459	1175
16:47:51	19.05	1.06	1.12	19.22	0.00	21.91	0.0	1444	1166
16:48:21	18.62	1.44	1.72	24.56	0.00	20.40	0.0	1521	1165

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10-02-19902	CO2	CO	NOx	SO2	HCl	THC	LCTmp	UCTmp	
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
16:48:51	16.80	2.35	7.84	29.58	0.00	27.15	0.0	1575	1176
16:49:21	16.38	2.49	13.75	27.78	0.00	26.66	0.0	1555	1187
16:49:51	17.83	1.65	9.25	21.15	0.00	24.80	0.0	1486	1183
16:50:21	18.82	1.16	3.19	19.48	0.00	23.59	0.0	1447	1173
16:50:51	19.07	1.05	1.40	19.18	0.00	23.55	0.0	1462	1160
16:51:21	17.99	1.80	2.81	27.68	0.00	20.35	0.0	1543	1169
16:51:51	16.70	2.38	9.37	29.07	0.00	27.18	0.0	1584	1182
16:52:21	16.76	2.25	11.39	26.51	0.00	26.56	0.0	1528	1187
16:52:50	18.37	1.39	5.61	20.06	0.00	22.89	0.0	1471	1178
16:53:20	18.95	1.09	1.63	19.07	0.00	20.31	0.0	1437	1169
16:53:50	19.00	1.19	1.53	21.25	0.00	20.65	0.0	1495	1163
16:54:20	17.31	2.10	4.51	29.39	0.00	20.30	0.0	1562	1171
16:54:50	16.59	2.45	10.98	29.27	0.00	26.34	0.0	1576	1183
16:55:20	17.16	1.98	10.35	24.13	0.00	27.82	0.0	1505	1184
16:55:50	18.71	1.22	4.08	19.25	0.00	24.33	0.0	1458	1174
16:56:20	19.11	1.03	1.28	18.41	0.00	25.56	0.0	1439	1165
16:56:50	18.63	1.45	1.46	24.08	0.00	19.58	0.0	1521	1163
16:57:20	16.95	2.26	7.28	29.26	0.00	29.93	0.0	1576	1175
16:57:50	16.57	2.41	11.83	28.20	0.00	21.85	0.0	1557	1185
16:58:20	17.82	1.63	8.64	21.15	0.00	30.36	0.0	1486	1180
16:58:50	18.85	1.12	2.24	18.59	0.00	19.69	0.0	1446	1170
16:59:20	19.09	1.04	0.74	18.60	0.00	32.46	0.0	1463	1161
16:59:50	18.02	1.79	2.96	26.99	0.00	20.08	0.0	1543	1164
17:00:20	16.72	2.38	10.06	28.88	0.00	27.50	0.0	1587	1176
17:00:50	16.68	2.27	12.52	26.54	0.00	25.64	0.0	1530	1181
17:01:20	18.31	1.40	5.66	19.74	0.00	27.78	0.0	1471	1174
17:01:50	18.99	1.08	1.61	18.54	0.00	20.35	0.0	1436	1164
17:02:20	19.02	1.18	1.32	20.55	0.00	21.74	0.0	1494	1159
17:02:49	17.16	2.18	5.43	28.96	0.00	20.72	0.0	1565	1170
17:03:19	16.61	2.43	10.78	28.68	0.00	23.17	0.0	1579	1180
17:03:49	17.11	1.98	10.13	23.59	0.00	26.88	0.0	1506	1180
17:04:19	18.70	1.20	3.46	18.27	0.00	22.56	0.0	1457	1169
17:04:49	19.15	0.98	0.81	17.13	0.00	20.02	0.0	1441	1156
17:05:19	18.73	1.41	1.74	22.73	0.00	20.08	0.0	1521	1156
17:05:49	17.06	2.22	6.97	28.05	0.00	28.69	0.0	1574	1167
17:06:19	16.56	2.43	11.54	28.05	0.00	23.25	0.0	1563	1178
17:06:49	17.56	1.71	9.37	21.22	0.00	29.36	0.0	1490	1176
17:07:19	18.83	1.13	1.90	18.15	0.00	18.14	0.0	1446	1166
17:07:49	19.04	1.03	1.52	18.10	0.00	20.78	0.0	1454	1158
17:08:19	18.12	1.77	2.99	25.97	0.00	18.98	0.0	1541	1162
17:08:49	16.74	2.37	9.37	28.32	0.00	24.02	0.0	1584	1174
17:09:19	16.61	2.31	11.14	26.48	0.00	23.51	0.0	1533	1183

CENTRAL CAROLINA HOSPITAL
CEM DATA LISTING
RUN 10 10/02/90

10-02-19902	CO2	CO	NOx	SO2	HCl	THC	LCTmp	UCTmp	
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
17:09:49	18.23	1.42	6.33	19.16	0.00	29.30	0.0	1471	1175
17:10:19	18.94	1.08	2.09	18.03	0.00	19.21	0.0	1435	1160
17:10:49	19.05	1.14	1.31	19.66	0.00	21.90	0.0	1492	1160
17:11:19	17.44	2.06	4.52	27.59	0.00	17.40	0.0	1560	1168
17:11:48	16.66	2.40	9.78	28.16	0.00	16.90	0.0	1581	1180
17:12:18	16.97	2.05	10.72	24.04	0.00	10.26	0.0	1511	1182
17:12:48	18.53	1.27	3.65	18.52	0.00	11.95	0.0	1459	1171
17:13:18	19.03	1.06	1.60	18.18	0.00	14.93	0.0	1438	1162
17:13:48	18.75	1.36	1.24	22.09	0.00	9.26	0.0	1515	1159
17:14:18	17.13	2.20	6.90	27.70	0.00	15.97	0.0	1571	1170
17:14:48	16.59	2.42	11.64	27.67	0.00	7.54	0.0	1564	1180
17:15:18	17.44	1.77	9.01	21.15	0.00	8.16	0.0	1491	1177
17:15:48	18.79	1.17	2.15	18.03	0.00	5.93	0.0	1449	1169
17:16:18	19.02	1.02	0.71	17.69	0.00	11.93	0.0	1456	1155
17:16:48	18.32	1.65	2.87	24.37	0.00	4.82	0.0	1539	1161
17:17:18	16.97	2.26	8.42	26.63	0.00	15.31	0.0	1583	1172
17:17:48	16.59	2.32	12.84	26.08	0.00	5.14	0.0	1537	1180
17:18:18	18.11	1.46	7.94	18.75	0.00	10.37	0.0	1474	1173
17:18:48	18.77	1.08	1.42	17.47	0.00	6.77	0.0	1435	1162
17:19:18	19.10	1.12	1.03	18.83	0.00	12.14	0.0	1489	1156
17:19:48	17.56	2.02	4.39	26.74	0.00	5.05	0.0	1557	1164
17:20:18	16.74	2.35	10.69	26.66	0.00	11.82	0.0	1578	1175
17:20:48	17.10	1.98	10.85	22.41	0.00	11.83	0.0	1507	1176
17:21:17	18.59	1.24	3.78	17.73	0.00	12.65	0.0	1455	1166
17:21:47	19.04	1.02	1.38	17.01	0.00	10.67	0.0	1437	1156
17:22:17	18.71	1.42	2.27	21.96	0.00	8.96	0.0	1520	1157
17:22:47	16.92	2.29	7.93	27.26	0.00	11.79	0.0	1578	1169
17:23:17	16.58	2.42	11.38	27.28	0.00	7.03	0.0	1562	1179
17:23:47	17.48	1.71	8.67	20.41	0.00	14.11	0.0	1488	1176
17:24:17	18.79	1.12	2.51	17.21	0.00	7.09	0.0	1444	1165
17:24:47	19.11	1.01	1.28	17.17	0.00	13.56	0.0	1451	1155
17:25:17	18.19	1.76	2.91	24.72	0.00	7.63	0.0	1541	1161
17:25:47	16.79	2.35	8.96	27.33	0.00	13.80	0.0	1581	1173
17:26:17	16.66	2.32	10.65	25.98	0.00	5.83	0.0	1536	1181
17:26:47	18.28	1.47	6.20	18.67	0.00	5.97	0.0	1472	1173
17:27:17	18.99	1.08	1.27	17.33	0.00	7.65	0.0	1431	1163
17:27:47	19.02	1.13	1.58	18.70	0.00	11.86	0.0	1490	1158
17:28:17	17.25	2.02	4.57	26.00	0.00	9.58	0.0	1557	1166
17:28:46	16.72	2.32	11.09	25.84	0.00	10.88	0.0	1580	1176
17:29:16	17.21	1.99	10.48	22.52	0.00	8.43	0.0	1510	1177
17:29:46	18.79	1.20	3.26	16.67	0.00	8.03	0.0	1456	1165
17:30:16	19.07	1.01	1.51	16.37	0.00	9.36	0.0	1439	1154

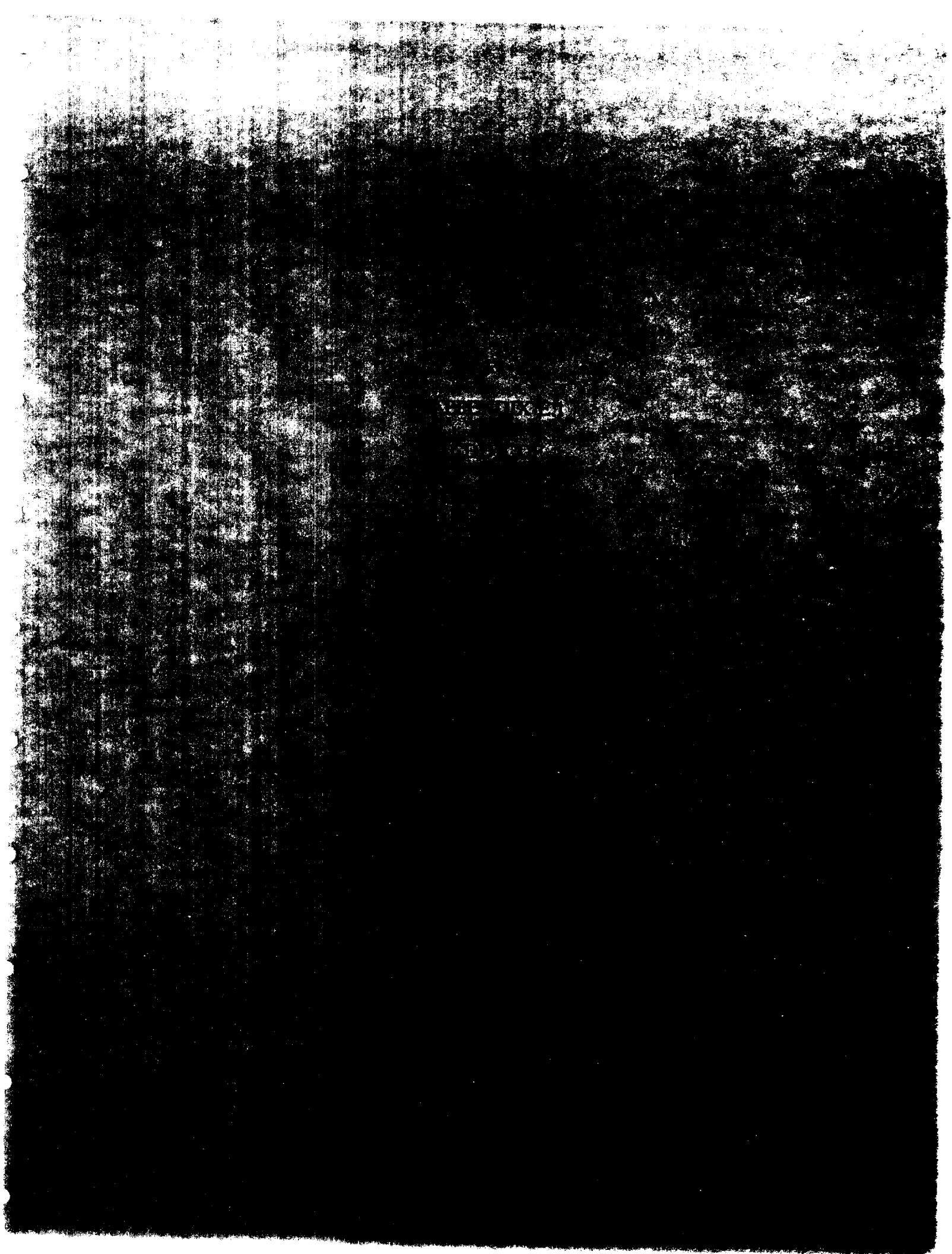
CENTRAL CAROLINA HOSPITAL
 CEM DATA LISTING
 RUN 10 10/02/90

10-02-19902	CO2	CO	NOx	SO2	HCl	THC	LCTmp	UCTmp	
TIME	%V	%V	ppmV	ppmV	ppmV	ppmVw	ppmCw	DEG-F	DEG-F
17:30:46	18.52	1.41	1.62	21.28	0.00	6.02	0.0	1520	1155
17:31:16	16.87	2.24	7.17	26.82	0.00	12.45	0.0	1573	1166
17:31:46	16.50	2.44	11.10	26.83	0.00	9.03	0.0	1564	1178
17:32:16	17.64	1.76	9.19	20.40	0.00	10.83	0.0	1490	1176
17:32:46	18.87	1.15	2.64	17.29	0.00	8.17	0.0	1445	1166
17:33:16	19.12	1.03	1.72	17.30	0.00	12.44	0.0	1463	1155
17:33:46	17.84	1.79	3.17	24.53	0.00	5.19	0.0	1542	1164
17:34:16	16.66	2.35	8.28	26.84	0.00	12.76	0.0	1583	1175
17:34:46	16.62	2.33	10.85	25.73	0.00	7.20	0.0	1536	1182
17:35:16	18.23	1.48	5.61	18.52	0.00	10.18	0.0	1472	1175
17:35:46	19.28	0.87	2.09	14.87	0.00	6.54	0.0	1429	1155
17:36:16	20.33	0.37	0.00	10.13	0.00	16.88	0.0	1398	1127
17:36:46	20.50	0.28	0.00	9.36	0.00	7.07	0.0	1377	1101
17:37:15	20.53	0.26	0.00	9.19	0.00	13.68	0.0	1361	1080
17:37:45	20.56	0.26	0.00	8.65	0.00	2.67	21.4	1358	1067

ARGENTINE

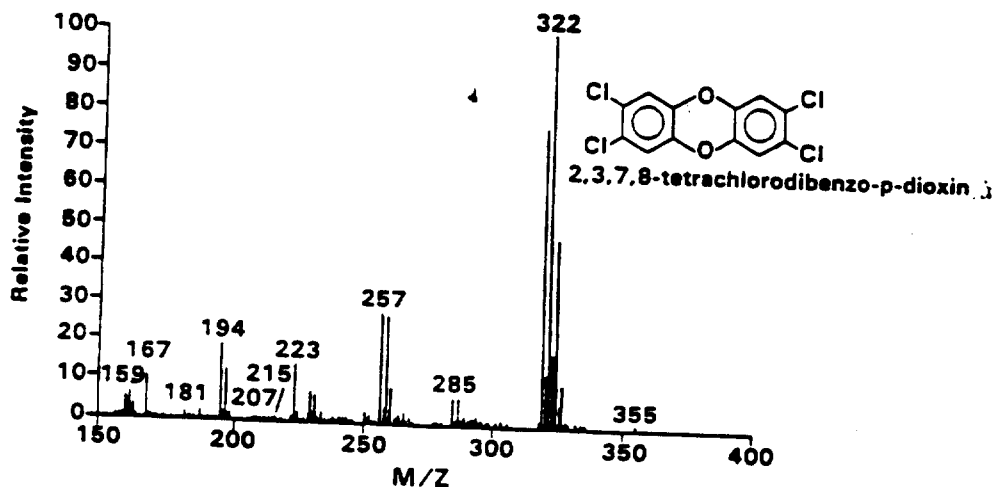
IN AMERICAN DESIGNS

THE
DESIGN
OF
THE
ARGENTINE
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TRIANGLE LABORATORIES, INC.
POLYCHLORINATED DIBENZODIOXINS
AND
DIBENZOFURANS
DATA USER MANUAL

Triangle Laboratories
Analytical Methodology,
Data Quality Objectives,
Deliverables,
Data Package Assembly Description
&
Examples of Calculations



3.3 Sample Data

For each sample analyzed, a "sample data pack" is provided, which consists of:

3.3.1 Sample Data Summary Topsheet and Data Qualifiers

A Sample Data Summary Top Sheet (Figure 2), which summarizes the analyte concentrations, specific congener retention times, ion-abundance ratios and percent recoveries, analyst initials, date of analysis, TLI project number, Client identification, Client Sample identification, GC/MS file name, and continuing calibration file name. The terminology of the symbols used on the header of this reporting form (e.g., EMPC, ppt...) are given below.

On the Sample Data Summary Topsheets, the concentrations of the analytes are given either in parts per quadrillion (ppq), parts per trillion (ppt) or parts per billion (ppb). Absolute amounts (in pg or ng) are reported for "A" and "AA" sample types.

"RT" is the gas chromatographic retention time in minutes and seconds,

"number" is the number of GC peaks identified as PCDD/PCDF isomers in the totals reported for each homologous series,

"ratio" is the integrated ion-abundance ratio as shown in Table 7,

"DL" is the detection limit for samples presenting an analyte response that is less than 2.5 times the background level,

"EMPC", representing the estimated maximum possible concentration, is reported for GC/MS signals eluting within the PCDD/PCDF retention time windows established with the daily GC performance analysis, and which are characterized by a signal-to-noise ratio in excess of 2.5:1 but do not meet all of the qualitative identification criteria listed in Section 2.5. The "EMPC" is calculated by using the same expression used for reporting the identified analyte concentrations. The "DL" and "EMPC" are both reported in the same units used to report detected analytes.

"Flags" are used to warn the Data User of specific peculiarities associated with the results of a particular sample. For reporting results, the following specific data qualifiers are used:

S This qualifier indicates that the response of a specific PCDD/PCDF isomer has exceeded the normal dynamic range of the mass spectrometer detection system. The corresponding signal is saturated and the reported analyte concentration

is a "minimum estimate" regardless of whether or not the ion-abundance ratio or the retention time criteria are met. When the S qualifier is associated with the reporting of "totals", its use is to warn the Data User of the existence of one (not necessarily from a specific isomer) or more saturated signals for a given class of compounds.

- I This flag identifies a labeled compound (e.g., internal standard) for which the retention time criterion was not met due to the possible presence of coeluting interferences. The concentration of unlabeled analytes (computed relatively to the labeled standard in question) may be underestimated while the percent recoveries of the flagged labeled standard may be higher than reality.

Note that this qualifier may also be used if several unexpected signals are found to elute in the vicinity of the labeled standards even though the former's identification criteria are met.

- Q A "Q" qualifier is used to warn the Data User of the existence of a "quantitative interference" as defined in Section 5.1.2.4.1 of Triangle Laboratories User Manual. The reported concentrations and percent recoveries may be questionable.

- A When an "A" data qualifier is used in conjunction with the "Q" data qualifier, the results reported have been adjusted to reflect the change of sensitivity observed on the QC SICPs (Section 5). This will only apply to percent recoveries of labeled compounds when a quantitative interference is detected.

- N Carbon-labeled internal standard characterized by a signal-to-noise ratio of less than 10:1 will be flagged by using the qualifier "N".

- R This flag will be used to indicate that the results reported for the analytes (e.g., 1,2,3,7,8-PeCDD and total PeCDD) quantified relative to a specific internal standard (e.g., ¹³C₁₂-1,2,3,7,8-PeCDD) are rejected due to failure to achieve adequate recoveries (i.e., below QC limits) concomitantly with a low signal-to-noise ratio (S/N < 10:1) for the internal standard and associated specific analyte (Figure 13). In such cases, Triangle Labs recommends that the sample extraction and analysis be repeated to verify that no matrix effect is responsible for the observation(s).

- V A "V" flag indicates that the analytical results reported for the associated analytes are considered valid even though the percent recoveries of the internal standard are below the QC limits. Thus, Triangle Labs considers that a re-extraction of the sample is not warranted. Please refer to Section 5.1.3.4.1 for additional explanations.

- B This flag is used when the analyte is found in the associated laboratory method blank sample as well as in the field sample. The flag is to warn the Data User of the possible/probable blank contamination.
- L This flag identifies detected analytes for which the reported concentrations are below the working calibration curve of the GC/MS system.
- E This data qualifier is used to warn the Data User of the presence of signals in the polychlorinated diphenylether channels that may interfere with the determination of polychlorinated dibenzofurans.
- RO Internal standards for which the ion-abundance ratio is measured outside the acceptable range are flagged with "RO" to indicate the possibility of the presence of a coeluting interference.
- PR The presence of "poorly resolved" GC peaks is flagged by using the PR data qualifier. This will normally be used for specific analytes only.
- X Other specific flags and footnotes may be required to properly define the results. If used, they will be fully described in the Case Narrative. If more than one is necessary, a different letter (e.g., Y, Z...) will be used.

3.3.2 "Raw Data" and "Matched Peaks" Files

A set of dBase-generated pages ("Raw Data" file; Figure 6) reporting the mass of the ions monitored, their corresponding area measurements and retention times for all the GC/MS peaks recorded within the appropriate retention time windows is provided following the Sample Data Summary Sheet. The data can be used by the Data User during the audit to recalculate the results reported on the Sample Data Summary Top Sheet. Additionally, the "Matched Peaks" file (Figure 7) summarizes the ion-abundance ratios ("RATIO") and relative retention times ("REL_RT") of the GC/MS signals. Note that under the header "M_Z" of the "Matched Peaks" file are represented the low-mass ions used in the computation of the ratios (e.g., $M/Z\ 316 = m/z\ 316 / m/z\ 318$; the values originate from the corresponding m/z's with the correct retention time from the "Raw Data" file). The results from the computation of the ion-abundance ratios ("MATCH RAT") and relative retention times ("MATCH RT") are compared to tolerance windows (as stipulated in Section 2.5) and a true "T" or false "F" statement is printed depending on the outcome of the computation and the acceptable values.

Sanford mass

TRIANGLE LABORATORIES, INC.
801-10 CAPITOLA DRIVE
RESEARCH TRIANGLE PARK, NC 27713

Phone: (919) 544-5729
Fax: (919) 544-5491

DATE : * 14 NOVEMBER 1990
CLIENT ID : * RADIAN CORPORATION
P.O. NUMBER : * S106087
TLI PROJECT No. : * 16653M

CASE NARRATIVE
MODEL 8290X

*
* ANALYSIS OF SAMPLES FOR THE PRESENCE OF *
* POLYCHLORINATED DIBENZO-p-DIOXINS *
* AND *
* DIBENZOFURANS *
* BY *
* HIGH-RESOLUTION GAS CHROMATOGRAPHY / *
* HIGH-RESOLUTION MASS SPECTROMETRY *

Ten MM5 samples were received from RADIAN CORPORATION in good condition October 09, 1990 and stored in a refrigerator at 4°C. The samples were extracted and analyzed according to procedures described in the Triangle Labs User Manual provided with this data package. Any particular difficulties encountered during the sample handling by Triangle Labs will be discussed in the QA/QC remark section below.

Quality Assurance/Quality Control Samples

A laboratory method blank -- identified as the TLI Blank -- is prepared along with the batch of samples.

QA/QC Remarks

The release of this particular set of RADIAN CORPORATION analytical data by Triangle Labs was authorized by the Quality Assurance Officer who has reviewed each sample data package individually following a series of inspections/reviews conducted at two other levels of the data production line. When applicable, general deviations from acceptable QA/QC requirements are identified below. Comments on the effect of these deviations upon the validity and reliability of the results can be obtained from the User Manual (Data Quality Objectives; Section 5). Specific QA/QC Problems Associated with this Particular Project are:

Sample Preparation Laboratory: None

Mass Spectrometry: None

Data Review:

The following samples represent an analysis of 2.0 % of the archived half (effectively 1.0 % of the entire sample). These samples were spiked with an additional 10.0 ng of internal and alternate standards, bringing these spike levels to 1010 ng per entire sample. The dilution of the original surrogate pre-spikes negates their accurate quantitation. They have, therefore been deleted from final reports.

<u>Sample</u>	<u>TLI #</u>
RUN # 2	37-13-2A-D
RUN # 4	37-14-1A-D
RUN # 8	37-15-1A-D

The remaining samples represent an analysis of the archived half, and contain the usual 10.0 ng spike of internal standards (per entire sample).

Addendum to Section 4.6 of the Data User's Manual

Effective December 15, 1989, Triangle Laboratories has adopted a new procedure for calculating the analyte specific detection limits. Under this new policy two representative noise height determinations are summed and multiplied by an empirically deter-

mined factor before the detection limit equation given in Section 4.6 of the Data User's Manual is applied. The effect of this procedure is to increase DB-225 analyses detection limits by a factor of 3.5, and DB-5 analyses detection limits by a factor of 5. This procedure will result in a more accurate estimate of detection limits.

The revised formula for DB-225 analyses is:

$$DL_{ai}^{DB-225} = \frac{2.5 * (3.5 * H_{ai}) * Q_{Bj}}{A_{Bj} * \overline{RRF} * W}$$

$$3.5 * H_{ai} = A_{noise}$$

The revised formula for DB-5 analyses is:

$$DL_{ai}^{DB-5} = \frac{2.5 * (5 * H_{ai}) * Q_{Bj}}{A_{Bj} * \overline{RRF} * W}$$

$$5 * H_{ai} = A_{noise}$$

The symbols are defined in Section 4.6 of the Data User's Manual.

As an example, consider a DB-225 confirmation analysis of a 10 g sample. The internal standard spike is 2000 pg, the $^{13}C_{12}$ -2,3,7,8-TCDF internal standard area is 12000 area units, the RRF is 1.215 and the noise height is 11 units. The 2,3,7,8-TCDF detection limit is:

$$DL_{TCDF}^{DB-225} = \frac{2.5 * (3.5 * 11) * 2000}{12000 * 1.215 * 10.0} = 1.3 \text{ ppt}$$

Should RADIAN CORPORATION have any questions or comments to formulate regarding this data package please feel free to contact us.

For Triangle Laboratories,

V. Chaston
Analyst

Paul B. Bels
QA Project Officer

Shane Wilford
Laboratory Manager

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (a)

Page 1 of 2
11/13/90

FILE NAME.....: S903969 CLIENT ID.....: RADIAN TLI NUMBER.....: n/a
CONCAL (VER)..: S903958 SAMPLE ID.....: TLI BLANK
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: n/a SAMPLE ORIGIN: n/a
DATE RECEIVED.: / / DATE COLLECTED: / /
SPIKE FILE....: SPX23711 SHIPMENT NO....: n/a

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		6.5				
12378-PeCDD	ND		8.6				
123478-HxCDD	ND		8.5				
123678-HxCDD	ND		8.3				
123789-HxCDD	ND		9.5				
1234678-HpCDD	ND		14.5				
OCDD	ND		26.5				
2378-TCDF	ND		4.5				
12378-PeCDF	ND		6.3				
23478-PeCDF	ND		6.6				
123478-HxCDF	ND		5.0				
123678-HxCDF	ND		4.8				
234678-HxCDF	ND		6.6				
123789-HxCDF	ND		8.4				
1234678-HpCDF	ND		6.0				
1234789-HpCDF	ND		10.1				
OCDF	ND		22.4				
TOTAL TCDD	ND		6.5				
TOTAL PeCDD	ND		8.6				
TOTAL HxCDD	ND		8.7				
TOTAL HpCDD	ND		14.5				
TOTAL TCDF	ND		4.5				
TOTAL PeCDF	ND		6.4				
TOTAL HxCDF	ND		5.9				
TOTAL HpCDF	ND		7.5				

MSS 11/13/90

X237_RPT rev:3.03

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (a) QA/QC SUMMARY

Page 2 of 2
11/13/90

FILE NAME.....: S903969 CLIENT ID.....: RADIAN TLI NUMBER.....: n/a
CONCAL (VER)..: S903958 SAMPLE ID.....: TLI BLANK
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: n/a SAMPLE ORIGIN: n/a
DATE RECEIVED.: / / DATE COLLECTED: / /
SPIKE FILE....: SPX23711 SHIPMENT NO....: n/a

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	771	76.3	0.53	42:18	—
13C12-HxCDF 234	998	98.8	0.51	41:09	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	698	69.1	0.76	30:20	—
13C12-2378-TCDD	727	72.0	0.81	31:07	—
13C12-PeCDF 123	842	83.4	1.50	35:06	—
13C12-PeCDD 123	1020	101	1.53	36:32	—
13C12-HxCDF 678	809	80.1	0.53	40:20	—
13C12-HxCDD 678	942	93.2	1.25	41:28	—
13C12-HpCDF 678	695	68.8	0.45	44:47	—
13C12-HpCDD 678	659	65.9	1.03	46:20	—
13C12-OCDD	1080	53.6	0.86	51:42	—

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PCDD/PCDF 2378X ANALYSIS (a)

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FILE NAME.....: S903987 CLIENT ID.....: RADIAN TLI NUMBER.....: n/a
CONCAL (VER):: S903976 SAMPLE ID.....: 1/2 OM TLI BLANK 50%
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 10/28/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: n/a SAMPLE ORIGIN: n/a
DATE RECEIVED.: / / DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO....: n/a

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		0.05				---
12378-PeCDD	ND		0.06				---
123478-HxCDD	ND		0.05				---
123678-HxCDD	ND		0.05				---
123789-HxCDD	ND		0.05				---
1234678-HpCDD	ND		0.08				---
OCDD	0.18				0.80	51:45	---
2378-TCDF	ND		0.04				---
12378-PeCDF	ND		0.05				---
23478-PeCDF	ND		0.05				---
123478-HxCDF	ND		0.03				---
123678-HxCDF	ND		0.03				---
234678-HxCDF	ND		0.04				---
123789-HxCDF	ND		0.05				---
1234678-HpCDF	ND		0.03				---
1234789-HpCDF	ND		0.06				---
OCDF	ND		0.1				---
TOTAL TCDD	ND		0.05				---
TOTAL PeCDD	ND		0.06				---
TOTAL HxCDD	ND		0.05				---
TOTAL HpCDD	ND		0.08				---
TOTAL TCDF	ND		0.04				---
TOTAL PeCDF	ND		0.05				---
TOTAL HxCDF	ND		0.03				---
TOTAL HpCDF	ND		0.04				---

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PCDD/PCDF 2378X ANALYSIS (a)

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FILE NAME.....: S903997 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-16-1A-D
CONCAL (VER)..: S903996 SAMPLE ID.....: 1/2 10M FIELD BLANK 50%
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: VC ANALYSIS DATE: 10/28/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: n/a SAMPLE ORIGIN: n/a
DATE RECEIVED.: / / DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO....: n/a

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		0.06				---
12378-PeCDD	ND		0.08				---
123478-HxCDD	ND		0.1				---
123678-HxCDD	ND		0.1				---
123789-HxCDD	EMPC			0.18			---
1234678-HpCDD	0.58				0.99	46:03	---
OCDD	EMPC			0.95			---
2378-TCDF	0.35				0.81	30:08	---
12378-PeCDF	0.14				1.36	34:51	---
23478-PeCDF	0.23				1.66	35:49	---
123478-HxCDF	EMPC			0.68			---
123678-HxCDF	0.38				1.27	40:05	---
234678-HxCDF	EMPC			0.46			---
123789-HxCDF	ND		0.1				---
1234678-HpCDF	1.6				0.91	44:32	---
1234789-HpCDF	ND		0.2				---
CCDF	0.91				0.81	51:34	---
TOTAL TCDD	EMPC			0.07			---
TOTAL PeCDD	0.29	3		0.36	1.46		---
TOTAL HxCDD	0.85	3		1.0	1.18		---
TOTAL HpCDD	0.58	1		1.4	0.99		---
TOTAL TCDF	0.63	4		1.4	0.76		---
TOTAL PeCDF	1.9	8		2.3	1.50		---
TOTAL HxCDF	0.72	2		3.6	1.19		---
TOTAL HpCDF	3.0	3			1.05		---

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FILE NAME.....: S903997 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-16-1A-D
CONCAL (VER)..: S903996 SAMPLE ID.....: 1/2 10M FIELD BLANK 50%
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: VC ANALYSIS DATE: 10/28/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: n/a SAMPLE ORIGIN: n/a
DATE RECEIVED.: / / DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO....: n/a

SURROGATE RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	9.0	90.4		30:54	
13C12-PeCDF 234	7.8	78.1	1.56	35:48	
13C12-HxCDF 478	9.2	91.6	0.50	39:56	
13C12-HxCDD 478	8.6	86.1	1.13	41:04	
13C12-HpCDF 789	6.6	65.8	0.43	46:41	

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	6.5	65.1	0.48	42:02	
13C12-HxCDF 234	8.7	87.0	0.51	40:52	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	6.6	66.2	0.77	30:06	
13C12-2378-TCDD	7.4	73.8	0.80	30:53	
13C12-PeCDF 123	10.2	102	1.58	34:50	
13C12-PeCDD 123	9.8	98.4	1.56	36:17	
13C12-HxCDF 678	10.4	104	0.55	40:05	
13C12-HxCDD 678	11.6	116	1.30	41:12	
13C12-HpCDF 678	6.0	59.9	0.44	44:30	
13C12-HpCDD 678	5.0	49.7	0.98	46:02	
13C12-OCDD	6.6	32.8	0.74	51:18	

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FILE NAME.....: S903978 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-13-1A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 1 50% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: MTB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO....: MWI

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	0.63				0.68	31:10	---
12378-PeCDD	1.5				1.51	36:35	---
123478-HxCDD	0.98				1.25	41:21	---
123678-HxCDD	1.5				1.22	41:29	---
123789-HxCDD	3.2				1.30	41:56	---
1234678-HpCDD	8.5				1.00	46:23	---
OCDD	10.0				0.78	51:44	---
2378-TCDF	18.5				0.74	30:24	---
12378-PeCDF	3.2				1.60	35:09	---
23478-PeCDF	6.1				1.57	36:07	---
123478-HxCDF	7.5				1.15	40:12	---
123678-HxCDF	3.9				1.13	40:23	---
234678-HxCDF	4.8				1.14	41:10	---
123789-HxCDF	0.18				1.32	42:20	---
1234678-HpCDF	9.6				0.95	44:50	---
1234789-HpCDF	1.2				0.94	47:04	---
OCDF	5.8				0.94	51:59	---
TOTAL TCDD	18.5	10		19.0	0.78		---
TOTAL PeCDD	17.3	8		22.2	1.62		---
TOTAL HxCDD	20.5	7			1.25		---
TOTAL HpCDD	18.7	2			1.01		---
TOTAL TCDF	108	18		108	0.73		---
TOTAL PeCDF	77.4	14			1.58		---
TOTAL HxCDF	39.5	11		40.1	1.16		---
TOTAL HpCDF	17.7	4			0.94		---

* See document control for full sample ID

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FILE NAME.....: S903978 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-13-1A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 1 50% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: MTB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO....: MWI

SURROGATE RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	8.7	86.7		31:10	
13C12-PeCDF 234	10.7	107	1.51	36:06	
13C12-HxCDF 478	9.0	90.5	0.52	40:12	
13C12-HxCDD 478	8.6	86.3	1.17	41:20	
13C12-HpCDF 789	7.8	78.1	0.39	47:03	

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	8.2	81.8	0.50	42:19	
13C12-HxCDF 234	10.2	102	0.51	41:09	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	6.3	63.0	0.79	30:21	
13C12-2378-TCDD	7.5	74.6	0.81	31:09	
13C12-PeCDF 123	7.7	76.7	1.52	35:08	
13C12-PeCDD 123	8.1	81.4	1.54	36:35	
13C12-HxCDF 678	11.5	115	0.52	40:22	
13C12-HxCDD 678	12.2	122	1.23	41:28	
13C12-HpCDF 678	8.3	83.2	0.45	44:49	
13C12-HpCDD 678	7.7	77.0	1.08	46:21	
13C12-OCDD	10.4	52.1	0.89	51:43	

* See document control for full sample ID

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FILE NAME.....: S903979 CLIENT ID.....: RADIAN TLI NUMBER.....: 36-13-2A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 2 1% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: MTB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23711 SHIPMENT NO....: MWI

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	19.0				0.77	31:07	---
12378-PeCDD	59.0				1.67	36:34	---
123478-HxCDD	56.1				1.20	41:21	---
123678-HxCDD	66.3				1.36	41:29	---
123789-HxCDD	118				1.23	41:57	PE
1234678-HpCDD	315				1.05	46:21	---
OCDD	409				0.85	51:43	---
2378-TCDF	409				0.78	30:22	---
12378-PeCDF	166				1.70	35:06	---
23478-PeCDF	231				1.60	36:06	---
123478-HxCDF	495				1.14	40:11	---
123678-HxCDF	297				1.14	40:22	---
234678-HxCDF	291				1.08	41:09	---
123789-HxCDF	20.6				1.21	42:19	---
1234678-HpCDF	787				0.96	44:48	---
1234789-HpCDF	119				0.88	47:02	---
OCDF	549				0.98	51:58	---
TOTAL TCDD	465	11		474	0.78		---
TOTAL PeCDD	450	9		528	1.60		---
TOTAL HxCDD	787	7			1.27		---
TOTAL HpCDD	645	2			1.02		---
TOTAL TCDF	2580	15		2590	0.77		---
TOTAL PeCDF	3050	17		3060	1.58		---
TOTAL HxCDF	2800	13			1.14		---
TOTAL HpCDF	1540	4			0.92		---

* See document control for full sample ID

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PCDD/PCDF 2378X ANALYSIS (a) QA/QC SUMMARY

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FILE NAME.....: S903979 CLIENT ID.....: RADIAN TLI NUMBER.....: 36-13-2A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 2 1% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: MTB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE...: SPX23711 SHIPMENT NO....: MWI
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ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	856	84.7	0.52	42:18	—
13C12-HxCDF 234	1050	104	0.51	41:09	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	791	78.3	0.77	30:20	—
13C12-2378-TCDD	851	84.3	0.81	31:07	—
13C12-PeCDF 123	970	96.1	1.52	35:06	—
13C12-PeCDD 123	1210	120	1.57	36:34	—
13C12-HxCDF 678	1060	105	0.51	40:21	—
13C12-HxCDD 678	1070	106	1.25	41:28	—
13C12-HpCDF 678	849	84.1	0.45	44:48	—
13C12-HpCDD 678	753	75.3	1.00	46:20	—
13C12-OCDD	1120	55.4	0.88	51:42	—

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FILE NAME.....: S903980 CLIENT ID.....: RADIAN TLI NUMBER.....: 36-13-3A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 3 50% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: MTB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / / SAMPLE ORIGIN: CCH
SPIKE FILE....: SPX23720 SHIPMENT NO....: MWI

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	EMPC			1.2			
12378-PeCDD	4.6				1.42	36:34	---
123478-HxCDD	4.5				1.16	41:21	---
123678-HxCDD	7.3				1.25	41:29	---
123789-HxCDD	14.0				1.22	41:54	PR
1234678-HpCDD	41.7				1.03	46:21	---
OCDD	53.4				0.89	51:43	---
2378-TCDF	104				0.79	30:23	---
12378-PeCDF	11.3				1.61	35:06	---
23478-PeCDF	29.7				1.59	36:06	---
123478-HxCDF	52.0				1.16	40:10	---
123678-HxCDF	21.6				1.15	40:22	---
234678-HxCDF	44.8				1.15	41:09	---
123789-HxCDF	1.3				1.15	42:20	---
1234678-HpCDF	81.3				0.94	44:48	---
1234789-HpCDF	12.6				0.96	47:02	---
OCDF	83.0				0.92	51:58	---
TOTAL TCDD	156	11		158	0.77		---
TOTAL PeCDD	133	11		140	1.56		---
TOTAL HxCDD	127	7		128	1.23		---
TOTAL HpCDD	93.0	2			1.04		---
TOTAL TCDF	492	16		535	0.74		---
TOTAL PeCDF	399	18		400	1.58		---
TOTAL HxCDF	267	13		267	1.16		---
TOTAL HpCDF	165	4			0.95		---

* See document control for full sample ID

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FILE NAME.....: S903980 CLIENT ID.....: RADIAN TLI NUMBER.....: 36-13-3A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 3 50% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: MTB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO...: MWI
=====

SURROGATE RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	9.5	94.9		31:08	
13C12-PeCDF 234	10.0	99.7	1.58	36:04	
13C12-HxCDF 478	9.9	98.5	0.52	40:11	
13C12-HxCDD 478	8.6	86.1	1.23	41:20	
13C12-HpCDF 789	8.2	81.7	0.43	47:01	

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	8.1	81.1	0.52	42:18	
13C12-HxCDF 234	10.1	101	0.51	41:09	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	8.0	79.7	0.78	30:20	
13C12-2378-TCDD	8.2	81.7	0.82	31:07	
13C12-PeCDF 123	8.9	89.1	1.51	35:06	
13C12-PeCDD 123	9.1	91.5	1.57	36:34	
13C12-HxCDF 678	10.9	109	0.52	40:20	
13C12-HxCDD 678	11.3	113	1.18	41:28	
13C12-HpCDF 678	8.0	80.3	0.44	44:47	
13C12-HpCDD 678	7.5	74.9	1.06	46:20	
13C12-OCDD	10.8	54.0	0.92	51:42	

* See document control for full sample ID

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FILE NAME.....: S903981 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-14-1A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 4 1% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: MTB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / / SAMPLE ORIGIN: CCH
SPIKE FILE....: SPX23711 SHIPMENT NO....: MWI

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	53.1				0.84	31:08	
12378-PeCDD	208				1.47	36:34	
123478-HxCDD	179				1.17	41:21	
123678-HxCDD	228				1.28	41:29	
123789-HxCDD	433				1.25	41:56	
1234678-HpCDD	928				1.01	46:20	
OCDD	702				0.85	51:42	
2378-TCDF	1130				0.77	30:22	
12378-PeCDF	798				1.68	35:06	
23478-PeCDF	945				1.57	36:04	
123478-HxCDF	2300				1.16	40:11	
123678-HxCDF	1450				1.17	40:21	
234678-HxCDF	1030				1.19	41:09	
123789-HxCDF	90.1				1.16	42:19	
1234678-HpCDF	2930				0.92	44:48	
1234789-HpCDF	354				0.97	47:01	
OCDF	898				0.90	51:57	
TOTAL TCDD	996	12			0.79		
TOTAL PeCDD	1600	10		1640	1.52		
TOTAL HxCDD	2540	7		2540	1.27		
TOTAL HpCDD	1940	2			1.02		
TOTAL TCDF	7940	15		7950	0.75		
TOTAL PeCDF	14470	19			1.55		
TOTAL HxCDF	12650	14		12660	1.16		
TOTAL HpCDF	5340	4			0.93		

* See document control for full sample ID

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PCDD/PCDF 2378X ANALYSIS (a) QA/QC SUMMARY

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FILE NAME.....: S903981 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-14-1A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 4 1% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: MTB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE...: SPX23711 SHIPMENT NO....: MWI
=====

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	919	91.0	0.50	42:18	—
13C12-HxCDF 234	1060	105	0.50	41:08	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	825	81.7	0.74	30:20	—
13C12-2378-TCDD	900	89.1	0.82	31:07	—
13C12-PeCDF 123	988	97.9	1.49	35:05	—
13C12-PeCDD 123	1290	128	1.53	36:32	—
13C12-HxCDF 678	1040	103	0.50	40:20	—
13C12-HxCDD 678	1030	102	1.25	41:28	—
13C12-HpCDF 678	918	90.9	0.45	44:47	—
13C12-HpCDD 678	781	78.1	1.06	46:19	—
13C12-OCDD	1250	62.0	0.88	51:41	—

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (a)

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FILE NAME....: S903982 CLIENT ID....: RADIAN TLI NUMBER....: 37-14-2A-D
CONCAL (VER)..: S903976 SAMPLE ID....: RUN 5 50% *
PROJECT NUMBER: 16653M ICAL DATE....: 10/15/90
ANALYST.....: MTB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO....: MWI

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	0.72				0.85	31:08	---
12378-PeCDD	1.9				1.62	36:34	---
123478-HxCDD	1.2				1.27	41:21	---
123678-HxCDD	1.8				1.20	41:29	---
123789-HxCDD	3.7				1.20	41:56	PC
1234678-HpCDD	12.4				1.03	46:21	---
OCDD	17.2				0.92	51:43	---
2378-TCDF	28.0				0.76	30:23	---
12378-PeCDF	4.1				1.61	35:06	---
23478-PeCDF	7.0				1.49	36:06	---
123478-HxCDF	9.1				1.12	40:11	---
123678-HxCDF	4.7				1.09	40:22	---
234678-HxCDF	6.5				1.12	41:10	---
123789-HxCDF	0.33				1.16	42:20	---
1234678-HpCDF	17.8				0.95	44:49	---
1234789-HpCDF	2.3				1.01	47:02	---
OCDF	12.0				0.92	51:59	---
TOTAL TCDD	57.4	12			0.81		---
TOTAL PeCDD	37.5	10		40.3	1.59		---
TOTAL HxCDD	30.4	7			1.24		---
TOTAL HpCDD	25.8	2			1.03		---
TOTAL TCDF	190	17		190	0.75		---
TOTAL PeCDF	74.6	14		87.6	1.53		---
TOTAL HxCDF	47.3	11		47.4	1.11		---
TOTAL HpCDF	33.4	4			0.96		---

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PCDD/PCDF 2378X ANALYSIS (a) QA/QC SUMMARY

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FILE NAME.....: S903982 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-14-2A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 5 50% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: MTB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO....: MWI
=====

SURROGATE RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	9.2	91.7		31:08	---
13C12-PeCDF 234	9.7	97.1	1.58	36:04	---
13C12-HxCDF 478	9.4	94.1	0.54	40:11	---
13C12-HxCDD 478	8.6	86.4	1.26	41:20	---
13C12-HpCDF 789	8.2	82.5	0.42	47:01	---

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	8.6	86.2	0.52	42:19	---
13C12-HxCDF 234	10.1	101	0.51	41:09	---

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	7.6	75.5	0.78	30:20	---
13C12-2378-TCDD	8.2	81.9	0.81	31:08	---
13C12-PeCDF 123	8.2	82.3	1.51	35:06	---
13C12-PeCDD 123	7.8	77.7	1.59	36:34	---
13C12-HxCDF 678	11.5	115	0.53	40:21	---
13C12-HxCDD 678	11.9	119	1.15	41:28	---
13C12-HpCDF 678	8.2	81.9	0.47	44:48	---
13C12-HpCDD 678	7.8	77.8	1.03	46:21	---
13C12-OCDD	11.1	55.3	0.95	51:42	---

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FILE NAME.....: S903983 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-14-3A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 6 50% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO....: MWI

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	EMPC			0.22			
12378-PeCDD	0.69				1.49	36:35	---
123478-HxCDD	0.57				1.21	41:22	---
123678-HxCDD	0.96				1.24	41:30	---
123789-HxCDD	1.8				1.25	41:55	---
1234678-HpCDD	6.3				1.03	46:22	---
OCDD	7.6				0.90	51:44	---
2378-TCDF	8.0				0.73	30:23	---
12378-PeCDF	1.6				1.50	35:08	---
23478-PeCDF	2.8				1.57	36:06	---
123478-HxCDF	4.8				1.13	40:12	---
123678-HxCDF	2.4				1.16	40:22	---
234678-HxCDF	3.8				1.12	41:11	---
123789-HxCDF	0.18				1.06	42:20	---
1234678-HpCDF	8.5				0.95	44:49	---
1234789-HpCDF	1.7				0.93	47:03	---
OCDF	13.4				0.90	51:59	---
TOTAL TCDD	11.2	11		11.4	0.77		---
TOTAL PeCDD	12.2	11		12.6	1.53		---
TOTAL HxCDD	15.0	7		15.0	1.24		---
TOTAL HpCDD	13.7	2			1.03		---
TOTAL TCDF	43.8	17		43.8	0.76		---
TOTAL PeCDF	29.1	11		34.9	1.55		---
TOTAL HxCDF	24.9	13		25.0	1.14		---
TOTAL HpCDF	17.1	4			0.93		---

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PCDD/PCDF 2378X ANALYSIS (a) QA/QC SUMMARY

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FILE NAME.....: S903983 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-14-3A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 6 50% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 10/27/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO....: MWI

SURROGATE RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	9.1	91.0		31:09	---
13C12-PeCDF 234	10.0	100	1.46	36:04	---
13C12-HxCDF 478	9.4	94.3	0.50	40:12	---
13C12-HxCDD 478	7.2	71.6	1.19	41:21	---
13C12-HpCDF 789	8.8	87.7	0.44	47:02	---

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	8.6	86.5	0.51	42:19	---
13C12-HxCDF 234	9.7	97.4	0.50	41:09	---

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	7.9	78.6	0.76	30:21	---
13C12-2378-TCDD	8.5	85.1	0.82	31:08	---
13C12-PeCDF 123	9.2	92.2	1.52	35:06	---
13C12-PeCDD 123	12.4	124	1.55	36:34	---
13C12-HxCDF 678	9.8	97.5	0.51	40:22	---
13C12-HxCDD 678	12.9	129	1.16	41:29	---
13C12-HpCDF 678	7.8	77.5	0.46	44:48	---
13C12-HpCDD 678	7.8	78.3	0.97	46:21	---
13C12-OCDD	11.7	58.4	0.91	51:42	---

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FILE NAME.....: S903984 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-1A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 8 1% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 10/28/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23711 SHIPMENT NO....: MWI

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	25.2				0.69	31:08	---
12378-PeCDD	128				1.62	36:35	---
123478-HxCDD	149				1.28	41:22	---
123678-HxCDD	155				1.25	41:30	---
123789-HxCDD	278				1.24	41:57	Pr
1234678-HpCDD	862				1.02	46:22	---
OCDD	1080				0.90	51:44	---
2378-TCDF	608				0.74	30:23	---
12378-PeCDF	285				1.73	35:08	---
23478-PeCDF	364				1.64	36:06	---
123478-HxCDF	1190				1.11	40:12	---
123678-HxCDF	721				1.13	40:23	---
234678-HxCDF	633				1.14	41:11	---
123789-HxCDF	43.7				1.08	42:20	---
1234678-HpCDF	2020				0.95	44:49	---
1234789-HpCDF	258				0.89	47:03	---
OCDF	950				0.93	51:59	---
TOTAL TCDD	660	9		757	0.80		---
TOTAL PeCDD	954	10		981	1.61		---
TOTAL HxCDD	1780	7			1.25		---
TOTAL HpCDD	1800	2			1.04		---
TOTAL TCDF	3630	17		3660	0.74		---
TOTAL PeCDF	5050	17		5060	1.61		---
TOTAL HxCDF	6670	15		6670	1.15		---
TOTAL HpCDF	3800	4			0.95		---

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PCDD/PCDF 2378X ANALYSIS (a) QA/QC SUMMARY

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FILE NAME.....: S903984 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-1A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 8 1% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 10/28/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23711 SHIPMENT NO....: MWI
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ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	831	82.3	0.53	42:20	—
13C12-HxCDF 234	1090	107	0.51	41:09	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	835	82.7	0.77	30:21	—
13C12-2378-TCDD	804	79.6	0.82	31:08	—
13C12-PeCDF 123	1070	106	1.57	35:06	—
13C12-PeCDD 123	1160	115	1.60	36:34	—
13C12-HxCDF 678	1000	99.4	0.51	40:22	—
13C12-HxCDD 678	1040	103	1.23	41:29	—
13C12-HpCDF 678	825	81.7	0.44	44:48	—
13C12-HpCDD 678	709	70.9	1.06	46:21	—
13C12-OCDD	1080	53.4	0.90	51:43	—

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FILE NAME.....: S903985 CLIENT ID.....: RADIANT TLI NUMBER.....: 37-15-2A-D
CONCAL (VER):: S903976 SAMPLE ID.....: RUN 9 50% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 10/28/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO....: MWI

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	2.5				0.76	31:10	---
12378-PeCDD	5.8				1.55	36:36	---
123478-HxCDD	3.4				1.22	41:23	---
123678-HxCDD	5.2				1.22	41:31	---
123789-HxCDD	8.6				1.20	41:57	---
1234678-HpCDD	23.6				1.04	46:23	---
OCDD	30.5				0.87	51:45	---
2378-TCDF	69.2				0.86	30:24	---
12378-PeCDF	12.5				1.62	35:09	---
23478-PeCDF	19.5				1.67	36:07	---
123478-HxCDF	24.2				1.12	40:12	---
123678-HxCDF	12.7				1.12	40:23	---
234678-HxCDF	16.8				1.14	41:11	---
123789-HxCDF	0.82				1.11	42:21	---
1234678-HpCDF	33.5				0.95	44:50	---
1234789-HpCDF	4.4				0.90	47:04	---
OCDF	26.5				0.89	52:00	---
TOTAL TCDD	148	13		148	0.82		---
TOTAL PeCDD	122	12			1.56		---
TOTAL HxCDD	78.6	8		78.8	1.24		---
TOTAL HpCDD	52.0	2			1.03		---
TOTAL TCDF	478	16		478	0.79		---
TOTAL PeCDF	286	16		286	1.62		---
TOTAL HxCDF	135	13			1.13		---
TOTAL HpCDF	63.6	4			0.93		---

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PCDD/PCDF 2378X ANALYSIS (a) QA/QC SUMMARY

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FILE NAME.....: S903985 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-2A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 9 50% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 10/28/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO....: MWI

SURROGATE RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	9.0	90.2		31:10	—
13C12-PeCDF 234	8.8	88.0	1.56	36:06	—
13C12-HxCDF 478	9.5	95.0	0.52	40:13	—
13C12-HxCDD 478	9.1	90.6	1.24	41:22	—
13C12-HpCDF 789	7.6	76.2	0.44	47:03	—

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	9.0	89.6	0.50	42:20	—
13C12-HxCDF 234	10.8	108	0.50	41:11	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	8.7	87.2	0.78	30:22	—
13C12-2378-TCDD	8.3	82.6	0.82	31:09	—
13C12-PeCDF 123	10.0	99.8	1.52	35:08	—
13C12-PeCDD 123	9.9	98.9	1.55	36:35	—
13C12-HxCDF 678	11.3	113	0.51	40:23	—
13C12-HxCDD 678	11.9	119	1.27	41:30	—
13C12-HpCDF 678	8.2	81.6	0.44	44:49	—
13C12-HpCDD 678	7.4	74.1	1.01	46:22	—
13C12-OCDD	10.9	54.4	0.91	51:44	—

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FILE NAME.....: S903986 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-3A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 10 50% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 10/28/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO....: MWI

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	EMPC			0.37			
12378-PeCDD	1.2				1.64	36:35	---
123478-HxCDD	1.4				1.16	41:23	---
123678-HxCDD	2.8				1.35	41:30	---
123789-HxCDD	4.2				1.26	41:56	---
1234678-HpCDD	20.7				1.07	46:22	---
OCDD	25.9				0.83	51:44	---
2378-TCDF	21.7				0.76	30:23	---
12378-PeCDF	3.9				1.59	35:08	---
23478-PeCDF	9.4				1.60	36:06	---
123478-HxCDF	12.9				1.13	40:12	---
123678-HxCDF	6.6				1.21	40:23	---
234678-HxCDF	13.3				1.13	41:11	---
123789-HxCDF	0.56				1.18	42:21	---
1234678-HpCDF	24.1				0.93	44:50	---
1234789-HpCDF	5.3				0.95	47:03	---
OCDF	36.5				0.92	51:59	---
TOTAL TCDD	19.2	10		19.7	0.76		---
TOTAL PeCDD	20.6	9		24.0	1.59		---
TOTAL HxCDD	35.2	7			1.24		---
TOTAL HpCDD	44.0	2			1.05		---
TOTAL TCDF	123	15		124	0.77		---
TOTAL PeCDF	91.1	15		103	1.57		---
TOTAL HxCDF	77.1	13		77.4	1.18		---
TOTAL HpCDF	54.4	4			0.94		---

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PCDD/PCDF 2378X ANALYSIS (a) QA/QC SUMMARY

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FILE NAME.....: S903986 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-3A-D
CONCAL (VER)..: S903976 SAMPLE ID.....: RUN 10 50% *
PROJECT NUMBER: 16653M ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 10/28/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX23720 SHIPMENT NO....: MWI

SURROGATE RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	9.0	89.9		31:09	—
13C12-PeCDF 234	9.7	97.4	1.51	36:04	—
13C12-HxCDF 478	9.3	93.0	0.53	40:12	—
13C12-HxCDD 478	8.7	86.8	1.15	41:21	—
13C12-HpCDF 789	7.6	75.9	0.45	47:02	—

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	8.5	85.2	0.51	42:20	—
13C12-HxCDF 234	10.9	109	0.53	41:10	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	6.7	67.4	0.79	30:21	—
13C12-2378-TCDD	7.1	71.4	0.83	31:08	—
13C12-PeCDF 123	7.9	79.1	1.49	35:06	—
13C12-PeCDD 123	8.8	87.6	1.47	36:34	—
13C12-HxCDF 678	11.9	119	0.52	40:22	—
13C12-HxCDD 678	12.5	125	1.18	41:29	—
13C12-HpCDF 678	9.4	93.7	0.47	44:49	—
13C12-HpCDD 678	8.6	86.1	1.07	46:21	—
13C12-OCDD	14.2	70.8	0.94	51:43	—

* See document control for full sample ID

MMI 11/13/90

X237_RPT rev:3.03

TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME....: U902470 CLIENT ID....: RADIAN TLI NUMBER....: 37-16-1A-D
CONCAL (VER)..: U902462 SAMPLE ID....: 1/2 10M FIELD BLANK 50%
PROJECT NUMBER: 16653M ICAL DATE....: 09/21/90
ANALYST.....: SB ANALYSIS DATE: 10/31/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF20 SHIPMENT NO....: MWI

NAME	AMT (ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		0.04				—
2378-TCDF	EMPC			0.07			—
TOTAL TCDD	0.05	1		0.15	0.89		—
TOTAL TCDF	0.84	9		1.5	0.77		—

SURROGATE STD. RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	10.0	100		21:37	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	8.0	79.8	0.76	22:58	—
13C12-2378-TCDD	7.6	75.8	0.78	21:35	—

* See document control for full sample ID

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C2NF_RPT rev:3.01

TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME....: U902459 CLIENT ID....: RADIAN TLI NUMBER....: 37-13-1A-D
CONCAL (VER)..: U902446 SAMPLE ID....: RUN #1 50% *
PROJECT NUMBER: 16653M ICAL DATE....: 09/21/90
ANALYST.....: SG ANALYSIS DATE: 10/30/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF20 SHIPMENT NO....: MWI

NAME	AMT (ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	1.6				0.78	21:39	—
2378-TCDF	2.1				0.74	23:00	—
TOTAL TCDD	20.2	13		20.6	0.80		—
TOTAL TCDF	73.6	22			0.75		—

SURROGATE STD. RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	9.8	98.2		21:37	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	7.6	76.2	0.75	22:58	—
13C12-2378-TCDD	7.9	78.6	0.75	21:37	—

* See document control for full sample ID

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C2NF_RPT rev:3.01

TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME.....: U902460 CLIENT ID.....: RADIANT TLI NUMBER.....: 37-13-2A-D
CONCAL (VER)..: U902446 SAMPLE ID.....: RUN #2 1% *
PROJECT NUMBER: 16653M ICAL DATE.....: 09/21/90
ANALYST.....: SG ANALYSIS DATE: 10/30/90
SAMPLE SIZE..: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE...: SPC2NF11 SHIPMENT NO....: MWI

NAME	AMT (ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	32.7				0.83	21:37	—
2378-TCDF	57.8				0.77	22:59	—
TOTAL TCDD	482	10		510	0.81		—
TOTAL TCDF	1780	21		1780	0.74		—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	922	91.3	0.75	22:58	—
13C12-2378-TCDD	925	91.6	0.77	21:36	—

* See document control for full sample ID

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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME....: U902463 CLIENT ID....: RADIAN TLI NUMBER....: 37-13-3A-D
CONCAL (VER)..: U902462 SAMPLE ID....: RUN #3 50% *
PROJECT NUMBER: 16653M ICAL DATE....: 09/21/90
ANALYST.....: SB ANALYSIS DATE: 10/30/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF20 SHIPMENT NO....: MWI

NAME	AMT (ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	7.5				0.83	21:39	—
2378-TCDF	7.8				0.75	22:58	—
TOTAL TCDD	184	14		184	0.80		—
TOTAL TCDF	481	22			0.75		—

SURROGATE STD. RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	9.6	96.5		21:36	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	8.8	87.6	0.78	22:57	—
13C12-2378-TCDD	9.1	91.1	0.76	21:35	—

* See document control for full sample ID

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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME....: U902464 CLIENT ID....: RADIAN TLI NUMBER....: 37-14-1A-D
CONCAL (VER)..: U902462 SAMPLE ID....: RUN #4 1% *
PROJECT NUMBER: 16653M ICAL DATE....: 09/21/90
ANALYST.....: SB ANALYSIS DATE: 10/30/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF11 SHIPMENT NO....: MWI

NAME	AMT (ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	105				0.80	21:36	—
2378-TCDF	196				0.73	22:58	—
TOTAL TCDD	1110	15			0.81		—
TOTAL TCDF	5710	21		5720	0.72		—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	997	98.7	0.80	22:57	—
13C12-2378-TCDD	990	98.0	0.76	21:35	—

* See document control for full sample ID

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FILE NAME....: U902465 CLIENT ID....: RADIAN TLI NUMBER....: 37-14-2A-D
CONCAL (VER)..: U902462 SAMPLE ID....: RUN #5 50% *
PROJECT NUMBER: 16653M ICAL DATE....: 09/21/90
ANALYST.....: SB ANALYSIS DATE: 10/31/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF20 SHIPMENT NO....: MWI

NAME	AMT (ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	2.9				0.79	21:37	
2378-TCDF	3.4				0.75	22:58	
TOTAL TCDD	59.2	14		59.3	0.79		
TOTAL TCDF	132	22		132	0.74		

SURROGATE STD. RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	10.0	100		21:37	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	9.1	90.9	0.79	22:58	
13C12-2378-TCDD	9.5	94.7	0.80	21:35	

* See document control for full sample ID

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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME....: U902466 CLIENT ID....: RADIAN TLI NUMBER....: 37-14-3A-D
CONCAL (VER)..: U902462 SAMPLE ID....: RUN #6 50% *
PROJECT NUMBER: 16653M ICAL DATE....: 09/21/90
ANALYST.....: VC ANALYSIS DATE: 10/31/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF20 SHIPMENT NO....: MWI

NAME	AMT (ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	0.72				0.83	21:38	
2378-TCDF	0.86				0.73	22:58	
TOTAL TCDD	12.0	12		12.6	0.80		
TOTAL TCDF	29.9	20		31.8	0.78		

SURROGATE STD. RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	10.1	101		21:36	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	9.1	90.8	0.78	22:57	
13C12-2378-TCDD	9.4	93.8	0.78	21:35	

* See document control for full sample ID

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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME....: U902467 CLIENT ID....: RADIAN TLI NUMBER....: 37-15-1A-D
CONCAL (VER)..: U902462 SAMPLE ID....: RUN #8 1% *
PROJECT NUMBER: 16653M ICAL DATE....: 09/21/90
ANALYST.....: SB ANALYSIS DATE: 10/31/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF11 SHIPMENT NO....: MWI

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	56.3				0.80	21:37	—
2378-TCDF	80.8				0.76	22:58	—
TOTAL TCDD	717	12		794	0.82		—
TOTAL TCDF	2370	21		2540	0.77		—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13012-2378-TCDF	948	93.9	0.78	22:57	—
13012-2378-TCDD	963	95.4	0.79	21:35	—

* See document control for full sample ID

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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME.....: U902468 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-2A-D
CONCAL (VER)..: U902462 SAMPLE ID.....: RUN #9 50% *
PROJECT NUMBER: 16653M ICAL DATE.....: 09/21/90
ANALYST.....: SB ANALYSIS DATE: 10/31/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE...: SPC2NF20 SHIPMENT NO...: MWI

NAME	AMT (ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	9.1				0.81	21:39	—
2378-TCDF	11.4				0.75	22:59	—
TOTAL TCDD	170	15			0.80		—
TOTAL TCDF	456	21			0.75		—

SURROGATE STD. RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	9.7	97.2		21:36	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	8.8	87.5	0.77	22:57	—
13C12-2378-TCDD	9.6	96.2	0.77	21:36	—

* See document control for full sample ID

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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME.....: U902469 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-3A-D
CONCAL (VER)..: U902462 SAMPLE ID.....: RUN #10 50% *
PROJECT NUMBER: 16653M ICAL DATE.....: 09/21/90
ANALYST.....: SB ANALYSIS DATE: 10/31/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: MM5 SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF20 SHIPMENT NO....: MWI

NAME	AMT(ng)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	1.1				0.77	21:39	—
2378-TCDF	2.4				0.77	22:59	—
TOTAL TCDD	19.9	11		20.8	0.80		—
TOTAL TCDF	90.0	22		90.0	0.74		—

SURROGATE STD. RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	9.7	96.9		21:37	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	8.5	85.0	0.74	22:58	—
13C12-2378-TCDD	8.3	82.6	0.78	21:36	—

* See document control for full sample ID

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TRIANGLE LABORATORIES, INC.
801-10 CAPITOLA DRIVE
RESEARCH TRIANGLE PARK, NC 27713

Phone: (919) 544-5729
Fax: (919) 544-5491

DATE : * 21 NOVEMBER 1990
CLIENT ID : * RADIAN CORPORATION
P.O. NUMBER : * S106087
TLI PROJECT No. : * 16654

CASE NARRATIVE
MODEL 8290X

*
* ANALYSIS OF SAMPLES FOR THE PRESENCE OF *
* POLYCHLORINATED DIBENZO-p-DIOXINS *
* AND *
* DIBENZOFURANS *
* BY *
* HIGH-RESOLUTION GAS CHROMATOGRAPHY / *
* HIGH-RESOLUTION MASS SPECTROMETRY *
*

Three ash samples were received from RADIAN CORPORATION in good condition October 09, 1990 and stored in a refrigerator at 4°C. The samples were extracted and analyzed according to procedures described in the Triangle Labs User Manual provided with this data package. Any particular difficulties encountered during the sample handling by Triangle Labs will be discussed in the QA/QC remark section below.

Quality Assurance/Quality Control Samples

A laboratory method blank -- identified as the TLI Blank -- is prepared along with the batch of samples.

QA/QC Remarks

The release of this particular set of RADIAN CORPORATION analytical data by Triangle Labs was authorized by the Quality Assurance Officer who has reviewed each sample data package individually following a series of inspections/reviews conducted at two other levels of the data production line. When applicable, general deviations from acceptable QA/QC requirements are identified below. Comments on the effect of these deviations upon the validity and reliability of the results can be obtained from the User Manual (Data Quality Objectives; Section 5). Specific QA/QC Problems Associated with this Particular Project are:

Sample Preparation Laboratory: None

Mass Spectrometry: None

Data Review:

Analytes were found in the TLI Blank at levels less than one-third the calculated theoretical method quantitation limit (TMQL) for the associated samples. Blank contamination levels of one-third TMQL or less are acceptable under TLI guidelines, as discussed in section 5.1.3.2 of the Data User's Manual.

Samples in this project have been reanalyzed on the DB-5 column due to source arcing during the initial analyses.

Addendum to Section 4.6 of the Data User's Manual

Effective December 15, 1989, Triangle Laboratories has adopted a new procedure for calculating the analyte specific detection limits. Under this new policy two representative noise height determinations are summed and multiplied by an empirically determined factor before the detection limit equation given in Section 4.6 of the Data User's Manual is applied. The effect of this procedure is to increase DB-225 analyses detection limits by a factor of 3.5, and DB-5 analyses detection limits by a factor of 5. This procedure will result in a more accurate estimate of detection limits.

The revised formula for DB-225 analyses is:

$$\frac{DB-225}{DL_{ai}} = \frac{2.5 * (3.5 * H_{ai}) * Q_{Bj}}{A_{Bj} * \overline{RRF} * W}$$

$$3.5 * H_{ai} = A_{noise}$$

The revised formula for DB-5 analyses is:

$$\frac{DB-5}{DL_{ai}} = \frac{2.5 * (5 * H_{ai}) * Q_{Bj}}{A_{Bj} * \overline{RRF} * W}$$

$$5 * H_{ai} = A_{noise}$$

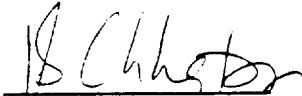
The symbols are defined in Section 4.6 of the Data User's Manual.

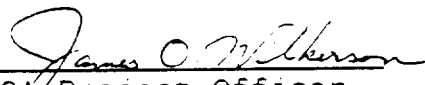
As an example, consider a DB-225 confirmation analysis of a 10 g sample. The internal standard spike is 2000 pg, the ¹³C₁₂-2,3,7,8-TCDF internal standard area is 12000 area units, the RRF is 1.215 and the noise height is 11 units. The 2,3,7,8-TCDF detection limit is:

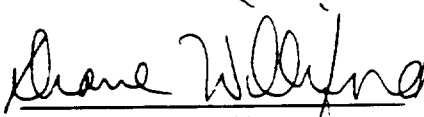
$$\frac{DB-225}{DL_{TCDF}} = \frac{2.5 * (3.5 * 11) * 2000}{12000 * 1.215 * 10.0} = 1.3 \text{ ppt}$$

Should RADIAN CORPORATION have any questions or comments to formulate regarding this data package please feel free to contact us.

For Triangle Laboratories,


Analyst


QA Project Officer


Laboratory Manager

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

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FILE NAME.....: S904123 CLIENT ID.....: RADIAN TLI NUMBER.....: n/a
CONCAL (VER)..: S904119 SAMPLE ID.....: TLI BLANK
PROJECT NUMBER: 16654 ICAL DATE.....: 10/15/90
ANALYST.....: JA ANALYSIS DATE: 11/04/90
SAMPLE SIZE...: 10.000 g SAMPLE MATRIX: n/a SAMPLE ORIGIN: n/a
DATE RECEIVED.: / / DATE COLLECTED: / /
SPIKE FILE....: SPX23710 SHIPMENT NO....: n/a

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		0.001				
12378-PeCDD	ND		0.001				
123478-HxCDD	ND		0.001				
123678-HxCDD	ND		0.001				
123789-HxCDD	ND		0.001				
1234678-HpCDD	0.002				0.91	47:16	
OCDD	0.01				1.02	52:52	
2378-TCDF	ND		0.001				
12378-PeCDF	ND		0.001				
23478-PeCDF	ND		0.001				
123478-HxCDF	ND		0.001				
123678-HxCDF	ND		0.001				
234678-HxCDF	0.001				1.27	42:04	
123789-HxCDF	ND		0.001				
1234678-HpCDF	0.002				0.93	45:39	
1234789-HpCDF	ND		0.001				
OCDF	0.01				0.83	53:08	
TOTAL TCDD	ND		0.001				
TOTAL PeCDD	ND		0.001				
TOTAL HxCDD	ND		0.001				
TOTAL HpCDD	0.002	1			0.91		
TOTAL TCDF	ND		0.001				
TOTAL PeCDF	ND		0.001				
TOTAL HxCDF	0.001	1		0.001	1.27		
TOTAL HpCDF	0.002	1			0.93		

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY

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FILE NAME....: S904123 CLIENT ID....: RADIAN TLI NUMBER....: n/a
CONCAL (VER)..: S904119 SAMPLE ID....: TLI BLANK
PROJECT NUMBER: 16654 ICAL DATE....: 10/15/90
ANALYST.....: JA ANALYSIS DATE: 11/04/90
SAMPLE SIZE...: 10.000 g SAMPLE MATRIX: n/a SAMPLE ORIGIN: n/a
DATE RECEIVED.: / / DATE COLLECTED: / /
SPIKE FILE....: SPX23710 SHIPMENT NO....: n/a

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	0.37	37.0		31:55	✓
13C12-PeCDF 234	0.56	55.6	1.53	36:53	—
13C12-HxCDF 478	0.59	58.8	0.52	41:01	—
13C12-HxCDD 478	0.81	80.9	1.22	42:10	—
13C12-HpCDF 789	0.52	52.1	0.44	47:56	—

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	0.55	55.3	0.53	43:08	—
13C12-HxCDF 234	0.78	78.2	0.51	41:58	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	0.34	33.7	0.74	31:07	✓
13C12-2378-TCDD	0.42	41.6	0.78	31:54	—
13C12-PeCDF 123	0.47	46.9	1.54	35:55	—
13C12-PeCDD 123	0.78	77.7	1.62	37:21	—
13C12-HxCDF 678	0.64	64.3	0.52	41:10	—
13C12-HxCDD 678	0.94	94.1	1.21	42:18	—
13C12-HpCDF 678	0.58	58.0	0.45	45:38	—
13C12-HpCDD 678	0.62	61.6	1.01	47:14	—
13C12-OCDD	1.2	58.8	0.89	52:51	—

11/20/90

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

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FILE NAME....: T904961 CLIENT ID....: RADIAN TLI NUMBER....: *
CONCAL (VER)..: T904955 SAMPLE ID....: CCH-190,312,317
PROJECT NUMBER: 16654 ICAL DATE....: 10/16/90
ANALYST.....: CD ANALYSIS DATE: 11/14/90
SAMPLE SIZE...: 10.000 g SAMPLE MATRIX: ASH SAMPLE ORIGIN: CC HOSPIT
DATE RECEIVED.: 10/09/90 DATE COLLECTED: 10/03/90
SPIKE FILE....: SPX23710 SHIPMENT NO....: SANFORD

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	EMPC			0.01			
12378-PeCDD	0.03				1.72	36:38	---
123478-HxCDD	0.04				1.36	41:28	---
123678-HxCDD	0.05				1.19	41:36	---
123789-HxCDD	0.10				1.23	42:01	---
1234678-HpCDD	0.27				1.04	46:31	B
OCDD	0.36				0.86	51:59	B
2378-TCDF	1.7				0.75	30:24	---
12378-PeCDF	0.16				1.62	35:09	---
23478-PeCDF	0.65				1.64	36:09	---
123478-HxCDF	1.7				1.14	40:15	---
123678-HxCDF	0.36				1.21	40:27	---
234678-HxCDF	1.2				1.14	41:16	B
123789-HxCDF	0.01				1.08	42:25	---
1234678-HpCDF	2.1				0.98	44:56	E
1234789-HpCDF	0.09				0.97	47:12	---
OCDF	0.55				0.83	52:14	B
TOTAL TCDD	0.35	8		0.46	0.82		---
TOTAL PeCDD	0.58	10		0.61	1.57		---
TOTAL HxCDD	0.68	7			1.24		---
TOTAL HpCDD	0.65	2			1.02		---
TOTAL TCDF	5.8	15		6.4	0.76		---
TOTAL PeCDF	6.7	13		6.7	1.60		---
TOTAL HxCDF	5.7	12			1.16		---
TOTAL HpCDF	3.2	4			1.00		---

* TLI # 37-17-3,6,9

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY

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FILE NAME....: T904961 CLIENT ID....: RADIAN TLI NUMBER....: *
CONCAL (VER)..: T904955 SAMPLE ID....: CCH-190,312,317
PROJECT NUMBER: 16654 ICAL DATE....: 10/16/90
ANALYST.....: CD ANALYSIS DATE: 11/14/90
SAMPLE SIZE...: 10.000 g SAMPLE MATRIX: ASH SAMPLE ORIGIN: CC HOSPIT
DATE RECEIVED.: 10/09/90 DATE COLLECTED: 10/03/90
SPIKE FILE....: SPX23710 SHIPMENT NO....: SANFORD

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	0.68	68.0		31:10	
13C12-PeCDF 234	0.89	88.5	1.52	36:07	
13C12-HxCDF 478	0.93	93.2	0.52	40:17	
13C12-HxCDD 478	1.1	107	1.25	41:27	
13C12-HpCDF 789	0.59	59.0	0.41	47:11	

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	0.67	67.4	0.51	42:25	
13C12-HxCDF 234	0.93	92.7	0.50	41:15	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	0.95	95.2	0.80	30:21	
13C12-2378-TCDD	0.69	69.3	0.80	31:09	
13C12-PeCDF 123	0.78	77.7	1.59	35:09	
13C12-PeCDD 123	0.67	66.7	1.58	36:37	
13C12-HxCDF 678	0.80	79.5	0.51	40:26	
13C12-HxCDD 678	0.86	85.7	1.24	41:35	
13C12-HpCDF 678	0.72	71.8	0.43	44:55	
13C12-HpCDD 678	0.63	63.3	1.03	46:30	
13C12-OCDD	0.75	37.6	0.87	51:57	

* TLI # 37-17-3,6,9

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X237_RPT rev:3.03

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

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FILE NAME.....: T904959 CLIENT ID.....: RADIANT 3 TLI NUMBER.....: *
CONCAL (VER)..: T904955 SAMPLE ID.....: CCH-83,152,321
PROJECT NUMBER: 16654 ICAL DATE.....: 10/16/90
ANALYST.....: CD ANALYSIS DATE: 11/13/90
SAMPLE SIZE...: 10.070 g SAMPLE MATRIX: ASH SAMPLE ORIGIN: CC HOSPIT
DATE RECEIVED.: 10/09/90 DATE COLLECTED: 10/03/90
SPIKE FILE....: SPX23710 SHIPMENT NO....: SANFORD

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	0.03				0.69	31:10	---
12378-PeCDD	0.11				1.55	36:38	---
123478-HxCDD	0.12				1.29	41:27	---
123678-HxCDD	0.11				1.18	41:35	---
123789-HxCDD	0.35				1.30	42:01	---
1234678-HpCDD	0.62				1.00	46:30	B
OCDD	0.83				0.87	51:57	B
2378-TCDF	7.1				0.80	30:24	---
12378-PeCDF	0.83				1.56	35:09	---
23478-PeCDF	2.5				1.57	36:09	---
123478-HxCDF	6.0				1.14	40:15	---
123678-HxCDF	1.2				1.14	40:27	---
234678-HxCDF	3.3				1.15	41:16	B
123789-HxCDF	0.03				1.12	42:25	---
1234678-HpCDF	6.0				0.96	44:56	B
1234789-HpCDF	0.21				1.05	47:11	---
OCDF	1.3				0.92	52:12	B
TOTAL TCDD	1.1	13			0.80		---
TOTAL PeCDD	1.3	10		1.4	1.54		---
TOTAL HxCDD	1.7	7			1.26		---
TOTAL HpCDD	1.4	2			1.03		---
TOTAL TCDF	29.8	17			0.77		---
TOTAL PeCDF	27.9	14			1.56		---
TOTAL HxCDF	19.1	13		19.1	1.15		---
TOTAL HpCDF	8.8	4			1.01		---

* TLI # 37-17-5,7,8

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X237_RPT rev:3.03

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY

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FILE NAME.....: T904959 CLIENT ID.....: RADIAN TLI NUMBER.....: *
CONCAL (VER)..: T904955 SAMPLE ID.....: CCH-83,152,321
PROJECT NUMBER: 16654 ICAL DATE.....: 10/16/90
ANALYST.....: CD ANALYSIS DATE: 11/13/90
SAMPLE SIZE..: 10.070 g SAMPLE MATRIX: ASH SAMPLE ORIGIN: CC HOSPIT
DATE RECEIVED.: 10/09/90 DATE COLLECTED: 10/03/90
SPIKE FILE...: SPX23710 SHIPMENT NO....: SANFORD

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	0.73	73.3		31:10	---
13C12-PeCDF 234	0.88	88.8	1.56	36:07	---
13C12-HxCDF 478	1.2	121	0.53	40:16	---
13C12-HxCDD 478	1.2	119	1.27	41:26	---
13C12-HpCDF 789	0.74	74.4	0.43	47:10	---

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	0.81	81.3	0.51	42:25	---
13C12-HxCDF 234	1.1	112	0.51	41:15	---

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	0.97	98.0	0.78	30:20	---
13C12-2378-TCDD	0.74	74.0	0.80	31:09	---
13C12-PeCDF 123	0.83	83.9	1.54	35:08	---
13C12-PeCDD 123	0.73	73.6	1.46	36:37	---
13C12-HxCDF 678	0.97	98.1	0.53	40:26	---
13C12-HxCDD 678	0.92	92.1	1.21	41:34	---
13C12-HpCDF 678	0.89	89.6	0.47	44:55	---
13C12-HpCDD 678	0.73	73.0	1.05	46:29	---
13C12-OCDD	0.97	48.8	0.88	51:56	---

* TLI # 37-17-5,7,8

11/20/90

X237_RPT rev:3.03

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

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FILE NAME....: T904960 CLIENT ID....: RADIAN TLI NUMBER....: *
CONCAL (VER)..: T904955 SAMPLE ID....: CCH-94,173,323
PROJECT NUMBER: 16654 ICAL DATE....: 10/16/90
ANALYST.....: CD ANALYSIS DATE: 11/14/90
SAMPLE SIZE...: 1.000 g SAMPLE MATRIX: ASH SAMPLE ORIGIN: CC HOSPIT
DATE RECEIVED.: 10/09/90 DATE COLLECTED: 10/03/90
SPIKE FILE....: SPX23710 SHIPMENT NO....: SANFORD

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	0.12				0.77	31:10	---
12378-PeCDD	0.63				1.66	36:38	---
123478-HxCDD	0.81				1.17	41:28	---
123678-HxCDD	1.4				1.24	41:36	---
123789-HxCDD	2.5				1.18	42:02	---
1234678-HpCDD	10.8				1.04	46:30	<u>R</u>
OCDD	12.5				0.88	51:58	<u>B</u>
2378-TCDF	9.9				0.74	30:24	---
12378-PeCDF	1.4				1.60	35:09	---
23478-PeCDF	4.0				1.56	36:09	---
123478-HxCDF	10.3				1.18	40:16	---
123678-HxCDF	3.2				1.16	40:27	---
234678-HxCDF	7.5				1.17	41:16	<u>B</u>
123789-HxCDF	EMPC			0.18			---
1234678-HpCDF	15.6				0.97	44:56	<u>B</u>
1234789-HpCDF	1.3				1.05	47:11	---
OCDF	8.0				0.85	52:13	<u>B</u>
TOTAL TCDD	13.2	13			0.80		---
TOTAL PeCDD	19.6	10		20.8	1.61		---
TOTAL HxCDD	30.8	7		30.9	1.22		---
TOTAL HpCDD	25.7	2			1.03		---
TOTAL TCDF	42.8	15		43.1	0.76		---
TOTAL PeCDF	43.2	13		43.4	1.54		---
TOTAL HxCDF	40.8	9		42.2	1.21		---
TOTAL HpCDF	25.3	4			0.99		---

* TLI # 37-17-1,2,4

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY

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FILE NAME.....: T904960 CLIENT ID.....: RADIAN TLI NUMBER.....: *
CONCAL (VER)..: T904955 SAMPLE ID.....: CCH-94,173,323
PROJECT NUMBER: 16654 ICAL DATE.....: 10/16/90
ANALYST.....: CD ANALYSIS DATE: 11/14/90
SAMPLE SIZE...: 1.000 g SAMPLE MATRIX: ASH SAMPLE ORIGIN: CC HOSPIT
DATE RECEIVED.: 10/09/90 DATE COLLECTED: 10/03/90
SPIKE FILE....: SPX23710 SHIPMENT NO....: SANFORD

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	7.7	77.3		31:11	---
13C12-PeCDF 234	9.4	94.1	1.56	36:07	---
13C12-HxCDF 478	10.8	108	0.53	40:17	---
13C12-HxCDD 478	11.4	114	1.26	41:27	---
13C12-HpCDF 789	6.8	68.4	0.44	47:10	---

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	8.6	86.2	0.53	42:25	---
13C12-HxCDF 234	10.9	109	0.52	41:15	---

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	9.9	99.5	0.79	30:21	---
13C12-2378-TCDD	7.8	77.8	0.80	31:10	---
13C12-PeCDF 123	8.5	84.7	1.55	35:09	---
13C12-PeCDD 123	7.2	72.1	1.58	36:37	---
13C12-HxCDF 678	9.0	90.5	0.52	40:27	---
13C12-HxCDD 678	9.4	94.2	1.24	41:35	---
13C12-HpCDF 678	8.1	81.4	0.44	44:55	---
13C12-HpCDD 678	7.6	75.8	1.06	46:29	---
13C12-OCDD	11.5	57.5	0.87	51:56	---

* TLI # 37-17-1,2,4

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X237_RPT rev:3.03

TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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11/20/90

FILE NAME....: U902638 CLIENT ID....: RADIAN TLI NUMBER....: *
CONCAL (VER)..: U902632 SAMPLE ID....: CCH-94,173,323
PROJECT NUMBER: 16654 ICAL DATE....: 09/21/90
ANALYST.....: MTB ANALYSIS DATE: 11/05/90
SAMPLE SIZE...: 1.000 g SAMPLE MATRIX: ASH SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: 10/03/90
SPIKE FILE....: SPC2NF10 SHIPMENT NO....: SANFORD

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	0.86				0.77	21:41	—
2378-TCDF	0.90				0.82	23:00	—
TOTAL TCDD	15.9	14			0.78		—
TOTAL TCDF	45.6	22			0.77		—

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	8.8	88.0		21:39	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	7.9	79.0	0.75	22:59	—
13C12-2378-TCDD	8.5	84.9	0.78	21:38	—

* TLI # 37-17-1,2,4

MBS 11/20/90

C2NF_RPT rev:3.01

TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

Page 1 of 1
11/20/90

FILE NAME.....: U902637 CLIENT ID.....: RADIAN TLI NUMBER.....: *
CONCAL (VER)..: U902632 SAMPLE ID.....: CCH-83,152,321
PROJECT NUMBER: 16654 ICAL DATE.....: 09/21/90
ANALYST.....: MTB ANALYSIS DATE: 11/05/90
SAMPLE SIZE...: 10.070 g SAMPLE MATRIX: ASH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: 10/03/90
SPIKE FILE....: SPC2NF10

SAMPLE ORIGIN: CCH

SHIPMENT NO....: SANFORD

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	0.15						
2378-TCDF	0.76				0.74	21:42	
					0.77	23:01	
TOTAL TCDD	1.3	13		1.3	0.76		
TOTAL TCDF	30.5	22			0.76		

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	0.77	77.3		21:39	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	0.67	67.2	0.77	23:00	
13C12-2378-TCDD	0.75	75.9	0.79	21:39	

* TLI # 37-17-5,7,8

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C2NF_RPT rev:3.01

TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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11/20/90

FILE NAME....: U902639 CLIENT ID....: RADIAN TLI NUMBER....: *
CONCAL (VER)..: U902632 SAMPLE ID....: CCH-190,312,317
PROJECT NUMBER: 16654 ICAL DATE....: 09/21/90
ANALYST.....: CD ANALYSIS DATE: 11/05/90
SAMPLE SIZE..: 10.000 g SAMPLE MATRIX: ASH SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: 10/03/90
SPIKE FILE....: SPC2NF10 SHIPMENT NO....: SANFORD

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	0.05				0.72	21:42	—
2378-TCDF	0.14				0.75	23:01	—
TOTAL TCDD	0.50	15		0.50	0.76		—
TOTAL TCDF	6.4	23			0.76		—

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	0.72	71.8		21:39	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	0.62	61.5	0.75	23:00	—
13C12-2378-TCDD	0.71	70.6	0.78	21:38	—

* TLI # 37-17-3,6,9

MSS 11/20/90

C2NF_RPT rev:3.01

WET

October 19, 1990

TRIANGLE LABS

Charlie Parrish
Radian Corporation
3200 Progress Center/Nelson Hwy
RTP, N.C. 27709

Dear Charlie:

This letter is a follow-up to our telephone conversation this morning regarding the MM5 sampling train samples for the hospital waste incinerator at Sanford:

The Table below summarizes the physical appearance of the MM5 sample extracts as documented by the wet chemistry lab supervisor.

<u>Sample</u>	<u>Approximate Solution Volume</u>	<u>Physical Appearance</u>
TLI Blank	10 mL	clear
Run #1	10 mL	light yellow -
Run #2	10 mL	bronze
Run #3	10 mL	light yellow
Run #4	10 mL	bronze
Run #5	10 mL	medium yellow
Run #6	10 mL	medium yellow
Run #8	10 mL	bronze
Run #9	10 mL	medium yellow
Run #10	10 mL	light yellow
Field Blank	10 mL	slight yellow

Please inform us how you want to proceed with the analysis of the above samples as soon as possible.

If you have any questions about this letter please do not hesitate to call.

Sincerely,

Hani Karam
Hani Karam, Ph.D.
Air Quality Product Manager

October 19, 1990

TRIANGLE LABS

Charlie Parrieh
Radian Corporation
3200 Progress Center/Nelson Hwy
RTP, N.C. 27709

Dear Charlie:

This letter is a follow-up to our telephone conversation today regarding the MM5 sampling train samples for the hospital waste incinerator at Sanford;

The Table below summarizes the physical appearance of the MM5 sample extracts as documented by the wet chemistry lab supervisor.

<u>Sample</u>	<u>Approximate Solution Volume</u>	<u>Physical Appearance</u>
TLI Blank	10 mL	clear
Run #1	10 mL	light yellow
Run #2	10 mL	bronze
Run #3	10 mL	light yellow
Run #4	10 mL	bronze
Run #5	10 mL	medium yellow
Run #6	10 mL	medium yellow
Run #8	10 mL	bronze
Run #8	10 mL	medium yellow
Run #10	10 mL	light yellow
Field Blank	10 mL	slight yellow

Based on our discussion this afternoon, all the samples except for Runs 2, 4, and 8 (a total of 7 samples) will be processed the normal way (i.e. spiked with 10 ng USB-A, split 50:50, then half the extract will be cleaned-up and analyzed while the other half archived. For Runs 2, 4 and 8, we will spike each with 10 ng of USB-A, split 50:50, then take an aliquot (2 % by volume) from each archived half. A similar aliquot will be taken from the archived half of the TLI blank. To each aliquot we will add 10 ng of the $^{13}\text{C}_{12}$ -labeled internal standards and 10 ng of the $^{13}\text{C}_{12}$ -labeled alternate standards. These aliquots will then be subjected to column-chromatographic cleanup. Following fractionation, each final extract will be concentrated to dryness then brought up in the $^{13}\text{C}_{12}$ -labeled recovery standard solution.

These extracts will then be analyzed for their tetra-through-octachlorinated dibenzo-p-dioxins and dibenzofurans (plus confirmation if needed).

801-10 Capkole Drive
Durham, NC 27713
919-544-5729

Triangle Laboratories, Inc.
P.O. Box 13486
Research Triangle Park, NC 27709
Fax # 919-544-6481

Charlie Parriah
Radian Corporation
Page 2

For samples Run #2, 4 and 8 a 150% charge of the regular analytical cost will apply (50% for the extraction only of the original MM5 trains, or \$565, and 100% for the cleanup and fullscreen analysis of the 2% aliquot samples of these extracts, or \$1130). Confirmation analyses will be at the regular rate of \$290 per sample.

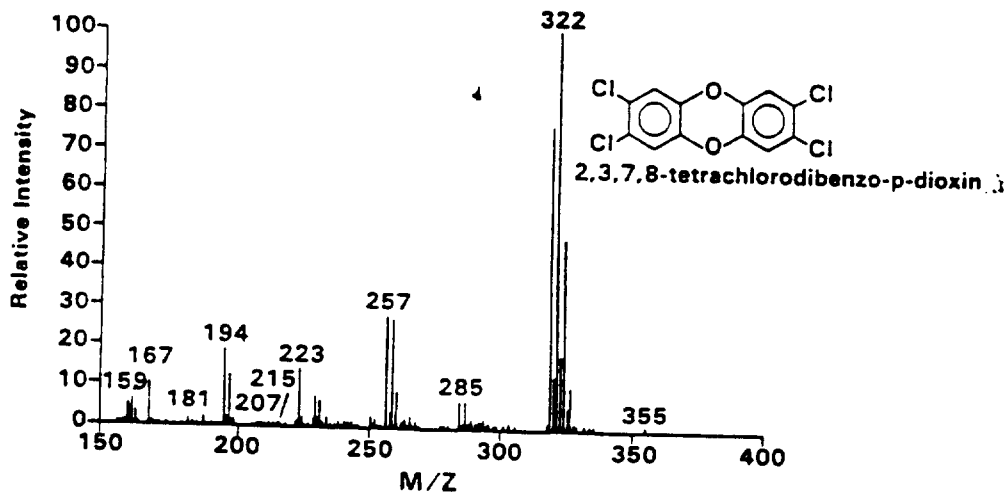
If you have any questions about this letter please do not hesitate to call.

Sincerely,
Hani Karam
Hani Karam, Ph.D.
Air Quality Product Manager

PROPRIETARY INFORMATION

TRIANGLE LABORATORIES, INC.
POLYCHLORINATED DIBENZODIOXINS
AND
DIBENZOFURANS
DATA USER MANUAL

Triangle Laboratories
Analytical Methodology,
Data Quality Objectives,
Deliverables,
Data Package Assembly Description
&
Examples of Calculations



TRIANGLE LABORATORIES, INC.

3.3 Sample Data

For each sample analyzed, a "sample data pack" is provided, which consists of:

3.3.1 Sample Data Summary Topsheet and Data Qualifiers

A Sample Data Summary Top Sheet (Figure 2), which summarizes the analyte concentrations, specific congener retention times, ion-abundance ratios and percent recoveries, analyst initials, date of analysis, TLI project number, Client identification, Client Sample identification, GC/MS file name, and continuing calibration file name. The terminology of the symbols used on the header of this reporting form (e.g., EMPC, ppt...) are given below.

On the Sample Data Summary Topsheets, the concentrations of the analytes are given either in parts per quadrillion (ppq), parts per trillion (ppt) or parts per billion (ppb). Absolute amounts (in pg or ng) are reported for "A" and "AA" sample types.

"RT" is the gas chromatographic retention time in minutes and seconds,

"number" is the number of GC peaks identified as PCDD/PCDF isomers in the totals reported for each homologous series,

"ratio" is the integrated ion-abundance ratio as shown in Table 7,

"DL" is the detection limit for samples presenting an analyte response that is less than 2.5 times the background level,

"EMPC", representing the estimated maximum possible concentration, is reported for GC/MS signals eluting within the PCDD/PCDF retention time windows established with the daily GC performance analysis, and which are characterized by a signal-to-noise ratio in excess of 2.5:1 but do not meet all of the qualitative identification criteria listed in Section 2.5. The "EMPC" is calculated by using the same expression used for reporting the identified analyte concentrations. The "DL" and "EMPC" are both reported in the same units used to report detected analytes.

"Flags" are used to warn the Data User of specific peculiarities associated with the results of a particular sample. For reporting results, the following specific data qualifiers are used:

S This qualifier indicates that the response of a specific PCDD/PCDF isomer has exceeded the normal dynamic range of the mass spectrometer detection system. The corresponding signal is saturated and the reported analyte concentration

is a "minimum estimate" regardless of whether or not the ion-abundance ratio or the retention time criteria are met. When the S qualifier is associated with the reporting of "totals", its use is to warn the Data User of the existence of one (not necessarily from a specific isomer) or more saturated signals for a given class of compounds.

- I This flag identifies a labeled compound (e.g., internal standard) for which the retention time criterion was not met due to the possible presence of coeluting interferences. The concentration of unlabeled analytes (computed relatively to the labeled standard in question) may be underestimated while the percent recoveries of the flagged labeled standard may be higher than reality.

Note that this qualifier may also be used if several unexpected signals are found to elute in the vicinity of the labeled standards even though the former's identification criteria are met.

- Q A "Q" qualifier is used to warn the Data User of the existence of a "quantitative interference" as defined in Section 5.1.2.4.1 of Triangle Laboratories User Manual. The reported concentrations and percent recoveries may be questionable.

- A When an "A" data qualifier is used in conjunction with the "Q" data qualifier, the results reported have been adjusted to reflect the change of sensitivity observed on the QC SICPs (Section 5). This will only apply to percent recoveries of labeled compounds when a quantitative interference is detected.

- N Carbon-labeled internal standard characterized by a signal-to-noise ratio of less than 10:1 will be flagged by using the qualifier "N".

- R This flag will be used to indicate that the results reported for the analytes (e.g., 1,2,3,7,8-PeCDD and total PeCDD) quantified relative to a specific internal standard (e.g., $^{13}\text{C}_{12}$ -1,2,3,7,8-PeCDD) are rejected due to failure to achieve adequate recoveries (i.e., below QC limits) concomitantly with a low signal-to-noise ratio ($S/N < 10:1$) for the internal standard and associated specific analyte (Figure 13). In such cases, Triangle Labs recommends that the sample extraction and analysis be repeated to verify that no matrix effect is responsible for the observation(s).

- V A "V" flag indicates that the analytical results reported for the associated analytes are considered valid even though the percent recoveries of the internal standard are below the QC limits. Thus, Triangle Labs considers that a re-extraction of the sample is not warranted. Please refer to Section 5.1.3.4.1 for additional explanations.

- B This flag is used when the analyte is found in the associated laboratory method blank sample as well as in the field sample. The flag is to warn the Data User of the possible/probable blank contamination.
- L This flag identifies detected analytes for which the reported concentrations are below the working calibration curve of the GC/MS system.
- E This data qualifier is used to warn the Data User of the presence of signals in the polychlorinated diphenylether channels that may interfere with the determination of polychlorinated dibenzofurans.
- RO Internal standards for which the ion-abundance ratio is measured outside the acceptable range are flagged with "RO" to indicate the possibility of the presence of a coeluting interference.
- PR The presence of "poorly resolved" GC peaks is flagged by using the PR data qualifier. This will normally be used for specific analytes only.
- X Other specific flags and footnotes may be required to properly define the results. If used, they will be fully described in the Case Narrative. If more than one is necessary, a different letter (e.g., Y, Z...) will be used.

3.3.2 "Raw Data" and "Matched Peaks" Files

A set of dBase-generated pages ("Raw Data" file; Figure 6) reporting the mass of the ions monitored, their corresponding area measurements and retention times for all the GC/MS peaks recorded within the appropriate retention time windows is provided following the Sample Data Summary Sheet. The data can be used by the Data User during the audit to recalculate the results reported on the Sample Data Summary Top Sheet. Additionally, the "Matched Peaks" file (Figure 7) summarizes the ion- abundance ratios ("RATIO") and relative retention times ("REL_RT") of the GC/MS signals. Note that under the header "M_Z" of the "Matched Peaks" file are represented the low-mass ions used in the computation of the ratios (e.g., $M/Z\ 316 = m/z\ 316 / m/z\ 318$; the values originate from the corresponding m/z's with the correct retention time from the "Raw Data" file). The results from the computation of the ion-abundance ratios ("MATCH RAT") and relative retention times ("MATCH RT") are compared to tolerance windows (as stipulated in Section 2.5) and a true "T" or false "F" statement is printed depending on the outcome of the computation and the acceptable values.

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801-10 CAPITOLA DRIVE
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Phone: (919) 544-5729

Fax: (919) 544-5491

DATE : * 26 NOVEMBER 1990

CLIENT ID : * RADIAN CORPORATION

P.O. NUMBER : * S106087

TLI PROJECT No. : * 16653T

CASE NARRATIVE
MODEL 8290X

*
* ANALYSIS OF SAMPLES FOR THE PRESENCE OF *
* POLYCHLORINATED DIBENZO-p-DIOXINS *
* AND *
* DIBENZOFURANS *
* BY *
* HIGH-RESOLUTION GAS CHROMATOGRAPHY / *
* HIGH-RESOLUTION MASS SPECTROMETRY *
*

Ten toluene rinse samples were received from RADIAN CORPORATION in good condition October 09, 1990 and stored in a refrigerator at 4°C. The samples were extracted and analyzed according to procedures described in the Triangle Labs User Manual provided with this data package. Any particular difficulties encountered during the sample handling by Triangle Labs will be discussed in the QA/QC remark section below.

Quality Assurance/Quality Control Samples

A laboratory method blank -- identified as the TLI Blank -- is prepared along with the batch of samples.

QA/QC Remarks

The release of this particular set of RADIAN CORPORATION analytical data by Triangle Labs was authorized by the Quality Assurance Officer who has reviewed each sample data package individually following a series of inspections/reviews conducted at two other levels of the data production line. When applicable, general deviations from acceptable QA/QC requirements are identified below. Comments on the effect of these deviations upon the validity and reliability of the results can be obtained from the User Manual (Data Quality Objectives; Section 5). Specific QA/QC Problems Associated with this Particular Project are:

Sample Preparation Laboratory: None

Mass Spectrometry: None

Data Review:

Sample RUN #10 CCH-344 (TLI # 37-15-3B) in this project presents QC ion instabilities as a result of quantitative interferences. The affected isomers are flagged "Q" on the report. Affected analytes may be overestimated or underestimated due to this interference. Quantitative interference is described in section 5.1.2.4.1 of the Data User's Manual.

Due to sensitivity differences between analyses of the following samples, more TCDD peaks were detected on the DB-225 analyses than on the DB-5 analyses. Reliable estimates for Total TCDD can be obtained from the DB-225 analyses.

Sample

TLI

RUN #10 CCH-344	37-15-3B
RUN #9 CCH-266	37-15-2B

The following samples have been reanalyzed on the DB-225 column due to low sensitivity.

<u>Sample</u>	<u>TLI #</u>
RUN #3 CCH-106	37-13-3B
RUN #4 CCH-137	37-14-1B
RUN #6 CCH-213	37-14-3B
FIELD BLANK CCH-335	37-16-1B

} →

Sample RUN #5 CCH-165 has been scheduled for confirmation analysis. The results will be forwarded as soon as possible.

Sample RUN #1 CCH-50 (TLI # 37-13-1B) contains a diphenyl ether peak which elutes at the same time as a peak in the TCDF analyte channel. The TCDF Total concentration may be significantly affected.

Addendum to Section 4.6 of the Data User's Manual

Effective December 15, 1989, Triangle Laboratories has adopted a new procedure for calculating the analyte specific detection limits. Under this new policy two representative noise height determinations are summed and multiplied by an empirically determined factor before the detection limit equation given in Section 4.6 of the Data User's Manual is applied. The effect of this procedure is to increase DB-225 analyses detection limits by a factor of 3.5, and DB-5 analyses detection limits by a factor of 5. This procedure will result in a more accurate estimate of detection limits.

The revised formula for DB-225 analyses is:

$$DL_{ai} = \frac{2.5 * (3.5 * H_{ai}) * Q_{Bj}}{A_{Bj} * \overline{RRF} * W}$$

$$3.5 * H_{ai} = A_{noise}$$

The revised formula for DB-5 analyses is:

$$DL_{ai} = \frac{2.5 * (5 * H_{ai}) * Q_{Bj}}{A_{Bj} * \overline{RRF} * W}$$

$$5 * H_{ai} = A_{noise}$$

The symbols are defined in Section 4.6 of the Data User's Manual.

As an example, consider a DB-225 confirmation analysis of a 10 g sample. The internal standard spike is 2000 pg, the 13C12-2,3,7,8-TCDF internal standard area is 12000 area units, the RRF is 1.215 and the noise height is 11 units. The 2,3,7,8-TCDF detection limit is:

$$\begin{array}{lcl} \text{DB-225} & 2.5 * (3.5 * 11) * 2000 & \\ \text{DLTCDF} & = \frac{\text{-----}}{12000 * 1.215 * 10.0} & = 1.3 \text{ ppt} \end{array}$$

Should RADIANT CORPORATION have any questions or comments to formulate regarding this data package please feel free to contact us.

For Triangle Laboratories,

B. Chluster

Analyst

James O. Wilkerson

QA Project Officer

Deane Wilkerson

Laboratory Manager

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

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FILE NAME.....: S904002 CLIENT ID.....: RADIAN TLI NUMBER.....: n/a
CONCAL (VER)..: S903996 SAMPLE ID.....: TLI BLANK
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: VC ANALYSIS DATE: 10/29/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: n/a SAMPLE ORIGIN: n/a
DATE RECEIVED.: / / DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: n/a

NAME	AMT(pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		25.5				---
12378-PeCDD	ND		31.2				---
123478-HxCDD	ND		44.4				---
123678-HxCDD	ND		43.4				---
123789-HxCDD	ND		49.3				---
1234678-HpCDD	ND		160				---
OCDD	ND		453				---
2378-TCDF	ND		19.2				---
12378-PeCDF	ND		25.5				---
23478-PeCDF	ND		26.6				---
123478-HxCDF	ND		27.3				---
123678-HxCDF	ND		26.2				---
234678-HxCDF	ND		36.2				---
123789-HxCDF	ND		46.2				---
1234678-HpCDF	ND		48.5				---
1234789-HpCDF	ND		80.7				---
OCDF	ND		383				---
TOTAL TCDD	ND		25.5				---
TOTAL PeCDD	EMPC			34.4			---
TOTAL HxCDD	ND		45.6				---
TOTAL HpCDD	ND		160				---
TOTAL TCDF	ND		19.2				---
TOTAL PeCDF	ND		26.0				---
TOTAL HxCDF	ND		32.3				---
TOTAL HpCDF	ND		60.6				---

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY

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FILE NAME.....: S904002 CLIENT ID.....: RADIAN TLI NUMBER.....: n/a
CONCAL (VER)..: S903996 SAMPLE ID.....: TLI BLANK
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: VC ANALYSIS DATE: 10/29/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: n/a SAMPLE ORIGIN: n/a
DATE RECEIVED.: / / DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: n/a

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	625	31.3		30:53	—
13C12-PeCDF 234	740	37.0	1.55	35:48	—
13C12-HxCDF 478	1460	73.1	0.55	39:54	—
13C12-HxCDD 478	1670	83.7	1.23	41:03	—
13C12-HpCDF 789	493	24.7	0.39	46:42	—

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	712	35.6	0.50	42:01	—
13C12-HxCDF 234	1240	61.8	0.56	40:52	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	599	30.0	0.77	30:04	✓
13C12-2378-TCDD	689	34.4	0.81	30:52	✓
13C12-PeCDF 123	772	38.6	1.48	34:50	✓
13C12-PeCDD 123	1040	52.2	1.64	36:17	—
13C12-HxCDF 678	1560	78.2	0.49	40:04	—
13C12-HxCDD 678	1910	95.5	1.18	41:12	—
13C12-HpCDF 678	916	45.8	0.42	44:30	—
13C12-HpCDD 678	637	31.9	0.90	46:01	—
13C12-OCDD	669	16.7	0.80	51:17	✓

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

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FILE NAME.....: S904052 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-16-1B
CONCAL (VER)..: S904045 SAMPLE ID.....: FIELD BLANK CCH-335
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 11/01/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

NAME	AMT(pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	10.0				0.71	31:55	---
12378-PeCDD	53.0				1.51	37:21	---
123478-HxCDD	60.0				1.20	42:08	---
123678-HxCDD	82.2				1.26	42:17	---
123789-HxCDD	175				1.29	42:43	---
1234678-HpCDD	618				1.04	47:13	---
OCDD	887				0.86	52:50	---
2378-TCDF	337				0.75	31:06	---
12378-PeCDF	149				1.63	35:54	---
23478-PeCDF	289				1.58	36:52	---
123478-HxCDF	544				1.15	40:58	---
123678-HxCDF	317				1.12	41:09	---
234678-HxCDF	366				1.17	41:58	---
123789-HxCDF	27.2				1.13	43:15	---
1234678-HpCDF	1210				0.92	45:37	---
1234789-HpCDF	EMPC			219			---
OCDF	1380				0.89	53:06	---
TOTAL TCDD	245	8		279	0.79		---
TOTAL PeCDD	360	7		509	1.60		---
TOTAL HxCDD	895	7			1.24		---
TOTAL HpCDD	1140	2			1.03		---
TOTAL TCDF	1430	13		1440	0.76		---
TOTAL PeCDF	2550	13		2580	1.63		---
TOTAL HxCDF	2450	10		2550	1.11		---
TOTAL HpCDF	2160	3		2320	0.94		---

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY

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FILE NAME.....: S904052 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-16-1B
CONCAL (VER): S904045 SAMPLE ID.....: FIELD BLANK CCH-335
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 11/01/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1160	58.1		31:54	---
13C12-PeCDF 234	1470	73.5	1.54	36:51	---
13C12-HxCDF 478	1700	84.9	0.53	40:59	---
13C12-HxCDD 478	2060	103	1.23	42:08	---
13C12-HpCDF 789	1060	53.2	0.44	47:54	---

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	1440	71.9	0.52	43:07	---
13C12-HxCDF 234	1620	80.8	0.51	41:56	---

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	1090	54.6	0.78	31:03	---
13C12-2378-TCDD	1200	59.8	0.82	31:53	---
13C12-PeCDF 123	1350	67.4	1.54	35:52	---
13C12-PeCDD 123	1810	90.5	1.67	37:20	---
13C12-HxCDF 678	1730	86.3	0.53	41:09	---
13C12-HxCDD 678	2240	112	1.23	42:16	---
13C12-HpCDF 678	1270	63.4	0.44	45:36	---
13C12-HpCDD 678	1280	64.0	1.05	47:12	---
13C12-OCDD	1230	30.6	0.89	52:48	---

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

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FILE NAME.....: S904003 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-13-18
CONCAL (VER)..: S903996 SAMPLE ID.....: RUN #1 CCH-50
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: VC ANALYSIS DATE: 10/29/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE...: SPX2372K SHIPMENT NO....: MWI

NAME	AMT(pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		10.9				
12378-PeCDD	ND		11.1				
123478-HxCDD	ND		13.3				
123678-HxCDD	7.8				1.05	41:11	
123789-HxCDD	ND		14.7				
1234678-HpCDD	87.2				0.97	46:03	
OCDD	304				0.86	51:17	
2378-TCDF	14.5						
12378-PeCDF	ND		9.8		0.68	30:07	
23478-PeCDF	9.5						
123478-HxCDF	13.3				1.46	35:48	
123678-HxCDF	ND		9.3		1.24	39:52	
234678-HxCDF	ND		12.8				
123789-HxCDF	ND		16.3				
1234678-HpCDF	27.2				1.18	44:30	
1234789-HpCDF	ND		25.5				
OCDF	ND		71.1				
TOTAL TCDD	ND		10.9				
TOTAL PeCDD	11.3	1		147	1.60		
TOTAL HxCDD	8.2	1		35.0	1.05		
TOTAL HpCDD	176	2			0.94		
TOTAL TCDF	26.2	2		32.3	0.68		
TOTAL PeCDF	34.0	2		56.8	1.53		
TOTAL HxCDF	30.8	2			1.18		
TOTAL HpCDF	50.3	2			1.14		

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY

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FILE NAME.....: S904003 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-13-1B
CONCAL (VER)....: S903996 SAMPLE ID.....: RUN #1 CCH-50
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: VC ANALYSIS DATE: 10/29/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO...: MWI

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	956	47.8		30:52	
13C12-PeCDF 234	1270	63.4	1.43	35:47	
13C12-HxCDF 478	1780	88.8	0.51	39:54	
13C12-HxCDD 478	2090	105	1.18	41:02	
13C12-HpCDF 789	859	43.0	0.45	46:41	

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	1090	54.6	0.53	42:00	
13C12-HxCDF 234	1710	85.3	0.54	40:51	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	898	44.9	0.75	30:03	
13C12-2378-TCDD	1060	52.8	0.81	30:50	
13C12-PeCDF 123	1320	65.9	1.48	34:49	
13C12-PeCDD 123	1930	96.5	1.50	36:16	
13C12-HxCDF 678	2060	103	0.51	40:03	
13C12-HxCDD 678	2980	149	1.20	41:11	
13C12-HpCDF 678	1350	67.5	0.44	44:29	
13C12-HpCDD 678	1220	60.9	1.06	46:00	
13C12-OCDD	1680	42.1	0.82	51:16	

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

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FILE NAME.....: S904004 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-13-2B
CONCAL (VER): S903996 SAMPLE ID.....: RUN #2 CCH-67
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: VC ANALYSIS DATE: 10/29/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE...: SPX2372K

SHIPMENT NO....: MWI

NAME	AMT (pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		9.1				
12378-PeCDD	16.4						
123478-HxCDD	16.4				1.71	36:17	
123678-HxCDD	24.8				1.38	41:03	
123789-HxCDD	40.6				1.35	41:12	
1234678-HpCDD	EMPC				1.42	41:48	PR
OCDD	454			233			
					1.01	51:18	
2378-TCDF	57.7						
12378-PeCDF	36.5				0.80	30:07	
23478-PeCDF	45.3				1.51	34:50	
123478-HxCDF	134				1.71	35:48	
123678-HxCDF	76.3				1.07	39:54	
234678-HxCDF	82.5				1.20	40:05	
123789-HxCDF	ND				1.05	40:52	PR
1234678-HpCDF	360		13.4				
1234789-HpCDF	48.7				0.95	44:30	
OCDF	315				0.92	46:41	
					0.93	51:33	
TOTAL TCDD	19.9	1		60.3	0.86		
TOTAL PeCDD	36.5	2		132	1.66		
TOTAL HxCDD	204	6		205	1.29		
TOTAL HpCDD	195	1		428	1.01		
TOTAL TCDF	243	8		305	0.78		
TOTAL PeCDF	270	4		464	1.53		
TOTAL HxCDF	512	6		625	1.14		
TOTAL HpCDF	595	3		683	0.97		

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY

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FILE NAME..... S904004 CLIENT ID..... RADIAN TLI NUMBER..... 37-13-2B
CONCAL (VER)..: S903996 SAMPLE ID..... RUN #2 CCH-67
PROJECT NUMBER: 16653T ICAL DATE..... 10/15/90
ANALYST..... VC ANALYSIS DATE: 10/29/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1070	53.3		30:53	
13C12-PeCDF 234	1510	75.6	1.46	35:47	
13C12-HxCDF 478	1530	76.4	0.51	39:54	
13C12-HxCDD 478	1880	93.8	1.20	41:03	
13C12-HpCDF 789	891	44.6	0.40	46:41	

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	1090	54.3	0.52	42:00	
13C12-HxCDF 234	1660	82.8	0.51	40:51	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	996	49.8	0.78	30:03	
13C12-2378-TCDD	1170	58.7	0.82	30:52	
13C12-PeCDF 123	1490	74.6	1.55	34:49	
13C12-PeCDD 123	2050	103	1.54	36:16	
13C12-HxCDF 678	1620	81.0	0.52	40:03	
13C12-HxCDD 678	2370	118	1.25	41:11	
13C12-HpCDF 678	1220	61.0	0.45	44:29	
13C12-HpCDD 678	1180	58.9	0.96	46:01	
13C12-OCDD	1900	47.4	0.89	51:16	

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FILE NAME.....: S904005 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-13-38
CONCAL (VER)..: S903996 SAMPLE ID.....: RUN #3 CCH-106
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: VC ANALYSIS DATE: 10/29/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

NAME	AMT(pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		7.9				
12378-PeCDD	EMPC			9.7			
123478-HxCDD	EMPC			9.4			
123678-HxCDD	EMPC			19.7			
123789-HxCDD	25.0				1.31	41:38	PR
1234678-HpCDD	155				1.13	46:02	
OCDD	376				0.89	51:17	
2378-TCDF	267						
12378-PeCDF	28.0				0.78	30:06	
23478-PeCDF	71.0				1.33	34:49	
123478-HxCDF	122				1.65	35:48	
123678-HxCDF	EMPC				1.07	39:53	
234678-HxCDF	104			55.5			
123789-HxCDF	EMPC				1.09	40:52	
1234678-HpCDF	241			25.1			
1234789-HpCDF	24.7				0.98	44:30	
OCDF	203				1.02	46:42	
					0.86	51:32	
TOTAL TCDD	235	5		255	0.74		
TOTAL PeCDD	247	6		340	1.54		
TOTAL HxCDD	218	4		248	1.31		
TOTAL HpCDD	344	2			1.14		
TOTAL TCDF	861	7		1070	0.76		
TOTAL PeCDF	758	7		883	1.60		
TOTAL HxCDF	430	5		619	1.15		
TOTAL HpCDF	473	4			1.00		

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FILE NAME.....: S904005 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-13-3B
CONCAL (VER)..: S903996 SAMPLE ID.....: RUN #3 CCH-106
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: VC ANALYSIS DATE: 10/29/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	632	31.6		30:52	—
13C12-PeCDF 234	1050	52.4	1.51	35:47	—
13C12-HxCDF 478	1720	86.0	0.52	39:54	—
13C12-HxCDD 478	2220	111	1.24	41:02	—
13C12-HpCDF 789	824	41.2	0.41	46:41	—

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	951	47.6	0.50	42:00	—
13C12-HxCDF 234	1680	83.9	0.50	40:51	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	604	30.2	0.75	30:03	—
13C12-2378-TCDD	707	35.3	0.81	30:50	—
13C12-PeCDF 123	1080	53.9	1.51	34:49	—
13C12-PeCDD 123	1490	74.3	1.50	36:16	—
13C12-HxCDF 678	1910	95.7	0.52	40:03	—
13C12-HxCDD 678	2840	142	1.27	41:11	—
13C12-HpCDF 678	1290	64.3	0.44	44:29	—
13C12-HpCDD 678	1050	52.5	1.03	46:01	—
13C12-OCDD	1380	34.4	0.78	51:16	—

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FILE NAME.....: S904006 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-14-1B
CONCAL (VER)..: S903996 SAMPLE ID.....: RUN #4 CCH-137
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: VC ANALYSIS DATE: 10/29/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

NAME	AMT(pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	4.6				0.65	30:53	---
12378-PeCDD	EMPC			22.3			---
123478-HxCDD	25.5				1.19	41:05	---
123678-HxCDD	26.4				1.06	41:13	---
123789-HxCDD	49.4				1.22	41:40	---
1234678-HpCDD	210				1.17	46:02	---
OCDD	216				0.86	51:18	---
2378-TCDF	107						---
12378-PeCDF	90.7				0.80	30:07	---
23478-PeCDF	101				1.63	34:50	---
123478-HxCDF	251				1.45	35:49	---
123678-HxCDF	164				1.20	39:54	---
234678-HxCDF	130				1.08	40:05	---
123789-HxCDF	EMPC				1.13	40:52	---
1234678-HpCDF	442			24.0			---
1234789-HpCDF	50.4				0.89	44:31	---
OCDF	155				1.14	46:42	---
					1.00	51:32	---
TOTAL TCDD	4.6	1		37.2	0.65		---
TOTAL PeCDD	52.6	3		175	1.50		---
TOTAL HxCDD	251	6			1.19		---
TOTAL HpCDD	372	2			1.04		---
TOTAL TCDF	493	9		571	0.80		---
TOTAL PeCDF	1000	8		1090	1.50		---
TOTAL HxCDF	1160	9		1200	1.15		---
TOTAL HpCDF	801	4			0.97		---

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FILE NAME.....: S904006 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-14-1B
CONCAL (VER)..: S903996 SAMPLE ID.....: RUN #4 CCH-137
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: VC ANALYSIS DATE: 10/29/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED..: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	982	49.1		30:53	---
13C12-PeCDF 234	1510	75.6	1.56	35:48	---
13C12-HxCDF 478	1260	63.1	0.52	39:54	---
13C12-HxCDD 478	1620	81.2	1.23	41:03	---
13C12-HpCDF 789	913	45.7	0.40	46:41	---

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	1100	55.1	0.49	42:01	---
13C12-HxCDF 234	1590	79.7	0.48	40:52	---

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	896	44.8	0.78	30:04	---
13C12-2378-TCDD	1130	56.3	0.80	30:52	---
13C12-PeCDF 123	1490	74.3	1.51	34:50	---
13C12-PeCDD 123	2190	110	1.48	36:16	---
13C12-HxCDF 678	1470	73.7	0.50	40:03	---
13C12-HxCDD 678	2190	110	1.23	41:11	---
13C12-HpCDF 678	1180	59.1	0.42	44:30	---
13C12-HpCDD 678	1270	63.4	1.00	46:01	---
13C12-OCDD	2310	57.7	0.85	51:17	---

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FILE NAME.....: S904048 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-14-3B
CONCAL (VER)..: S904045 SAMPLE ID.....: RUN #6 CCH-213
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 10/31/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

NAME	AMT(pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		5.9				
12378-PeCDD	ND		7.2				
123478-HxCDD	ND		6.1				
123678-HxCDD	ND		6.0				
123789-HxCDD	ND		6.8				
1234678-HpCDD	29.0				1.02	47:14	
OCDD	346				0.88	52:50	
2378-TCDF	EMPC			7.3			
12378-PeCDF	ND		6.5				
23478-PeCDF	ND		6.7				
123478-HxCDF	6.7				1.39	40:58	
123678-HxCDF	ND		4.0				
234678-HxCDF	ND		5.5				
123789-HxCDF	ND		7.0				
1234678-HpCDF	15.4				1.17	45:37	
1234789-HpCDF	ND		9.5				
OCDF	EMPC			39.2			
TOTAL TCDD	ND		5.9				
TOTAL PeCDD	EMPC			22.7			
TOTAL HxCDD	ND		6.3				
TOTAL HpCDD	29.0	1		51.6	1.02		
TOTAL TCDF	EMPC			7.3			
TOTAL PeCDF	9.8	1			1.35		
TOTAL HxCDF	8.0	1		28.0	1.39		
TOTAL HpCDF	19.2	1		30.2	1.17		

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FILE NAME.....: S904048 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-14-3B
CONCAL (VER)..: S904045 SAMPLE ID.....: RUN #6 CCH-213
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 10/31/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1040	51.8		31:54	
13C12-PeCDF 234	1240	61.8	1.49	36:51	
13C12-HxCDF 478	1420	71.1	0.51	40:59	
13C12-HxCDD 478	1900	95.0	1.21	42:08	
13C12-HpCDF 789	916	45.8	0.44	47:54	

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	1130	56.4	0.50	43:07	
13C12-HxCDF 234	1400	70.2	0.51	41:56	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	1060	53.0	0.76	31:04	
13C12-2378-TCDD	1130	56.7	0.81	31:53	
13C12-PeCDF 123	1170	58.3	1.57	35:52	
13C12-PeCDD 123	1720	86.0	1.59	37:20	
13C12-HxCDF 678	1540	77.2	0.51	41:09	
13C12-HxCDD 678	2080	104	1.21	42:16	
13C12-HpCDF 678	1170	58.5	0.43	45:36	
13C12-HpCDD 678	1240	62.2	1.01	47:12	
13C12-OCDD	1750	43.8	0.85	52:48	

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FILE NAME.....: S904049 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-1B
CONCAL (VER)...: S904045 SAMPLE ID.....: RUN #8 CCH-242
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 11/01/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

NAME	AMT (pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	18.6						
12378-PeCDD	67.8				0.77	31:54	
123478-HxCDD	54.9				1.61	37:21	
123678-HxCDD	68.0				1.09	42:09	
123789-HxCDD	125				1.29	42:17	
1234678-HpCDD	398				1.24	42:44	
OCDD	574				1.05	47:13	
					0.80	52:49	
2378-TCDF	491						
12378-PeCDF	222				0.89	31:08	
23478-PeCDF	310				1.58	35:54	
123478-HxCDF	571				1.53	36:52	
123678-HxCDF	352				1.10	41:00	
234678-HxCDF	267				1.12	41:10	
123789-HxCDF	25.0				1.06	41:58	PR
1234678-HpCDF	962				1.12	43:08	
1234789-HpCDF	146				0.94	45:37	
OCDF	489				0.96	47:56	
					0.87	53:06	
TOTAL TCDD	516	9		545	0.74		
TOTAL PeCDD	380	8		574	1.55		
TOTAL HxCDD	705	6		738	1.22		
TOTAL HpCDD	789	2			1.02		
TOTAL TCDF	2840	13		3010	0.82		
TOTAL PeCDF	3060	12		3470	1.59		
TOTAL HxCDF	2770	10		2910	1.12		
TOTAL HpCDF	1610	3		1800	0.93		

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FILE NAME.....: S904049 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-1B
CONCAL (VER)....: S904045 SAMPLE ID.....: RUN #8 CCH-242
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 11/01/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1090	54.7		31:54	
13C12-PeCDF 234	1390	69.4	1.58	36:51	
13C12-HxCDF 478	1600	80.2	0.52	41:00	
13C12-HxCDD 478	2010	100	1.24	42:08	
13C12-HpCDF 789	1100	55.1	0.43	47:55	

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	1360	67.9	0.53	43:07	
13C12-HxCDF 234	1530	76.5	0.51	41:56	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	1040	51.9	0.79	31:06	
13C12-2378-TCDD	1180	59.2	0.81	31:53	
13C12-PeCDF 123	1310	65.5	1.56	35:52	
13C12-PeCDD 123	2120	106	1.51	37:20	
13C12-HxCDF 678	1550	77.6	0.52	41:09	
13C12-HxCDD 678	2050	103	1.24	42:16	
13C12-HpCDF 678	1270	63.7	0.45	45:36	
13C12-HpCDD 678	1400	70.1	1.07	47:12	
13C12-OCDD	1980	49.4	0.89	52:48	

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FILE NAME.....: S904050 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-2B
CONCAL (VER)..: S904045 SAMPLE ID.....: RUN #9 CCH-266
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 11/01/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPx2372K SHIPMENT NO....: MWI

NAME	AMT (pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	EMPC			3.8			
12378-PeCDD	8.5				1.53	37:21	
123478-HxCDD	EMPC			8.2			
123678-HxCDD	10.2				1.23	42:17	
123789-HxCDD	19.7				1.21	42:44	PR
1234678-HpCDD	EMPC			70.3			
OCDD	143				0.78	52:49	
2378-TCDF	106				0.88	31:08	
12378-PeCDF	EMPC			34.3			
23478-PeCDF	51.2				1.78	36:52	
123478-HxCDF	66.3				1.16	40:59	
123678-HxCDF	40.3				1.13	41:09	
234678-HxCDF	42.9				1.23	41:58	PR
123789-HxCDF	ND		4.0				
1234678-HpCDF	95.3				0.95	45:37	
1234789-HpCDF	13.7				0.88	47:56	
OCDF	75.3				0.92	53:06	
TOTAL TCDD	17.2	2		90.1	0.78		
TOTAL PeCDD	55.8	5		85.5	1.54		
TOTAL HxCDD	107	5		116	1.20		
TOTAL HpCDD	68.5	1		139	1.20		
TOTAL TCDF	443	10		566	0.78		
TOTAL PeCDF	509	9		595	1.57		
TOTAL HxCDF	280	6		335	1.15		
TOTAL HpCDF	180	4			0.97		

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FILE NAME.....: S904050 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-2B
CONCAL (VER)..: S904045 SAMPLE ID.....: RUN #9 CCH-266
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 11/01/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MwI

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1380	69.0		31:54	---
13C12-PeCDF 234	1590	79.6	1.57	36:51	---
13C12-HxCDF 478	1540	77.2	0.52	40:59	---
13C12-HxCDD 478	2210	110	1.23	42:08	---
13C12-HpCDF 789	1130	56.4	0.46	47:55	---

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	1370	68.5	0.53	43:07	---
13C12-HxCDF 234	1750	87.6	0.51	41:56	---

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	1410	70.4	0.77	31:06	---
13C12-2378-TCDD	1450	72.6	0.84	31:53	---
13C12-PeCDF 123	1490	74.4	1.55	35:52	---
13C12-PeCDD 123	2120	106	1.56	37:20	---
13C12-HxCDF 678	1560	77.8	0.51	41:09	---
13C12-HxCDD 678	2210	111	1.24	42:16	---
13C12-HpCDF 678	1260	63.2	0.44	45:36	---
13C12-HpCDD 678	1420	71.0	1.00	47:13	---
13C12-OCDD	2050	51.3	0.91	52:49	---

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FILE NAME.....: S904051 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-3B
CONCAL (VER)..: S904045 SAMPLE ID.....: RUN #10 CCH-344
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 11/01/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

NAME	AMT (pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		24.3				---
12378-PeCDD	ND		48.3				---
123478-HxCDD	EMPC			45.4			---
123678-HxCDD	EMPC			79.0			---
123789-HxCDD	EMPC			85.4			PR
1234678-HpCDD	506				1.01	47:14	---
OCDD	EMPC			1130			---
2378-TCDF	209				0.72	31:11	---
12378-PeCDF	51.1				1.75	35:56	---
23478-PeCDF	138				1.76	36:54	---
123478-HxCDF	271				1.15	41:00	---
123678-HxCDF	128				1.26	41:11	---
234678-HxCDF	252				1.09	41:58	---
123789-HxCDF	ND		76.4				---
1234678-HpCDF	EMPC			685			---
1234789-HpCDF	EMPC			169			---
OCDF	2420				0.90	53:06	---
TOTAL TCDD	EMPC			71.7			Q
TOTAL PeCDD	123	1		5510	1.33		Q
TOTAL HxCDD	295	2		679	1.24		---
TOTAL HpCDD	959	2			0.97		---
TOTAL TCDF	749	8		999	0.72		---
TOTAL PeCDF	1050	9		1230	1.59		---
TOTAL HxCDF	1310	7			1.16		---
TOTAL HpCDF	510	2		1490	0.99		---

_____ KU 11/20/90

X237_RPT rev:3.03

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY

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FILE NAME.....: S904051 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-38
CONCAL (VER)..: S904045 SAMPLE ID.....: RUN #10 CCH-344
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: SB ANALYSIS DATE: 11/01/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1020	50.9		31:57	
13C12-PeCDF 234	1060	52.8	1.47	36:53	
13C12-HxCDF 478	1770	88.7	0.52	41:00	
13C12-HxCDD 478	2030	101	1.27	42:09	
13C12-HpCDF 789	648	32.4	0.41	47:56	

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	1080	53.9	0.51	43:08	
13C12-HxCDF 234	1560	77.8	0.52	41:58	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	1010	50.4	0.78	31:07	
13C12-2378-TCDD	1230	61.3	0.81	31:55	
13C12-PeCDF 123	1190	59.7	1.56	35:55	
13C12-PeCDD 123	1140	57.1	1.68	37:22	
13C12-HxCDF 678	1790	89.6	0.51	41:10	
13C12-HxCDD 678	2100	105	1.23	42:17	
13C12-HpCDF 678	1040	52.0	0.47	45:37	
13C12-HpCDD 678	954	47.7	0.95	47:14	
13C12-OCDD	1320	33.1	0.86	52:50	

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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME....: U902596 CLIENT ID....: RADIAN TLI NUMBER....: 37-15-3B
CONCAL (VER)..: U902590 SAMPLE ID....: RUN #10 CCH-344
PROJECT NUMBER: 16653T ICAL DATE....: 09/21/90
ANALYST.....: JA ANALYSIS DATE: 11/04/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF2K SHIPMENT NO....: MWI

NAME	AMT (pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		6.3				—
2378-TCDF	24.8				0.76	23:02	—
TOTAL TCDD	97.1	5		133	0.83		<u>C</u>
TOTAL TCDF	844	17		883	0.78		—

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1230	61.5		21:41	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	1090	54.4	0.80	23:02	—
13C12-2378-TCDD	1360	68.0	0.79	21:39	—

_____ Kv 11/16/90

C2NF_RPT rev:3.01

TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME..... U902594 CLIENT ID..... RADIAN TLI NUMBER.....: 37-15-1B
CONCAL (VER):: U902590 SAMPLE ID.....: RUN #8 CCH-242
PROJECT NUMBER: 16653T ICAL DATE.....: 09/21/90
ANALYST.....: JA ANALYSIS DATE: 11/04/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF2K SHIPMENT NO....: MWI

NAME	AMT (pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	EMPC			47.1			
2378-TCDF	EMPC			90.3			
TOTAL TCDD	294	3		530	0.80		
TOTAL TCDF	2750	17		3070	0.76		

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1120	56.2		21:37	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	1070	53.7	0.86	22:57	
13C12-2378-TCDD	1200	60.2	0.81	21:35	

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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME.....: U902595 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-15-28
CONCAL (VER)..: U902590 SAMPLE ID.....: RUN #9 CCH-266
PROJECT NUMBER: 16653T ICAL DATE.....: 09/21/90
ANALYST.....: JA ANALYSIS DATE: 11/04/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE...: SPC2NF2K SHIPMENT NO....: MWI

NAME	AMT (pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		21.6				
2378-TCDF	EMPC			20.2			
TOTAL TCDD	ND		21.6				
TOTAL TCDF	340	8		538	0.78		

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1340	67.1		21:36	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	1190	59.3	0.77	22:58	
13C12-2378-TCDD	1450	72.5	0.82	21:36	

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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME.....: U902642 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-14-1B
CONCAL (VER):: U902632 SAMPLE ID.....: RUN #4 CCH-137
PROJECT NUMBER: 16653T ICAL DATE.....: 09/21/90
ANALYST.....: SB ANALYSIS DATE: 11/06/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF2K SHIPMENT NO....: MWI

NAME	AMT (pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	15.0				0.76	21:40	—
2378-TCDF	EMPC			23.1			—
TOTAL TCDD	28.4	2		54.5	0.75		—
TOTAL TCDF	393	14		464	0.72		—

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1080	54.2		21:39	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	972	48.6	0.77	22:59	—
13C12-2378-TCDD	1130	56.4	0.77	21:37	—

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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME.....: U902643 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-14-3B
CONCAL (VER)..: U902632 SAMPLE ID.....: RUN #6 CCH-213
PROJECT NUMBER: 16653T ICAL DATE.....: 09/21/90
ANALYST.....: SB ANALYSIS DATE: 11/06/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF2K SHIPMENT NO....: MWI

NAME	AMT (pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		9.7				—
2378-TCDF	ND		5.3				—
TOTAL TCDD	ND		9.7				—
TOTAL TCDF	ND		5.3				—

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1190	59.5		21:38	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	996	49.8	0.81	22:59	—
13C12-2378-TCDD	1180	58.8	0.79	21:38	—

! KU 11/16/90!

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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME....: U902585 CLIENT ID....: RADIAN TLI NUMBER....: 37-13-2B
CONCAL (VER)..: U902581 SAMPLE ID....: RUN #2 CCH-67
PROJECT NUMBER: 16653T ICAL DATE....: 09/21/90
ANALYST.....: MTB ANALYSIS DATE: 11/04/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF2K SHIPMENT NO....: MWI

NAME	AMT(pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		20.8				
2378-TCDF	13.4				0.72	22:58	
TOTAL TCDD	EMPC			97.7			
TOTAL TCDF	247	12		331	0.78		

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1180	59.1		21:36	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	1380	69.1	0.82	22:56	
13C12-2378-TCDD	1130	56.4	0.81	21:34	

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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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FILE NAME.....: U902641 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-13-3B
CONCAL (VER)..: U902632 SAMPLE ID.....: RUN #3 CCH-106
PROJECT NUMBER: 16653T ICAL DATE.....: 09/21/90
ANALYST.....: SB ANALYSIS DATE: 11/06/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF2K SHIPMENT NO....: MWI

NAME	AMT(pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	9.0				0.67	21:41	—
2378-TCDF	EMPC			16.4			—
TOTAL TCDD	220	6		295	0.77		—
TOTAL TCDF	904	17		958	0.76		—

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	805	40.3		21:39	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	678	33.9	0.80	23:00	✓
13C12-2378-TCDD	807	40.3	0.78	21:38	—

! KY 11/16/90 !

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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

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11/16/90

FILE NAME.....: U902644 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-16-18
CONCAL (VER)..: U902632 SAMPLE ID.....: FIELD BLANK CCH-335
PROJECT NUMBER: 16653T ICAL DATE.....: 09/21/90
ANALYST.....: SB ANALYSIS DATE: 11/06/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF2K SHIPMENT NO....: MWI

NAME	AMT(pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	EMPC			24.1			
2378-TCDF	46.2				0.85	22:59	—
TOTAL TCDD	165	6		238	0.81		—
TOTAL TCDF	1080	19		1170	0.77		—

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1270	63.7		21:38	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	1180	58.8	0.78	22:59	—
13C12-2378-TCDD	1260	62.9	0.80	21:37	—

! KU 11/16/90 !

C2NF_RPT rev:3.01

TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

Page 1 of 1
11/21/90

FILE NAME.....: U902582 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-13-1B
CONCAL (VER)..: U902581 SAMPLE ID.....: RUN #1 CCH-50
PROJECT NUMBER: 16653T ICAL DATE.....: 09/21/90
ANALYST.....: MTB ANALYSIS DATE: 11/03/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPC2NF2K SHIPMENT NO....: MWI

NAME	AMT(pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		24.4				—
2378-TCDF	ND		9.1				—
TOTAL TCDD	ND		24.4				—
TOTAL TCDF	14.5	1		33.2	0.67		<u>E</u>

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	1010	50.4		21:36	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	1220	60.9	0.82	22:57	—
13C12-2378-TCDD	976	48.8	0.79	21:35	—

_____ ku # 21/90 C2NF_RPT rev:3.01

TRIANGLE LABS

November 29, 1990

Charlie Parrish
Radian Corporation
3200 E. Chapel Hill RD.
RTP, NC 27709

Dear Charlie,

Enclosed is Sample RUN #5 CCH-50 of TLI Project 16653.

Remarks from Quality Control are as follows:

Sample RUN #5 CCH-50 (TLI 37-14-2B) shows high recoveries of the labeled hexa-substituted internal standard and surrogate isomers. This sample was injected twice, and showed the same trend in each case. Although the reason for this is not apparent, no 2378 substituted hexa-dioxin/furan analyte isomers are detected in this sample. This sample completes project 16653T.

Sincerely,

Lisa Winstead
Lisa Winstead
Data Assembly Supervisor

801-10 Capitola Drive
Durham, NC 27713
919-544-5729

Triangle Laboratories, Inc.
P.O. Box 13485
Research Triangle Park, NC 27709
Fax # 919-544-5491

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

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11/29/90

FILE NAME.....: S904197 CLIENT ID.....: RADIAN TLI NUMBER.....: 37-14-2B
CONCAL (VER)..: S904196 SAMPLE ID.....: RUN #5 CCH-50
PROJECT NUMBER: 16653T ICAL DATE.....: 10/15/90
ANALYST.....: JA ANALYSIS DATE: 11/08/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

NAME	AMT (pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		24.3				
12378-PeCDD	ND		23.7				
123478-HxCDD	ND		20.8				
123678-HxCDD	ND		20.3				
123789-HxCDD	ND		23.1				
1234678-HpCDD	ND		75.6				
OCDD	ND		280				
2378-TCDF	20.9						
12378-PeCDF	ND		21.2		0.83	30:48	
23478-PeCDF	ND		22.0				
123478-HxCDF	ND		12.7				
123678-HxCDF	ND		12.2				
234678-HxCDF	ND		16.8				
123789-HxCDF	ND		21.5				
1234678-HpCDF	32.9						
1234789-HpCDF	ND		31.5		0.96	45:15	
OCDF	ND		237				
TOTAL TCDD	ND		24.3				
TOTAL PeCDD	EMPC			28.7			
TOTAL HxCDD	ND		21.3				
TOTAL HpCDD	ND		75.6				
TOTAL TCDF	20.9	1					
TOTAL PeCDF	EMPC			25.1	0.83		
TOTAL HxCDF	EMPC			27.2			
TOTAL HpCDF	41.1	1			0.96		

11/29/90

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY

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11/29/90

FILE NAME....: S904197 CLIENT ID....: RADIAN TLI NUMBER....: 37-14-2B
CONCAL (VER)..: S904196 SAMPLE ID....: RUN #5 CCH-50
PROJECT NUMBER: 16653T ICAL DATE....: 10/15/90
ANALYST.....: JA ANALYSIS DATE: 11/08/90
SAMPLE SIZE...: 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE....: SPX2372K SHIPMENT NO....: MWI

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	637	31.9		31:33	—
13C12-PeCDF 234	965	48.3	1.66	36:29	—
13C12-HxCDF 478	3400	170	0.48	40:37	—
13C12-HxCDD 478	3430	171	1.28	41:46	—
13C12-HpCDF 789	1420	71.0	0.38	47:30	—

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	1560	78.1	0.46	42:44	—
13C12-HxCDF 234	2560	128	0.50	41:34	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	677	33.8	0.74	30:44	✓
13C12-2378-TCDD	669	33.5	0.81	31:32	✓
13C12-PeCDF 123	864	43.2	1.61	35:31	—
13C12-PeCDD 123	1270	63.6	1.62	36:57	—
13C12-HxCDF 678	3600	180	0.51	40:47	—
13C12-HxCDD 678	4370	218	1.31	41:54	—
13C12-HpCDF 678	2510	126	0.44	45:13	—
13C12-HpCDD 678	1440	72.2	1.08	46:48	—
13C12-OCDD	1160	28.9	0.81	52:19	—

TV 11/29/90

X237_RPT rev:3.03

TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225)

Page 1 of 1
11/29/90

FILE NAME..... W903522 CLIENT ID..... RADIAN TLI NUMBER..... 37-14-2B
CONCAL (VER).. W903509 SAMPLE ID..... RUN #5 CCH-50
PROJECT NUMBER: 16653T ICAL DATE..... 11/12/90
ANALYST..... JA ANALYSIS DATE: 11/20/90
SAMPLE SIZE... 1.000 SAMPLE MATRIX: TOL RINSE SAMPLE ORIGIN: CCH
DATE RECEIVED.: 10/09/90 DATE COLLECTED: / /
SPIKE FILE.... SPC2NF2K SHIPMENT NO.... MWI

NAME	AMT (pg)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		28.8				—
2378-TCDF	ND		17.9				—
TOTAL TCDD	ND		28.8				—
TOTAL TCDF	ND		17.9				—

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

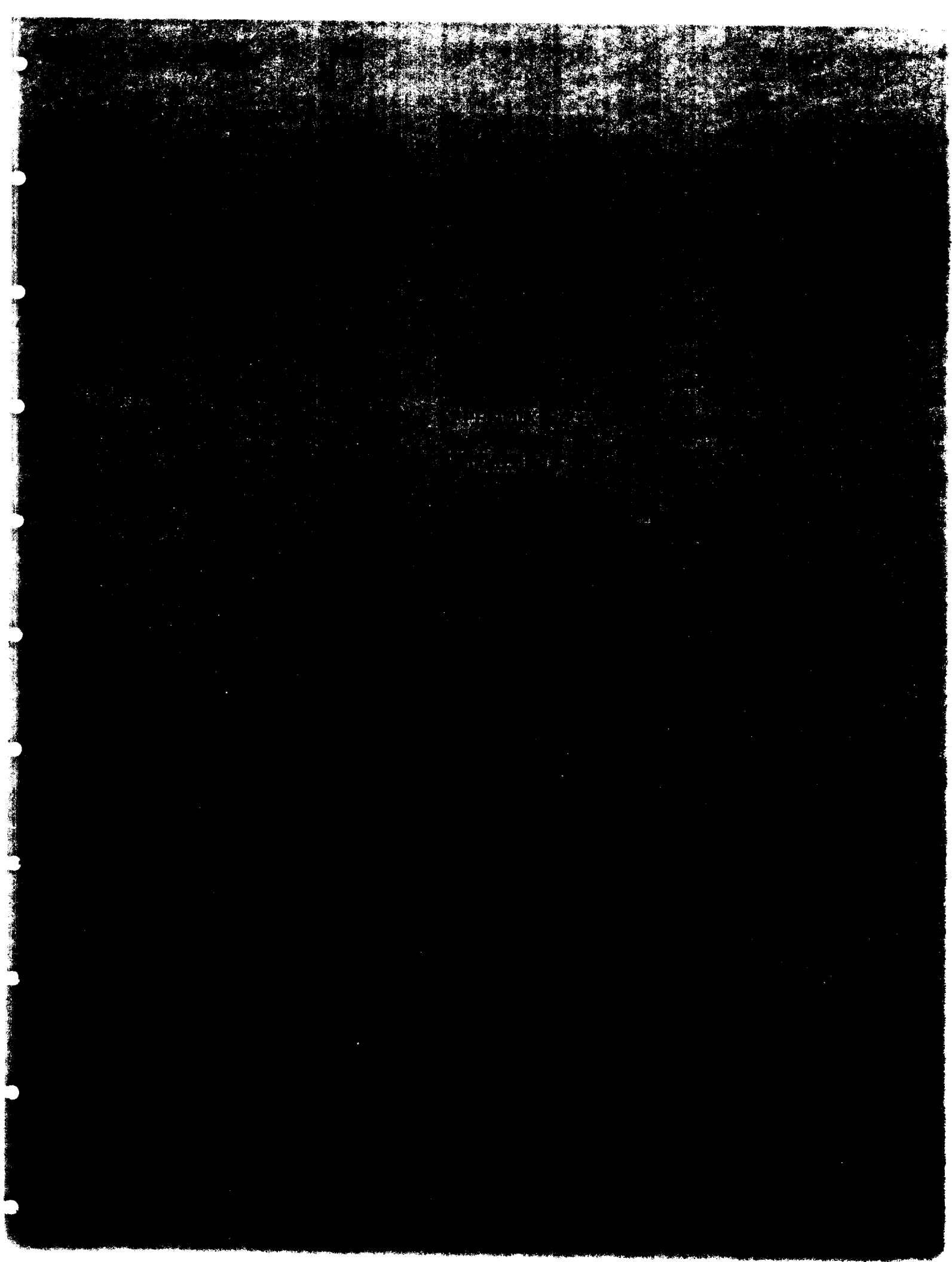
NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
37C1-TCDD	861	43.0		20:54	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (pg)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	787	39.4	0.84	22:15	✓
13C12-2378-TCDD	983	49.1	0.78	20:53	—

1. ✓ 11/29/90

C2NF_RPT rev:3.01





Radian Work Order P0-10-095

Analytical Report
11/27/90

EPA EMB

EPA EMB
Radian Corporation
3200 E. Chapel Hill Road
RTP, NC 27709
Winton Kelly

Customer Work Identification Central C Hospital
Purchase Order Number 275-026-26-35

Contents:

- 1 Analytical Data Summary
- 2 Sample History
- 3 Comments Summary
- 4 Notes and Definitions

Radian Analytical Services
900 Perimeter Park
Morrisville, NC 27560

919-481-0212

Client Services Coordinator: JDLOPEZ

Certified by:

A handwritten signature in dark ink, appearing to read "JFM-G", is written over a horizontal line.

EPA EMB

Radian Work Order: PO-10-095

Method:Metals by GF - Trains (1)

 List:GF Metals - EPA EMB-Front 1/2 *Run 1*

Sample ID: CCH-46,M22,MP-

-88

Factor: 0.25

Results in: total ug

01A

Matrix: front1/2

Run 2

CCH-62,M13,MP-

-66

0.25

total ug

02A

front1/2

Run 3

CCH-112,M12,M-

P-78

0.25

total ug

03A

front1/2

Run 4

CCH-144,M16,M-

P-80

0.25

total ug

04A

front1/2

 Arsenic
 Lead

Result Det. Limit

126 1.0

546 0.75

Result Det. Limit

15.8 1.0

2370 0.75

Result Det. Limit

11.0 1.0

731 0.75

Result Det. Limit

8.93 1.0

1400 0.75

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: PO-10-095

Method:Metals by GF - Trains (1)

 List:GF Metals - EPA EMB-Front 1/2 *Run 5*

Sample ID: CCH-182,M15,M-

P-46

Factor: 0.25

Results in: total ug

05A

Matrix: front1/2

Run 6

CCH-208,M14,M-

P-84

0.25

total ug

06A

front1/2

Run 8

CCH-238,M3,MP-

-83

0.25

total ug

08A

front1/2

Run 9

CCH-261,M8,MP-

-35

0.25

total ug

09A

front1/2

Arsenic

Result Det. Limit

11.1 1.0

Lead

368 0.75

Result Det. Limit

13.8 1.0

213 0.75

Result Det. Limit

6.80 1.0

2250 0.75

Result Det. Limit

278 1.0

477 0.75

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: PO-10-095

Method: Metals by GF - Trains (1)

List: GF Metals - EPA EMB-Front 1/2

Rev 1

Sample ID:	CCH-329,M18,M-P-87	METHOD BLANK	METHOD SPIKE	CCH-47
Factor:	0.25	0.25	0	0.108
Results in:	total ug	total ug	% rec	total ug
	10A	11A	12A	14A
Matrix:	front1/2	front1/2	front1/2	back 1/2

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	11.7	1.0	ND	1.0	98.0		ND	0.43
Lead	320	0.75	ND	0.75	100		ND	3.2

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: PO-10-095

Method: Metals by GF - Trains (1)

List: GF Metals - EPA EMB-Front 1/2 Run 02

Sample ID:	Run 02 CCH-63	Run 3 CCH-113	Run 4 CCH-145	Run 5 CCH-183
Factor:	0.108	0.109	0.109	0.109
Results in:	total ug	total ug	total ug	total ug
	15A	16A	17A	18A
Matrix:	back 1/2	back 1/2	back 1/2	back 1/2

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	1.23 @	0.43	ND	0.44	1.75 @	0.44	ND	0.44
Lead	ND	3.2	ND	3.3	ND	3.3	ND	3.3

@ Est. result less than 5 times detection limit

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: P0-10-095

Method: Metals by GF - Trains (1)

 List: GF Metals - EPA EMB-Front 1/2 *Run 6*

Sample ID: CCH-209

Run 8
 CCH-239

Run 9
 CCH-262

Run 10
 CCH-339, CCH-3-40

Factor: 0.108

0.109

0.109

0.107

Results in: total ug

total ug

total ug

total ug

19A

21A

22A

23A

Matrix: back 1/2

back 1/2

back 1/2

back 1/2

Arsenic

Result Det. Limit

ND 0.43

Result Det. Limit

0.780 @ 0.44

Result Det. Limit

ND 0.44

Result Det. Limit

3.16 0.43

Lead

ND 3.2

ND 3.3

ND 3.3

53.5 3.2

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: PO-10-095

Method:Metals by GF - Trains (1)

 List:GF Metals - EPA EMB-Front 1/2 *FB*

Sample ID:	CCH-330	METHOD BLANK	METHOD SPIKE	METHOD SPIKE
Factor:	0.114	0.109	0	DUP
Results in:	total ug	total ug	% rec	% rec
	24A	25A	26A	27A
Matrix:	back 1/2	back 1/2	back 1/2	back 1/2

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	ND	0.46	ND	0.44	96.2		94.4	
Lead	ND	3.4	ND	3.3	95.2		92.8	

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: P0-10-095

Method:ICP Total Metals - Trains (1)

 List:ICP Metals - EPA EMB -Back 1/2 *Run 01*

 Sample ID: CCH-46,M22,MP-
-88

Factor: 0.25

 Results in: total ug
01A

Matrix: front1/2

Run 02

 CCH-62,M13,MP-
-66

0.25

 total ug
02A

front1/2

Run 3

 CCH-112,M12,M-
P-78

0.25

 total ug
03A

front1/2

Run 4

 CCH-144,M16,M-
P-80

0.25

 total ug
04A

front1/2

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Antimony	60.0 @	16	655	16	76.5 @	16	412	16
Barium	25.0	0.50	106	0.50	41.8	0.50	85.8	0.50
Beryllium	ND	0.50	ND	0.50	ND	0.50	1.25 @	0.50
Cadmium	16.2	1.2	55.2	1.2	452	1.2	49.0	1.2
Chromium	14.6	2.5	40.0	2.5	48.0	2.5	27.0	2.5
Nickel	ND	5.0	14.2 @	5.0	26.2	5.0	14.8 @	5.0
Silver	ND	8.2	ND	8.2	ND	8.2	ND	8.2
Thallium	ND	14	ND	14	ND	14	ND	14

@ Est. result less than 5 times detection limit

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: PO-10-095

Method:ICP Total Metals - Trains (1)

 List:ICP Metals - EPA EMB -Back 1/2 *Run 5*

Sample ID: CCH-182,M15,M-

P-46

Factor: 0.25

Results in: total ug

05A

Matrix: front1/2

Run 6

CCH-208,M14,M-

P-84

0.25

total ug

06A

front1/2

Run 8

CCH-238,M3,MP-

-83

0.25

total ug

08A

front1/2

Run 9

CCH-261,M8,MP-

-35

0.25

total ug

09A

front1/2

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Antimony	64.5 @	16	59.2 @	16	748	16	77.5 @	16
Barium	26.0	0.50	33.2	0.50	80.2	0.50	34.8	0.50
Beryllium	ND	0.50	ND	0.50	1.25 @	0.50	ND	0.50
Cadmium	15.0	1.2	26.0	1.2	73.8	1.2	27.0	1.2
Chromium	41.5	2.5	532	2.5	32.8	2.5	33.5	2.5
Nickel	35.8	5.0	823	5.0	55.5	5.0	101	5.0
Silver	ND	8.2	ND	8.2	ND	8.2	ND	8.2
Thallium	ND	14	ND	14	ND	14	ND	14

@ Est. result less than 5 times detection limit

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: PO-10-095

Method: ICP Total Metals - Trains (1)

List: ICP Metals - EPA EMB - Back 1/2

Sample ID:

 CCH-329, M18, M-
 P-87

METHOD BLANK

METHOD SPIKE

 Run 1
 CCH-47

Factor:

0.25

0.25

0

0.108

Results in:

total ug

total ug

% rec

total ug

10A

11A

12A

14A

Matrix:

front1/2

front1/2

front1/2

back 1/2

Antimony

Result Det. Limit

59.5 @ 16

Result Det. Limit

ND 16

Result Det. Limit

104

Result Det. Limit

ND 6.9

Barium

22.5 0.50

6.75 0.50

97.6

0.433 @ 0.22

Beryllium

ND 0.50

ND 0.50

99.6

ND 0.22

Cadmium

17.0 1.2

ND 1.2

102

0.920 @ 0.54

Chromium

16.0 2.5

ND 2.5

104

2.33 @ 1.1

Nickel

44.0 5.0

ND 5.0

92.2

ND 2.2

Silver

ND 8.2

ND 8.2

113

ND 3.4

Thallium

ND 14

ND 14

83.4

6.76 @ 5.8

@ Est. result less than 5 times detection limit

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: PO-10-095

Method: ICP Total Metals - Trains (1)

 List: ICP Metals - EPA EMB - Back 1/2 *Run 2*

Sample ID:

CCH-63

Run 3
 CCH-113

Run 4
 CCH-145

Run 5
 CCH-183

Factor:

0.108

0.109

0.109

0.109

Results in:

total ug

total ug

total ug

total ug

Matrix:

 15A
 back 1/2

 16A
 back 1/2

 17A
 back 1/2

 18A
 back 1/2

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Antimony	49.0	6.9	8.05 @	7.0	47.8	7.0	ND	7.0
Barium	1.19	0.22	0.544 @	0.22	2.18	0.22	0.435 @	0.22
Beryllium	ND	0.22	ND	0.22	ND	0.22	ND	0.22
Cadmium	ND	0.54	0.871 @	0.54	ND	0.54	ND	0.54
Chromium	3.45 @	1.1	3.92 @	1.1	9.05	1.1	ND	1.1
Nickel	ND	2.2	ND	2.2	ND	2.2	ND	2.2
Silver	18.9	3.6	ND	3.6	11.0 @	3.6	ND	3.6
Thallium	ND	5.8	ND	5.9	ND	5.9	ND	5.9

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: PO-10-095

Method: ICP Total Metals - Trains (1)

List: ICP Metals - EPA EMB - Back 1/2

Sample ID:

CCH-209

Factor:

0.108

Results in:

total ug

19A

Matrix:

back 1/2

CCH-239

0.109

total ug

21A

back 1/2

CCH-262

0.109

total ug

22A

back 1/2

CCH-339, CCH-3-40

0.107

total ug

23A

back 1/2

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Antimony	ND	6.9	58.0	7.0	ND	7.0	ND	6.8
Barium	4.76	0.22	2.39	0.22	1.20	0.22	6.42	0.21
Beryllium	ND	0.22	ND	0.22	ND	0.22	ND	0.21
Cadmium	1.41 @	0.54	ND	0.54	ND	0.54	3.53	0.54
Chromium	1.41 @	1.1	4.68 @	1.1	1.30 @	1.1	15.0	1.1
Nickel	ND	2.2	ND	2.2	ND	2.2	81.1	2.1
Silver	ND	3.6	ND	3.6	ND	3.6	ND	3.5
Thallium	ND	5.8	ND	5.9	ND	5.9	ND	5.8

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: PO-10-095

Method: ICP Total Metals - Trains (1)

 List: ICP Metals - EPA EMB - Back 1/2 *FB*

Sample ID:

CCH-330

METHOD BLANK

METHOD SPIKE

METHOD SPIKE

Factor:

0.114

0.109

0

DUP

Results in:

total ug

total ug

% rec

 0
% rec

24A

25A

26A

27A

Matrix:

back 1/2

back 1/2

back 1/2

back 1/2

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Antimony	ND	7.3	ND	7.0	95.2		81.0	
Barium	ND	0.23	ND	0.22	96.6		96.0	
Beryllium	ND	0.23	ND	0.22	96.0		94.4	
Cadmium	ND	0.57	0.978 a	0.54	101		101	
Chromium	1.25 a	1.1	ND	1.1	99.6		98.2	
Nickel	ND	2.3	ND	2.2	89.6		90.0	
Silver	ND	3.8	ND	3.6	NC		NC	
Thallium	ND	6.2	ND	5.9	89.6		85.8	

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

NC Not calculated

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: P0-10-095

Method/Analyte	Sample Identifications					
	Run 1		Run 2		Run 3	
	CCH-46,M22,MP-		CCH-62,M13,MP-		CCH-112,M12,M-	
	-88		-66		P-78	
	01		02		03	
Matrix	front1/2		front1/2		front1/2	

Hg cold vapor AA - trains Mercury	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
	ND	total ug 2.4	ND	total ug 2.4	ND	total ug 2.4

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

EPA EMB

Radian Work Order: P0-10-095

Method/Analyte	Run 8	Sample Identifications	Run 9	FB
	CCH-238,M3,MP-		CCH-261,M8,MP-	CCH-329,M18,M-
	-83		-35	P-87
	08		09	10
Matrix	front1/2		front1/2	front1/2

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Hg cold vapor AA - trains						
Mercury	ND	total ug 2.4	ND	total ug 2.4	ND	total ug 2.4

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

EPA EMB

Radian Work Order: P0-10-095

Method/Analyte		Sample Identifications			
		METHOD BLANK		METHOD SPIKE	
		11		12	
Matrix		front1/2		front1/2	
				14	
				back 1/2	
Hg cold vapor AA - trains		Result	Det. Limit	Result	Det. Limit
Mercury		ND	total ug 2.4	115	% rec
				ND	total ug 6.5
ND Not detected at specified detection limit					
(1) For a detailed description of flags and technical terms in this report refer to the glossary.					

EPA EMB

Radian Work Order: PO-10-095

Method/Analyte	Sample Identifications					
	Run 5 CCH-183		Run 6 CCH-209		Run 8 CCH-239	
Matrix	18 back 1/2		19 back 1/2		21 back 1/2	
Hg cold vapor AA - trains	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Mercury	113	total ug 5.9	ND	total ug 6.4	ND	total ug 6.1

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

EPA EMB

Radian Work Order: P0-10-095

Method/Analyte		Sample Identifications					
		METHOD BLANK		METHOD SPIKE		METHOD SPIKE DUP	
Matrix		25		26		27	
		back 1/2		back 1/2		back 1/2	
		Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Hg cold vapor AA - trains							
Mercury		ND	total ug 6.1	109	% rec	101	% rec

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

EPA EMB

Method/Analyte		Sample Identifications			
	<i>PB</i> CCH-118	<i>#4</i> CCH-146	<i>#5</i> CCH-184		
Matrix	11 Hg train	12 Hg train	13 Hg train		

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Hg cold vapor AA - trains						
Mercury	ND	total ug 0.30	ND	total ug 0.67	86.5	total ug 0.65

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

EPA EMB

Radian Work Order: P0-10-096

Method/Analyte	Sample Identifications
# 6 CCH-210	# 7 CCH-227
14 Hg train	15 Hg train
# 8 CCH-240	16 Hg train

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Hg cold vapor AA - trains						
Mercury	ND	total ug 0.77	ND	total ug 0.71	ND	total ug 0.76

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

EPA EMB

Radian Work Order: P0-10-096

Method/Analyte		Sample Identifications						
	#9 CCH-263			#10 CCH-341	CCH-331 FIELD			
	17			18	BLANK			
Matrix	Hg train			Hg train	19 Hg train			
	Result	Det. Limit		Result	Det. Limit		Result	Det. Limit
Hg cold vapor AA - trains	ND	total ug 0.65		ND	total ug 0.69		ND	total ug 0.37
Mercury								
ND Not detected at specified detection limit								
(1) For a detailed description of flags and technical terms in this report refer to the glossary.								

EPA EMB

Method/Analyte	Sample Identifications					
	METHOD BLANK		MATRIX SPIKE		MATRIX SPIKE	
	20		21		DUP	
	Matrix	Hg train	Hg train		22	Hg train
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Hg cold vapor AA - trains						
Mercury	ND	total ug 0.67	64.1	% rec	80.1	% rec

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

EPA EMB

Radian Work Order: P0-10-095

Q ALL METHODS EXCEPT CLP

The results which are less than five times the method specified detection limit.

EXPLANATION

Uncertainty of the analysis will increase as the method detection limit is approached. These results should be considered approximate.

NC ALL METHODS EXCEPT CLP

The relative percent difference (RPD) and spike recovery are not calculated when a result value is less than five times the detection limit or obvious matrix interferences are present or a surrogate concentration is not calculated due to dilution.

EXPLANATION

See Q definition for data near the detection limit. A spike recovery is not calculated when the sample result is greater than four times the spike added concentration because the spike added concentration is insignificant. Surrogate recoveries are not calculated due to dilution to allow analyte quantitation.

ND ALL METHODS EXCEPT CLP

This flag is used to denote analytes which are not detected at or above the specified detection limit.

EXPLANATION

The value to the right of the < symbol is the method specified detection limit for the analyte.

EPA EMB

Radian Work Order: P0-10-095

TERMS USED IN THIS REPORT:

Analyte - A chemical for which a sample is to be analyzed. The analysis will meet EPA method and QC specifications.

Compound - See Analyte.

Detection Limit - The method specified detection limit, which is the lower limit of quantitation specified by EPA for a method. Radian staff regularly assess their laboratories' method detection limits to verify that they meet or are lower than those specified by EPA. Detection limits which are higher than method limits are based on experimental values at the 99% confidence level. The detection limits for EPA CLP (Contract Laboratory Program) methods are CRQLs (contract required quantitation limits) for organics and CRDLs (contract required detection limits) for inorganics. Note, the detection limit may vary from that specified by EPA based on sample size, dilution or cleanup. (Refer to Factor, below)

EPA Method - The EPA specified method used to perform an analysis. EPA has specified standard methods for analysis of environmental samples. Radian will perform its analyses and accompanying QC tests in conformance with EPA methods unless otherwise specified.

Factor - Default method detection limits are based on analysis of clean water samples. A factor is required to calculate sample specific detection limits based on alternate matrices (soil or water), reporting units, use of cleanup procedures, or dilution of extracts/digestates. For example, extraction or digestion of 10 grams of soil in contrast to 1 liter of water will result in a factor of 100.

Matrix - The sample material. Generally, it will be soil, water, air, oil, or solid waste.

Radian Work Order - The unique Radian identification code assigned to the samples reported in the analytical summary.

Units - ug/L	micrograms per liter (parts per billion); liquids/water
ug/kg	micrograms per kilogram (parts per billion); soils/solids
ug/M3	micrograms per cubic meter; air samples
mg/L	milligrams per liter (parts per million); liquids/water
mg/kg	milligrams per kilogram (parts per million); soils/solids
%	percent; usually used for percent recovery of QC standards
uS/cm	conductance unit; microSiemens/centimeter
mL/hr	milliliters per hour; rate of settlement of matter in water
NTU	turbidity unit; nephelometric turbidity unit
CU	color unit; equal to 1 mg/L of chloroplatinate salt



Radian Work Order P0-10-096

Sanford Ash
(metals)

Analytical Report
11/27/90

EPA EMB
EPA EMB Radian Corporation 3200 E. Chapel Hill Road RTP, NC 27709 Winton Kelly

Customer Work Identification Central C Hospital Purchase Order Number 275-026-26-35
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Contents:	
1	Analytical Data Summary
2	Sample History
3	Comments Summary
4	Notes and Definitions

Radian Analytical Services
900 Perimeter Park
Morrisville, NC 27560

919-481-0212

Client Services Coordinator: JDLOPEZ

Certified by: JF Mc Guffey

EPA EMB

Radian Work Order: PO-10-096

Method: Metals by GF - Soil (1)

List: GF Metals - EPA EMB- Ash

Sample ID:

 #1
 CCH-82, CCH-15-
 1, CCH-375

 #2
 CCH-93, CCH-17-
 2, CCH-320

 #3
 CCH-189, CCH-3-
 11, CCH-318

METHOD BLANK

Factor:

1.0

1.0

1.0

1.0

Results in:

mg/kg

mg/kg

mg/kg

mg/kg

Matrix:

01A

02A

03A

04A

ash

ash

ash

ash

Arsenic

Result Det. Limit

11.7 @ 4.0

Result Det. Limit

45.5 4.0

Result Det. Limit

ND 4.0

Result Det. Limit

ND 4.0

Lead

78.4 3.0

232 3.0

15.7 3.0

ND 3.0

@ Est. result less than 5 times detection limit

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

CCH-82 — 9/21 1

-151 — 9/23 3

375 — 10/03 10

CCH-93 — 9/22 2

172 — 9/24 4

320 — 9/27 8

CCH-189 — 9/25 5

311 — 9/24 9

318 — 9/26 6

EPA EMB

Radian Work Order: PO-10-096

Method:Metals by GF - Soil (1)

List:GF Metals - EPA EMB- Ash

Sample ID:	MATRIX SPIKE	MATRIX SPIKE
		DUP
Factor:	0	0
Results in:	% rec	% rec
	05A	06A
Matrix:	ash	ash

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	64.3		71.5					
Lead	81.4		80.2					

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: P0-10-096

Method:6010, 25 element ICP scan (1)

List:ICP Metals - EPA EMB- Ash

	#1	#2	#3	
Sample ID:	CCH-82,CCH-15- 1,CCH-375	CCH-93,CCH-17- 2,CCH-320	CCH-189,CCH-3- 11,CCH-318	METHOD BLANK
Factor:	0.1	0.1	0.1	0.1
Results in:	mg/kg	mg/kg	mg/kg	mg/kg
	01A	02A	03A	04A
Matrix:	ash	ash	ash	ash

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Antimony	9.60 @	6.4	19.2 @	6.4	ND	6.4	ND	6.4
Barium	2630	0.20	7260	0.20	245	0.20	2.30	0.20
Beryllium	1.60	0.20	4.10	0.20	1.00	0.20	ND	0.20
Cadmium	3.30	0.50	1.20 @	0.50	ND	0.50	ND	0.50
Chromium	30.4	1.0	26.7	1.0	8.30	1.0	ND	1.0
Nickel	7.20 @	2.0	15.1	2.0	ND	2.0	ND	2.0
Silver	ND	3.3	ND	3.3	ND	3.3	ND	3.3
Thallium	727	5.4	1820	5.4	410	5.4	ND	5.4

@ Est. result less than 5 times detection limit

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: P0-10-096

Method:6010, 25 element ICP scan (1)

List:ICP Metals - EPA EMB- Ash

Sample ID:	MATRIX SPIKE	MATRIX SPIKE
		DUP
Factor:	0	0
Results in:	% rec	% rec
	05A	06A
Matrix:	ash	ash

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Antimony	NC		NC					
Barium	NC		NC					
Beryllium	80.8		80.2					
Cadmium	85.0		84.4					
Chromium	84.5		82.3					
Nickel	79.0		81.9					
Silver	NC		NC					
Thallium	NC		NC					

NC Not calculated

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

EPA EMB

Radian Work Order: P0-10-096

Method/Analyte		Sample Identifications					
		#1		#2		#3	
		CCH-82,CCH-15-1,CCH-375		CCH-93,CCH-17-2,CCH-320		CCH-189,CCH-3-11,CCH-318	
		01		02		03	
Matrix		ash		ash		ash	

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
EPA 245.1,Hg cold vapor AA						
Mercury	ND	mg/kg 0.039	0.0450 @	mg/kg 0.039	ND	mg/kg 0.039

ND Not detected at specified detection limit	@ Est. result less than 5 times detection limit
(1) For a detailed description of flags and technical terms in this report refer to the glossary.	



Radian Work Order: P0-10-096

Method/Analyte		Sample Identifications					
		METHOD BLANK		MATRIX SPIKE		MATRIX SPIKE DUP	
Matrix		04 ash		05 ash		06 ash	
EPA 245.1, Hg cold vapor AA	Result	Det. Limit		Result	Det. Limit	Result	Det. Limit
Mercury	ND	mg/kg 0.039		57.0	% rec	67.0	% rec

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

Central Carolina Hospital-Sanford

Sample ID	Volume (ml)	Correction (g)	Tare Weight	Final Weight	Sample Weight	Comments

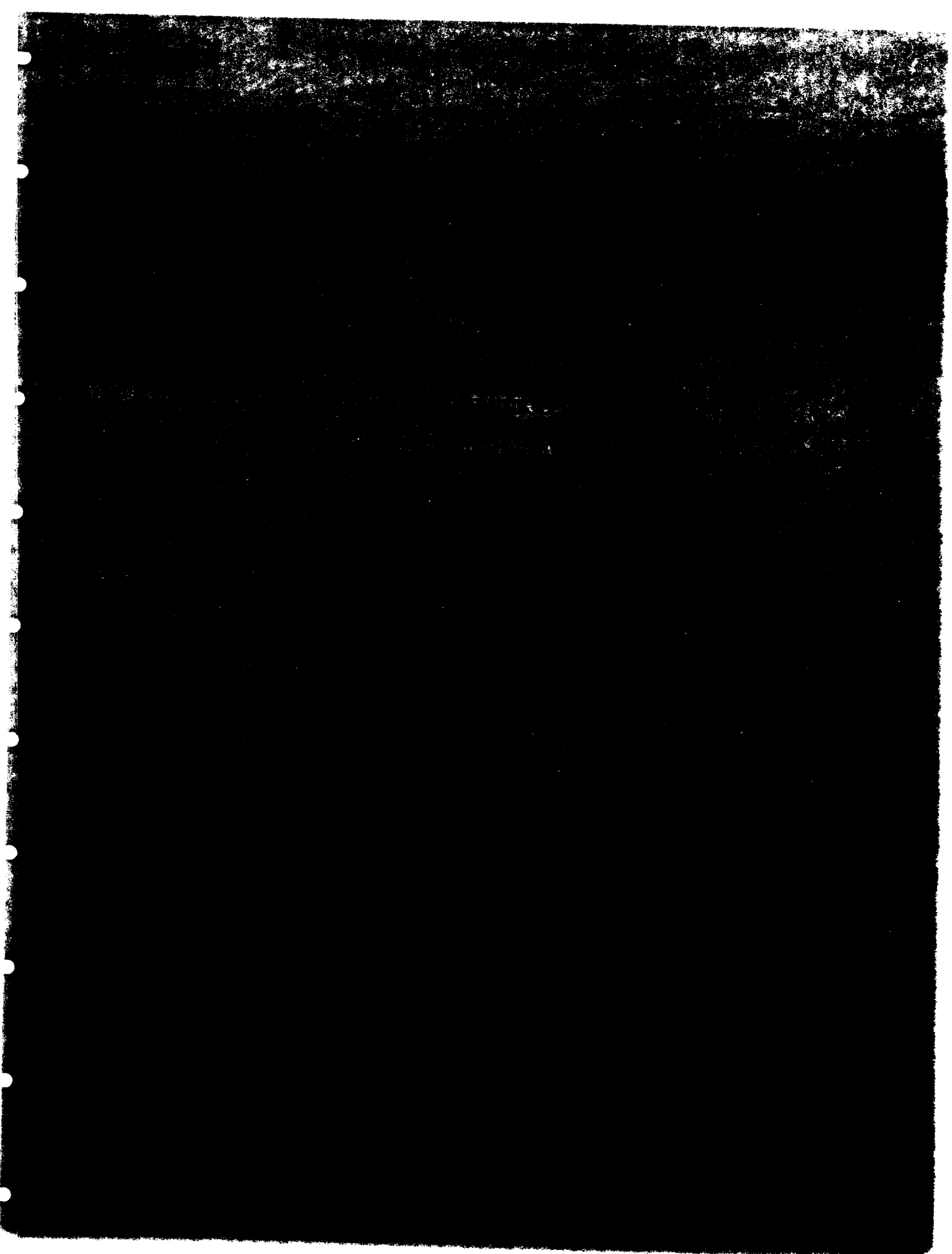
Filters						
Run 1	n/a	n/a	0.6654	0.7392		Filter #
	n/a	n/a	0.6653	0.7394	0.07395	MP-88
Run 2	n/a	n/a	0.9024	1.1872		Filter #
	n/a	n/a	0.9025	1.1870	0.28465	MP-66
Run 3	n/a	n/a	0.8930	0.9591		Filter #
	n/a	n/a	0.8927	0.9589	0.06615	MP-78
Run 4	n/a	n/a	0.8905	1.5532		Filter #
	n/a	n/a	0.8900	1.5536	0.66315	MP-80
Run 5	n/a	n/a	0.8725	0.9509		Filter #
	n/a	n/a	0.8724	0.9506	0.07830	MP-46
Run 6	n/a	n/a	0.9093	1.0027		Filter #
	n/a	n/a	0.9090	1.0022	0.09330	MP-84
Run 7	n/a	n/a	0.8779	1.1205		Filter #
	n/a	n/a	0.8777	1.1207	0.24280	MP-10
Run 8	n/a	n/a	0.8992	1.3612		Filter #
	n/a	n/a	0.8988	1.3607	0.46195	MP-83
Run 9	n/a	n/a	0.7330	0.8345		Filter #
	n/a	n/a	0.7328	0.8344	0.10155	MP-35
Run 10	n/a	n/a	0.9037	0.9855		Filter #
	n/a	n/a	0.9042	0.9851	0.08135	MP-40
Lab Proof	n/a	n/a	0.8710	0.8711		Filter #
Blank 1	n/a	n/a	0.8712	0.8710	-0.00005	MP-38
Lab Proof	n/a	n/a	0.9024	0.9025		Filter #
Blank '2	n/a	n/a	0.9025	0.9020	-0.00020	MP-66
Filter	n/a	n/a	0.6635	0.6631		Filter #
Blank	n/a	n/a	0.6634	0.6628	-0.00050	MP-87
Field	n/a	n/a	0.8986	0.8982		Filter #
Blank	n/a	n/a	0.8979	0.8983	0.00000	MP-65

Medical Waste Incinerator
Central Carolina Hospital-Sanford

Sample ID	Volume (ml)	Correction (g)	Tare Weight	Final Weight	Sample Weight	Comments

Acetone Samples						
Run 1	320	0.0005	102.7482 102.7482	102.7760 102.7760	0.02732	Beaker M22
Run 2	430	0.0006	105.0083 105.0088	105.1364 105.1364	0.12720	Beaker M13
Run 3	205	0.0003	103.8052 103.8052	103.8297 103.8297	0.02419	Beaker M12
Run 4	300	0.0005	104.0790 104.0794	105.8793 105.8791	1.79955	Beaker M16
Run 5	230	0.0003	109.2765 109.2767	109.2968 109.2968	0.01985	Beaker M15
Run 6	250	0.0004	100.5086 100.5086	100.5631 100.5636	0.05437	Beaker M14
Run 7	350	0.0005	109.4416 109.4418	109.6360 109.6365	0.19402	Beaker M7
Run 8	375	0.0006	113.6280 113.6276	113.7768 113.7768	0.14844	Beaker M3
Run 9	230	0.0003	110.2665 110.2670	110.2995 110.2995	0.03240	Beaker M8
Run 10	375	0.0006	101.0867 101.0869	101.1034 101.1034	0.01604	Beaker F94
Lab Proof Blank 1	150	0.0002	104.8585 104.8585	104.8602 104.8602	0.00147	Beaker M19
Lab Proof Blank 2	150	0.0002	103.6133 103.6133	103.6216 103.6216	0.00808	Beaker M21
Field Blank	170	0.0003	102.1350 102.1347	102.1391 102.1391	0.00399	Beaker M18
Reagent Blank	200	n/a	104.6094 104.6092	104.6096 104.6096	0.00030	Beaker M20

Acetone Correction Factor 0.0000015



INDICATOR SPORE ANALYTICAL SUMMARY

ASH SAMPLES, CFU/g				
RUN	CODE	REP 1	REP 2	REP 3
PRE 1	CCH-075	0	0	0
PRE 2	CCH-078	0	>1E2	<1E2
PRE 3	CCH-081	<1E2	<1E2	<1E2
PRE 4	CCH-092	<1E2	<1E2	<1E2
PRE 5	CCH-150	<1E2	<1E2	0
PRE 6	CCH-170	<1E2	0	<1E2
PRE 7	CCH-188	0	0	0
PRE 8	CCH-275	0	<1E2	<1E2
PRE 9	CCH-279	<1E2	0	<1E2
PRE 10	CCH-313	0	0	0

IMPINGER SAMPLES		
RUN	CODE	CFUs
FB	FIELD BLANK	0
1	CCH-119,120	0
2	CCH-121,122,123	0
3	CCH-124,125	-200/100 ml
4	CCH-130,131,135	0
5	CCH-199,200	<200/100 ml
6	CCH-201,202	30/100 ml
7	CCH-252,253	>200/100 ml
8	CCH-255,254	>200/100 ml
9	CCH-302,303	-100/100ml
10	CCH-368,369	0

CCH-271, SPORE SUSPENSION
 LABELED, 7.36E08 SPORES/ml
 ANALYZED 3.0E9 SPORES/ml
 NOT CONSISTENT WITH LABEL

CCH-272, SPORE SUSPENSION
 LABELED 7.88E09 SPORES/ml
 ANALYZED 3.E09 SPORES/ml
 NOT CONSISTENT WITH LABEL

CCH-273, DRY SPORES IN VIAL
 5.2E06 SPORES/VIAL

INDICATOR SPORE ANALYTICAL SUMMARY (Continued)

PIPE SAMPLES							
RUN	CODE	PIPE SIZE	CFUs	RUN	CODE	PIPE SIZE	CFUs
1	CCH-085	L	14	9	CCH-304	L	0
1	CCH-086	L	3	9	CCH-305	S	1
1	CCH-087	S	0	9	CCH-306	L	0
1	CCH-088	S	1	9	CCH-307	L	0
1	CCH-089	L	20	9	CCH-308	S	1
1	CCH-090	S	TNTC*	9	CCH-309	S	0
2	CCH-096	S	GR*	10	CCH-378	L	0
2	CCH-097	S	>32	10	CCH-379	L	0
2	CCH-098	S	20	10	CCH-380	S	0
2	CCH-099	L	>20	10	CCH-381	L	0
2	CCH-100	L	3	10	CCH-382	S	0
2	CCH-101	L	7	10	CCH-383	S	0
3	CCH-154	L	0				
3	CCH-155	S					
3	CCH-156	L	0				
3	CCH-157	S	1				
3	CCH-158	S	4				
3	CCH-159	L	5				
4	CCH-175	L	0				
4	CCH-176	S	2				
4	CCH-177	L	4				
4	CCH-178	S	3				
4	CCH-179	L	0				
4	CCH-180	S	0				
5	CCH-193	L	TNTC*				
5	CCH-194	S	0				
5	CCH-195	L	TNTC*				
5	CCH-196	L	>166				
5	CCH-197	S	>79				
5	CCH-198	S	0				
6	CCH-280	S	0				
6	CCH-281	L	0				
6	CCH-282	S	0				
6	CCH-283	L	0				
6	CCH-284	S	0				
6	CCH-285	L	0				
7	CCH-286	S	>40				
7	CCH-287	L	>20				
7	CCH-292	S	1				
7	CCH-293	S	17				
7	CCH-294	L	0				
7	CCH-295	L	2				
7	CCH-296	L	0				
7	CCH-297	S	0				
FB*	CCH-298	L	10				
FB	CCH-299	S	TNTC*				
A*	CCH-300		10				
A	CCH-301		TNTC*				

*Ambient

GR = Growth on Filters

TNTC = Too numerous to count (typically quantified as >200 spores)

FB = Field Blank

A = Ambient (loaded with spores but not placed in incinerator.)

SAMPLE ID: SPORE SUSPENSION
SAMPLE ID NUMBER: CFM - SS
SAMPLE DESCRIPT: SPORE SUSPENSION IN PLASTIC TUBE
SITE USED: CAPE FEAR MEMORIAL HOSPITAL
ANALYSIS DATE: 10-2-90

COMMENTS: REPORTED CONCENTRATION: $7.875E8$ /ml
A 1ml aliquot was aseptically pipetted into 99ml sterile water. Three consecutive 1:100 serial dilutions were then made. Three 1ml and 10ml aliquots were then filtered and incubated at 65 degrees C.

CALCULATIONS OF CONCENTRATION AS ANALYZED:

The spore suspension was labeled: $7.875E8$ spores/ml
Three 1ml replicates: $5.0E8 + 2.0E8$ spores/ml
Three 10ml replicates: $7.7E8 + 1.7E8$ spores/ml

RESULTS

SAMPLE	ALIQUT-REP (ml) *	NO. COLONIES 21 Hrs.	NO. COLONIES 48 Hrs.
CFM - SS	1-1	6	6
	-2	3	3
	-3	6	6
CFM - SS	10-1	68	72
	-2	63	63
	-3	91	96

SAMPLE ID: SPORE SUSPENSION
SAMPLE ID NUMBER: CCH-271
SAMPLE DESCRIPT: SPORE SUSPENSION IN PLASTIC BAG
SITE USED: CENTRAL CAROLINA HOSPITAL
ANALYSIS DATE: 10-4-90

COMMENTS: REPORTED CONCENTRATION: 3.68E11/ml
A 1ml aliquot was aseptically pipetted into 99ml sterile water. Four consecutive 1:100 serial dilutions were then made. Three 1ml and 10ml aliquots of the last dilution were then filtered and incubated at 55 degrees C.

CALCULATIONS OF CONCENTRATION AS ANALYZED:

The spore suspension was labeled: 3.68E11 spores/ml
Three 10ml replicates: 0.3E9 +0.1E9 spores/ml

THE RESULTS FROM THIS ANALYSIS WERE NOT CONSISTENT
WITH THE REPORTED CONCENTRATION.

RESULTS

SAMPLE	ALIQOUT-REP (ml) #	NO. COLONIES 22 Hrs.	NO. COLONIES 48 Hrs.
CCH-271	1-1	0	0
	-2	0	0
	-3	2	3
CCH-271	10-1	2	2
	-2	4	4
	-3	2	3

SAMPLE ID: SPORE SUSPENSION
SAMPLE ID NUMBER: COH-272
SAMPLE DESCRIPT: SPORE SUSPENSION IN PLASTIC BAG
SITE USED: CENTRAL CAROLINA HOSPITAL
ANALYSIS DATE: 10-4-80

COMMENTS: REPORTED CONCENTRATION: $3.94E11/m^1$
A 1ml aliquot was aseptically pipetted into 99ml sterile water. Four consecutive 1:100 serial dilutions were then made. Three 1ml and 10ml aliquots of the last dilution were then filtered and incubated at 65 degrees C.

CALCULATIONS OF CONCENTRATION AS ANALYZED:

The spore suspension was labeled: $3.94E11$ spores/ml
Three 10ml replicates: $0.3E9 \pm 0.2E9$ spores/ml

THE RESULTS FROM THIS ANALYSIS WERE NOT CONSISTENT WITH THE REPORTED CONCENTRATION.

RESULTS

SAMPLE	ALIQUT-REP (ml) #	NO. COLONIES 22 Hrs.	NO. COLONIES 48 Hrs.
COH-272	1-1	0	0
	-2	0	0
	-3	0	0
COH-272	10-1	3	3
	-2	4	5
	-3	1	1

SAMPLE ID: DRY SPORE VIAL
SAMPLE ID NUMBER: CCH-273
SAMPLE DESCRIPT: DRY SPORES IN A GLASS VIAL
SITE USED: CENTRAL CAROLINA HOSPITAL
ANALYSIS DATE: 10-4-80

COMMENTS: The entire contents of a vial containing dry spores were aseptically pipetted into 100ml sterile water. Two consecutive 1:100 serial dilutions were then made. Three 1ml and 10ml aliquots of the last dilution were then filtered and incubated at 65 degrees C.

CALCULATIONS OF CONCENTRATION AS ANALYZED:

Three 10ml replicates: $5.2E6 \pm 1.0E6$ spores/ml
1.0

RESULTS

SAMPLE	ALIQUT-REP (ml) &	NO. COLONIES 22 Hrs.	NO. COLONIES 48 Hrs.
CCH-273	1-1	1	3
	-2	3	7
	-3	3	8
CCH-272	10-1	55	64
	-2	36	49
	-3	26	44

Appendix E3

Flue Gas

Central Carolina

SAMPLE ID: RADIANT IMPINGER SAMPLES
 SAMPLE ID NUMBERS: CCH - 368-369
 SAMPLE DESCRIPT: IMPINGER SAMPLES FROM MEDICAL WASTE INCINERATOR
 SAMPLE SITE: CENTRAL CAROLINA HOSPITAL
 DATE RECEIVED/ANALYZED: 10-5-90/10-9-90
 COMMENTS: FLUID FAIRLY CLEAR WITH BLACK PARTICLES. DEPOSITS ON FILTERS - GREY.

RESULTS

SAMPLE-QUAN	REP#	NO. COLONIES 18 hrs.	NO. COLONIES 42 hrs.
RUN 10-10ml	- 1	0	0
	2	0	0
	3	0	0
RUN 10-100m	- 1	0	0
	2	0	0
	3	0	0
RUN 10-1/3	228.7a	0	0
RUN 10-2/3	238.9c	0	0
RUN 10-3/3	264.3a	0	0

SAMPLE ID: RADIAN IMPINGER SAMPLES

SAMPLE ID NUMBERS: FIELD BLANK

SAMPLE DESCRIPT: IMPINGER SAMPLES FROM MEDICAL WASTE
INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE RECEIVED/ANALYZED: 10-5-90/10-8-90

COMMENTS: FLUID CLEAR - FILTERS CLEAR.

RESULTS

SAMPLE-QUAN	REP#	NO. COLONIES 18 hrs.	NO. COLONIES 42 hrs.
FB-10m ¹	- 1	0	0
	2	0	0
	3	0	0
FB-100ml	- 1	0	0
	2	0	0
	3	0	0
FB-1/3 340.6c		0	0
FB-2/3 322.7a		0	0
FB-3/3 332.8c		0	0

SAMPLE ID: RADIAN IMPINGER SAMPLES

SAMPLE ID NUMBERS: CCH 119-120

SAMPLE DESCRIPT: IMPINGER SAMPLES FROM MEDICAL WASTE
INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE RECEIVED/ANALYZED: 9-24-90/9-28-90

COMMENTS: FLUID WAS FAIRLY CLEAR WITH BLACK PARTICLES.
DEPOSITS ON FILTERS DARK GREY.

RESULTS

SAMPLE-OUAN	REP#	NO. COLONIES 21 hrs.	NO. COLONIES 44 hrs.
RUN 1-10ml	- 1	0	0
	2	0	0
	3	0	0
RUN 1-100ml	- 1	0	0
	2	0	0
	3	0	0
RUN 1-1/3	267.7a	0	0
RUN 1-2/3	286.3a	0	0
RUN 1-3/3	276.2a	0	0

SAMPLE ID: RADIAN IMPINGER SAMPLES

SAMPLE ID NUMBERS: OCH 121-122-123

SAMPLE DESCRIPT: IMPINGER SAMPLES FROM MEDICAL WASTE
INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE RECEIVED/ANALYZED: 9-24-90/9-28-90

COMMENTS: FLUID WAS VERY BLACK AND OPAQUE
DEPOSITS ON ALL FILTERS VERY DARK.

RESULTS

SAMPLE-QUAN	REP#	NO. COLONIES 21 hrs.	NO. COLONIES 44 hrs.
RUN 2-10ml	- 1	0	0
	2	0	0
	3	0	0
RUN 2-100ml	- 1	0	0
	2	0	0
	3	0	0
RUN 2-1/3	260.8a	0	0
RUN 2-2/3	259.6a	0	0
RUN 2-3/3	247.6a	0	0

SAMPLE ID: RADIAN IMPINGER SAMPLES

SAMPLE ID NUMBERS: DCH 124-125

SAMPLE DESCRIPT: IMPINGER SAMPLES FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE RECEIVED/ANALYZED: 9-24-90/9-28-90

COMMENTS: FLUID WAS FAIRLY CLEAR WITH BLACK PARTICLES. DEPOSITS ON FILTERS GREY.

RESULTS

SAMPLE-QUAN	REP#	NO. COLONIES 21 hrs.	NO. COLONIES 44 hrs.
RUN 3-10ml	- 1	0	0
	2	0	0
	3	1	1 - 1cm
RUN 3-100ml	-	0	FILTER COVERED
	2	1	FILTER COVERED
	3	0	1 - 1cm
RUN 3-1/3	285.2a	0	0
RUN 3-2/3	246.9c	0	FILTER COVERED
RUN 3-3/3	293.9a	0	0

SAMPLE ID: RADIAN IMPINGER SAMPLES

SAMPLE ID NUMBERS: CCH 130-131-135

SAMPLE DESCRIPT: IMPINGER SAMPLES FROM MEDICAL WASTE
INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE RECEIVED/ANALYZED: 9-24-90/9-28-90

COMMENTS: FLUID EXTREMELY BLACK AND OPAQUE.
HEAVY BLACK DEPOSITS ON ALL FILTERS

RESULTS

SAMPLE-QUAN	REP#	NO. COLONIES 21 hrs.	NO. COLONIES 44 hrs.
RUN 4-10ml	- 1	0	0
	2	0	0
	3	0	0
RUN 4-100ml	- 1	0	0
	2	0	0
	3	0	0
RUN 4-1/3	140.3a	0	0
RUN 4-2/3	131.4a	0	0
RUN 4-3/3	133.8a	0	0

SAMPLE ID: RADIANT IMPINGER SAMPLES

SAMPLE ID NUMBERS: DCH 199-200

SAMPLE DESCRIPTION: IMPINGER SAMPLES FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE RECEIVED/ANALYZED: 9-28-90/10-2-90

COMMENTS: FLUID FAIRLY CLEAR WITH BLACK PARTICLES. DEPOSITS ON FILTERS GREY.

RESULTS

SAMPLE-QUAN	REP#	NO. COLONIES 20 hrs.	NO. COLONIES 44 hrs
RUN 5-10ml	- 1	0	0
	2	0	0
	3	0	0
RUN 5-100ml	-	0	0
	2	0	0
	3	0	0
RUN 5-1/3	243.6a	0	0
RUN 5-2/3	243.4a	1 PATCH	TNTC
RUN 5-3/3	223.3a	0	0

SAMPLE ID: RADIANT IMPINGER SAMPLES

SAMPLE ID NUMBERS: DCH 201-202

SAMPLE DESCRIPT: IMPINGER SAMPLES FROM MEDICAL WASTE
INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE RECEIVED/ANALYZED: 9-28-90/10-3-90

COMMENTS: FLUID FAIRLY CLEAR WITH BLACK PARTICLES.
DEPOSITS ON FILTERS GREY.

RESULTS

SAMPLE-QUAN	REP#	NO. COLONIES 21 hrs.	NO. COLONIES 48 hrs.
RUN 6-10ml	- 1	3	5
	2	3	4
	3	0	0
RUN 6-100ml	- 1	25	25
	2	SEVERAL PATCHES	SEVERAL PATCHES
	3	SEVERAL PATCHES	SEVERAL PATCHES
RUN 6-1/3	256.8a	0	0
RUN 6-2/3	258.5c	0	0
RUN 6-3/3	296.9c	0	TNTC

SAMPLE ID: RADIANT IMPINGER SAMPLES

SAMPLE ID NUMBERS: CCH 252-253

SAMPLE DESCRIPTION: IMPINGER SAMPLES FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE RECEIVED/ANALYZED: 10-1-90/10-3-90

COMMENTS: FLUID BLACK AND OPAQUE. DEPOSITS ON ALL FILTERS BLACK.

RESULTS

SAMPLE-QUAN	REP#	NO. COLONIES 21 hrs.	NO. COLONIES 48 hrs.
RUN 7-10ml	- 1	1 PATCH	TNTC
	2	0	0
	3	1	1
RUN 7-100ml	- 1	0	TNTC
	2	SEVERAL PATCHES	5 PATCHES
	3	SEVERAL PATCHES	TNTC
RUN 7-1/3	213.2a	0	TNTC
RUN 7-2/3	232.9a	0	TNTC
RUN 7-3/3	246.9a	0	TNTC

SAMPLE ID: RADIAN IMPINGER SAMPLES

SAMPLE ID NUMBERS: OCH 254-255 *Run 8*

SAMPLE DESCRIPT: IMPINGER SAMPLES FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE RECEIVED/ANALYZED: 10-1-90/10-4-90

COMMENTS: FLUID BLACK AND OPAQUE. DEPOSITS ON ALL FILTERS BLACK.

RESULTS

SAMPLE-OUAN	REP#	NO. COLONIES 21 hrs.	NO. COLONIES 48 hrs.
RUN 8-10m1	- 1	0	GROWTH AROUND FILT
	2	0	0
	3	0	0
RUN 8-100m1	- 1	0	TNTC
	2	0	TNTC
	3	0	TNTC
RUN 8-1/3	250.2a	0	TNTC
RUN 8-2/3	247.9c	0	TNTC
RUN 8-3/3	248.7a	0	1 LARGE PATCH OF

SAMPLE ID: RADIAN IMPINGER SAMPLES

SAMPLE ID NUMBERS: OCH 302-303

SAMPLE DESCRIPT: IMPINGER SAMPLES FROM MEDICAL WASTE
INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE RECEIVED/ANALYZED: 10-1-90/10-4-90

COMMENTS: FLUID FAIRLY CLEAR WITH BLACK PARTICLES
DEPOSITS ON FILTERS GREY.

RESULTS

SAMPLE-OUAN	REP#	NO. COLONIES 21 hrs.	NO. COLONIES 48 hrs
RUN 9-10ml	- 1	1	1
	2	0	17
	3	0	0
RUN 9-100ml	- 1	0	1
	2	0	1
	3	0	3
RUN 9-1/3 246.0a		0	TNTC
RUN 9-2/3 248.1c		0	TNTC
RUN 9-3/3 295.5a		0	0

SAMPLE ID: RADIANT SPORE PIPES

SAMPLE ID NUMBERS: SEE BELOW

SAMPLE DESCRIPT: INDICATOR SPORE PIPES FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE ANALYZED: 10-5-90

COMMENTS: SOME PIPES CONTAINED CLUMPS OF CHARRED MATTER AND OTHERS CONTAINED CLUMPS AND METALLIC FLAKES. SOME CONTAINED DUSTY ASH.

Appendix E3

Pipes

Central Carolina

RESULTS

PIPE SAMPLE #	Run Date	Run #	NO. COLONIES 21 hrs.	NO. COLONIES 45 hrs.
9/22 CCH 98 ✓	9/21	2	20	20
9/22 CCH 100 ✓	9/21	2	2	3
9/27 CCH 286 ✓	9/26	7	4 PATCHES OF GROWTH	4 PATCHES OF GROWTH
9/22 CCH 99 ✓	9/21	2	SEVERAL LARGE PATCHES OF GROWTH	SEVERAL LARGE PATCHES OF GROWTH
9/22 CCH 97 ✓	9/21	2	32 & GROWTH AROUND FILTER	32 & GROWTH AROUND FILTER
9/27 CCH 287 ✓	9/26	7	15 COLONIES & SEVERAL LARGE PATCHES OF GROWTH	20 COLONIES & SEVERAL LARGE PATCHES OF GROWTH

SAMPLE ID: RADIANT SPORE PIPES

SAMPLE ID NUMBERS: SEE BELOW

SAMPLE DESCRIPT: INDICATOR SPORE PIPES FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE ANALYZED: 10-8-90

COMMENTS: SOME PIPES CONTAINED CLUMPS OF CHARRED MATTER AND OTHERS CONTAINED CLUMPS AND METALLIC FLAKES (HEREAFTER REFERRED TO AS CLUMPS OR FLAKES). SOME CONTAINED DUSTY ASH

RESULTS

PIPE SAMPLE #	FILTER CONTENTS	NO. COLONIES 18 hrs.	NO. COLONIES 42 hrs.
9/22 OCH 101 ✓ <i>9/21</i> 2 FLAKES	3	7	
9/21 OCH 85 ✓ <i>9/20</i> 1 DUST	12	14	
9/21 OCH 86 ✓ <i>9/20</i> 1 FLAKES	2	3	
9/21 OCH 87 ✓ <i>9/20</i> 1 FLAKES	0	0	
9/21 OCH 88 ✓ <i>9/20</i> 1 FLAKES	1	1	
9/21 OCH 89 ✓ <i>9/20</i> 1 FLAKES/DUST	20	20	
9/21 OCH 90 ✓ <i>9/20</i> 1 CLUMPS	57	TNTC	
9/22 OCH 96 ✓ <i>9/21</i> 2 FLAKES	GROWTH SEEN ON REVERSE OF FILTER	GROWTH SEEN ON REVERSE OF FILTER	
9/23 OCH 154 ✓ <i>9/22</i> 3 FLAKES	0	0	
9/23 OCH 155 ✓ <i>9/22</i> 3 FLAKES	GROWTH SEEN ON REVERSE OF FILTER	GROWTH SEEN ON REVERSE OF FILTER	
9/23 OCH 156 ✓ <i>9/22</i> 3 DUST	0	0	
9/23 OCH 157 ✓ <i>9/22</i> 3 FLAKES	4	1	
9/23 OCH 158 ✓ <i>9/22</i> 3 FLAKES/DUST	GROWTH AROUND EDGE	4	
9/23 OCH 159 <i>9/22</i> 3 FLAKES	1	5	

<i>sample Date</i>	PIPE SAMPLE #	<i>Run Date</i>	FILTER CONTENTS	NO. COLONIES 18 hrs.	NO. COLONIES 42 hrs.
9/24	CCH 178 ✓	9/23	4 DUST	4	3
9/24	CCH 175 ✓	9/23	4 DUST/CLUMPS	11	0
9/24	CCH 179 ✓	9/23	4 DUST	3	0
9/24	CCH 180 ✓	9/23	4 DUST	0	0
9/24	CCH 176 ✓	9/23	4 DUST/FLAKES	0	2
9/24	CCH 177 ✓	9/23	4 FLAKES	0	4
9/29	CCH 304 ✓	9/28	9 DUST	2	0
9/29	CCH 308 ✓	9/28	9 DUST	4	1
9/29	CCH 309 ✓	9/28	9 DUST/CLUMPS	0	0
9/29	CCH 305 ✓	9/28	9 FLAKES	1	1
9/29	CCH 307 ✓	9/28	9 DUST	0	0
9/29	CCH 306 ✓	9/28	9 DUST	1	0
9/26	CCH 284 ✓	9/25	6 FLAKES	0	0
9/26	CCH 285 ✓	9/25	6 FLAKES	0	0
9/26	CCH 282 ✓	9/25	6 FLAKES/DUST	0	0
9/26	CCH 281 ✓	9/25	6 DIST	0	0
9/26	CCH 283 ✓	9/25	6 FLAKES/DUST	0	0
9/26	CCH 280 ✓	9/25	6 FLAKES	0	0
9/28	CCH 300 ✓	9/27	8 	10	10
9/28	CCH 294 ✓	9/27	8 	0	0
9/28	CCH 297 ✓	9/27	8 FLAKES	0	0
9/28	CCH 295 ✓	9/27	8 CLUMPS	2	2
9/28	CCH 298 ✓	9/27	8 CLUMPS	9	10
9/28	CCH 293 ✓	9/27	8 CLUMPS	12	17

Sample Date	PIPE SAMPLE #	Run Date	Run #	FILTER CONTENTS	NO. COLONIES 18 hrs.	NO. COLONIES 42 hrs.
9/28	OCH 292 ✓	9/27	8	DUST	0	1
9/28	OCH 296 ✓	9/27	8	DUST	0	0
9/28	OCH 299 ✓	9/27	8	CLUMPS	TNTC	TNTC
9/28	OCH 301 ✓	9/27	8	CLEAR	TNTC	TNTC
9/25	OCH 194 ✓	9/24	5	FLAKES	0	0
9/25	OCH 198 ✓	9/24	5	DUST	0	0
9/25	OCH 193 ✓	9/24	5	FLAKES/DUST	0	TNTC
9/25	OCH 197 ✓	9/24	5	DUST	>79	>79
9/25	OCH 195 ✓	9/24	5	CLUMPS/DUST	TNTC	TNTC
9/25	OCH 196 ✓	9/24	5	LITE DUST	>162	>166

SAMPLE ID: RADIAN SPORE PIPES
 SAMPLE ID NUMBERS: SEE BELOW
 SAMPLE DESCRIPT: INDICATOR SPORE PIPES FROM MEDICAL WASTE
 INCINERATOR
 SAMPLE SITE: CENTRAL CAROLINA HOSPITAL
 DATE ANALYZED: 11-15-90
 COMMENTS: SOME PIPES CONTAINED CLUMPS OF CHARRED MATTER
 OR DUSTY ASH PARTICLES. (HEREAFTER REFERRED
 TO AS DUST OR CLUMPS.)

RESULTS

PIPE SAMPLE #	FILTER CONTENTS	NO. COLONIES 17 hrs.	NO. COLONIES 41 hrs.
10/3 OCH 378	10/2 10 DUST	0	0
10/3 OCH 379	10/2 10 DUST/CLUMPS	0	12cm
10/3 OCH 380	10/2 10 DUST	0	0

SAMPLE ID: RADIAN SPORE PIPES
SAMPLE ID NUMBERS: SEE BELOW
SAMPLE DESCRIPT: INDICATOR SPORE PIPES FROM MEDICAL WASTE
INCINERATOR
SAMPLE SITE: CENTRAL CAROLINA HOSPITAL
DATE ANALYZED: 11-16-90
COMMENTS: SOME PIPES CONTAINED CLUMPS OF CHARRED MATTER
OR METALLIC FLAKES. (HEREAFTER REFERRED
TO AS DUST OR FLAKES)

RESULTS

*sample
date*

	PIPE SAMPLE #	<i>Run Date</i> Date	FILTER CONTENTS	NO. COLONIES 48 hrs.
10/3	COH 380	10/2	10 FLAKES	0
10/3	COH 381	10/2	10 DUST	0
10/3	COH 382	10/2	10 DUST	0

Appendix E3

Ash

Central Carolina

SAMPLE ID: RADIAN INCINERATOR ASH
SAMPLE ID NUMBERS: CCH - 78
SAMPLE DESCRIPT: ASH FROM MEDICAL WASTE INCINERATOR
SAMPLE SITE: CENTRAL CAROLINA HOSPITAL
DATE ANALYZED: 10-10-90
COMMENTS: DILUTION 1A, 1B, AND 1C FILTERS ALL HAD
LIGHT COAT OF ASH.

RESULTS

SAMPLE-DIL-QUAN	NO. COLONIES 18 hrs.	NO. COLONIES 42 hrs.
CCH-78-1A - 1.00a ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-78-2A - 10ml 1A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-78-3A - 10ml 2A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-78-4A - 10ml 3A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-78-5A - 10ml 4A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-78-6A - 10ml 5A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 18 hrs.

NO. COLONIES 42 hrs.

OCH-78-1B - 0.99a ASH/100ml BUFFER

FILTER #	-1	GROWTH AROUND FILTER	GROWTH AROUND FILTER
	-2	GROWTH AROUND FILTER	GROWTH AROUND FILTER
	-3	0	0

OCH-78-2B - 10ml 1B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-78-3B - 10ml 2B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-78-4B - 10ml 3B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-78-5B - 10ml 4B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-78-6B - 10ml 5B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 18 hrs.

NO. COLONIES 42 hrs.

DCH-78-1C - 1.03a ASH/100ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-78-2C - 10ml 1C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-78-3C - 10ml 2C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-78-4C - 10ml 3C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-78-5C - 10ml 4C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	1

DCH-78-6C - 10ml 5C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE ID: RADIAN INCINERATOR ASH

SAMPLE ID NUMBERS: CCH - 75

SAMPLE DESCRIPT: ASH FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE ANALYZED: 10-10-90

COMMENTS: DILUTION 1A, 1B, AND 1C FILTERS ALL HAD A
LIGHT COAT OF ASH.

RESULTS

SAMPLE-DIL-OUAN	NO. COLONIES 18 hrs.	NO. COLONIES 42 hrs.
CCH-75-1A - 1.01a ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-75-2A - 10ml 1A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-75-3A - 10ml 2A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-75-4A - 10ml 3A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-75-5A - 10ml 4A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-75-6A - 10ml 5A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 18 hrs.

NO. COLONIES 42 hrs.

OCH-75-1B - 1.00a ASH/100ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-75-2B - 10ml 1B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-75-3B - 10ml 2B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-75-4B - 10ml 3B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-75-5B - 10ml 4B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-75-6B - 10ml 5B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 18 hrs.

NO. COLONIES 42 hrs.

OCH-75-1C - 1.01d ASH/100ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-75-2C - 10ml 1C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-75-3C - 10ml 2C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-75-4C - 10ml 3C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-75-5C - 10ml 4C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-75-6C - 10ml 5C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE ID: RADIAN INCINERATOR ASH

SAMPLE ID NUMBERS: CCH - 81

SAMPLE DESCRIPT: ASH FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE ANALYZED: 10-10-90

COMMENTS: DILUTION 1A, 1B, AND 1C FILTERS ALL HAD A LIGHT COAT OF ASH.

RESULTS

SAMPLE-DIL-OUAN	NO. COLONIES 18 hrs.	NO. COLONIES 42 hrs.
CCH-81-1A - 1.01a ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-81-2A - 10ml 1A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-81-3A - 10ml 2A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-81-4A - 10ml 4A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-81-5A - 10ml 5A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-81-6A - 10ml 6A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 18 hrs.

NO. COLONIES 42 hrs.

OCH-81-1B - 1.07a ASH/100ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-81-2B - 10ml 1B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-81-3B - 10ml 2B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-81-4B - 10ml 3B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-81-5B - 10ml 4B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-81-6B - 10ml 5B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE-DIL-QUAN

NO. COLONIES 18 hrs.

NO. COLONIES 42 hrs.

OCH-81-1C - 1.01a ASH/100ml BUFFER

FILTER #	18 hrs.	42 hrs.
-1	0	0
-2	0	0
-3	0	0

OCH-81-2C - 10ml 1C/90ml BUFFER

FILTER #	18 hrs.	42 hrs.
-1	0	1
-2	0	0
-3	0	0

OCH-81-3C - 10ml 2C/90ml BUFFER

FILTER #	18 hrs.	42 hrs.
-1	1	1
-2	2	2
-3	0	0

OCH-81-4C - 10ml 3C/90ml BUFFER

FILTER #	18 hrs.	42 hrs.
-1	2	2
-2	0	0
-3	2	2

OCH-81-5C - 10ml 4C/90ml BUFFER

FILTER #	18 hrs.	42 hrs.
-1	1	1
-2	0	0
-3	0	0

OCH-81-6C - 10ml 5C/90ml BUFFER

FILTER #	18 hrs.	42 hrs.
-1	1	1
-2	0	0
-3	0	0

SAMPLE ID: . RADIANT INCINERATOR ASH

SAMPLE ID NUMBERS: CCH - 92

SAMPLE DESCRIPT: ASH FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE ANALYZED: 10-10-90

COMMENTS: DILUTION 1A, 1B, AND 1C FILTERS ALL HAD A LIGHT COAT OF ASH.

RESULTS

SAMPLE-DIL-OVAN	NO. COLONIES 18 hrs.	NO. COLONIES 42 hrs.
CCH-92-1A - 0.99g ASH/100ml BUFFER		
FILTER #	ON AGAR	ON AGAR/GROWTH ON EDGE
-1	0	0
-2	0	0
-3	0	0
CCH-92-2A - 10ml 1A/90ml BUFFER		
FILTER #		
-1	0	0
-2	0	0
-3	0	0
CCH-92-3A - 10ml 2A/90ml BUFFER		
FILTER #		
-1	0	0
-2	0	0
-3	1	1
CCH-92-4A - 10ml 3A/90ml BUFFER		
FILTER #		
-1	0	0
-2	0	0
-3	0	0
CCH-92-5A - 10ml 4A/90ml BUFFER		
FILTER #		
-1	0	0
-2	0	0
-3	0	0
CCH-92-6A - 10ml 5A/90ml BUFFER		
FILTER #		
-1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 18 hrs.

NO. COLONIES 42 hrs.

DCH-92-1B - 1.13d ASH/100ml BUFFER

FILTER #	18 hrs.	42 hrs.
-1	0	0
-2	0	0
-3	0	0

DCH-92-2B - 10ml 1B/90ml BUFFER

FILTER #	18 hrs.	42 hrs.
-1	0	0
-2	2	2
-3	0	0

DCH-92-3B - 10ml 2B/90ml BUFFER

FILTER #	18 hrs.	42 hrs.
-1	0	0
-2	0	0
-3	0	1

DCH-92-4B - 10ml 3B/90ml BUFFER

FILTER #	18 hrs.	42 hrs.
-1	0	0
-2	0	0
-3	0	0

DCH-92-5B - 10ml 4B/90ml BUFFER

FILTER #	18 hrs.	42 hrs.
-1	0	0
-2	0	0
-3	0	0

DCH-92-6B - 10ml 5B/90ml BUFFER

FILTER #	18 hrs.	42 hrs.
-1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-QUAN

NO. COLONIES 18 hrs.

NO. COLONIES 42 hrs.

OCH-92-1C - 1.05d ASH/100ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	1	1

OCH-92-2C - 10ml 1C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-92-3C - 10ml 2C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-92-4C - 10ml 3C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-92-5C - 10ml 4C/90ml BUFFER

FILTER #	-1	2	2
	-2	4	4
	-3	2	2

OCH-92-6C - 10ml 5C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE ID: RADIAN INCINERATOR ASH

SAMPLE ID NUMBERS: CCH - 150

SAMPLE DESCRIPT: ASH FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE ANALYZED: 10-11-90

COMMENTS: DILUTION 1A, 1B, AND 1C FILTERS ALL HAD A LIGHT COAT OF ASH.

RESULTS

SAMPLE-DIL-OUAN	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
CCH-150-1A - 1.21a ASH/100ml BUFFER		
FILTER # -1	0	0
-2	1	1 & GROWTH AROUND FILTER
-3	0	0
CCH-150-2A - 10ml 1A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-150-3A - 10ml 2A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-150-4A - 10ml 3A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-150-5A - 10ml 4A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-150-6A - 10ml 5A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 16 hrs.

NO. COLONIES 41 hrs.

DCH-150-1B - 1.07a ASH/100ml BUFFER

FILTER #	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
-1	0	0
-2	0	0
-3	0	0

DCH-150-2B - 10ml 1B/90ml BUFFER

FILTER #	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
-1	0	0
-2	0	0
-3	0	0

DCH-150-3B - 10ml 2B/90ml BUFFER

FILTER #	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
-1	0	0
-2	0	0
-3	0	0

DCH-150-4B - 10ml 3B/90ml BUFFER

FILTER #	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
-1	0	0
-2	0	0
-3	0	0

DCH-150-5B - 10ml 4B/90ml BUFFER

FILTER #	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
-1	0	0
-2	0	0
-3	0	0

DCH-150-6B - 10ml 5B/90ml BUFFER

FILTER #	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
-1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 16 hrs.

NO. COLONIES 41 hrs.

DCH-150-1C - 1.00a ASH/100ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-150-2C - 10ml 1C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-150-3C - 10ml 2C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-150-4C - 10ml 3C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-150-5C - 10ml 4C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-150-6C - 10ml 5C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE ID: RADIAN INCINERATOR ASH

SAMPLE ID NUMBERS: CCH - 171

SAMPLE DESCRIPT: ASH FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE ANALYZED: 10-11-90

COMMENTS: DILUTION 1A, 1B, AND 1C FILTERS ALL HAD A LIGHT COAT OF ASH.

RESULTS

SAMPLE-DIL-QUAN	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
CCH-171-1A - 1.29g ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-171-2A - 10ml 1A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-171-3A - 10ml 2A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-171-4A - 10ml 3A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-171-5A - 10ml 4A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-171-6A - 10ml 5A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 16 hrs.

NO. COLONIES 41 hrs.

DCH-171-1B - 1.04a ASH/100ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-171-2B - 10ml 1B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-171-3B - 10ml 2B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-171-4B - 10ml 3B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-171-5B - 10ml 4B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-171-6B - 10ml 5B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE-DIL-OUAN		NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
DCH-171-1C - 1.08d ASH/100ml BUFFER			
FILTER #	-1	0	0
	-2	0	0
	-3	0	0
DCH-171-2C - 10ml 1C/90ml BUFFER			
FILTER #	-1	0	0
	-2	0	0
	-3	0	0
DCH-171-3C - 10ml 2C/90ml BUFFER			
FILTER #	-1	0	0
	-2	1	1
	-3	2	0
DCH-171-4C - 10ml 3C/90ml BUFFER			
FILTER #	-1	0	0
	-2	2	2
	-3	1	1
DCH-171-5C - 10ml 4C/90ml BUFFER			
FILTER #	-1	0	0
	-2	2	2
	-3	3	2
DCH-171-6C - 10ml 5C/90ml BUFFER			
FILTER #	-1	0	0
	-2	1	1
	-3	0	1

24 & GROWTH AROUND FILTER

SAMPLE ID: RADIAN INCINERATOR ASH

SAMPLE ID NUMBERS: CCH - 188

SAMPLE DESCRIPT: ASH FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE ANALYZED: 10-11-90

COMMENTS: DILUTION 1A, 1B, AND 1C FILTERS ALL HAD A LIGHT COAT OF ASH.

RESULTS

SAMPLE-DIL-OUAN	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
CCH-188-1A - 1.02a ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-188-2A - 10ml 1A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-188-3A - 10ml 2A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-188-4A - 10ml 3A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-188-5A - 10ml 4A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-188-6A - 10ml 5A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 16 hrs.

NO. COLONIES 41 hrs.

DCH-188-1B - 0.98a ASH/100ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-188-2B - 10ml 1B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-188-3B - 10ml 2B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-188-4B - 10ml 3B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-188-5B - 10ml 4B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-188-6B - 10ml 5B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 16 hrs.

NO. COLONIES 41 hrs.

DCH-188-1C - 0.98a ASH/100ml BUFFER

FILTER #	-1	-2	-3
	0	0	0
	0	0	0
	0	0	0

DCH-188-2C - 10ml 1C/90ml BUFFER

FILTER #	-1	-2	-3
	0	0	0
	0	0	0
	0	0	0

DCH-188-3C - 10ml 2C/90ml BUFFER

FILTER #	-1	-2	-3
	0	0	0
	0	0	0
	0	0	0

DCH-188-4C - 10ml 3C/90ml BUFFER

FILTER #	-1	-2	-3
	0	0	0
	0	0	0
	0	0	0

DCH-188-5C - 10ml 4C/90ml BUFFER

FILTER #	-1	-2	-3
	0	0	0
	0	0	0
	0	0	0

DCH-188-6C - 10ml 5C/90ml BUFFER

FILTER #	-1	-2	-3
	0	0	0
	0	0	0
	0	0	0

SAMPLE ID: RADIAN INCINERATOR ASH

SAMPLE ID NUMBERS: CCH - 275

SAMPLE DESCRIPT: ASH FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE ANALYZED: 10-11-90

COMMENTS: DILUTION 1A, 1B, AND 1C FILTERS ALL HAD A LIGHT COAT OF ASH.

RESULTS

SAMPLE-DIL-OUAN	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
CCH-275-1A - 1.03a ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-275-2A - 10ml 1A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-275-3A - 10ml 2A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-275-4A - 10ml 3A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-275-5A - 10ml 4A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-275-6A - 10ml 5A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
CCH-275-1B - 1.00a ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
		ON FILTER - 1 ON AGAR
CCH-275-2B - 10ml 1B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
		16 & GROWTH AROUND FILTER
CCH-275-3B - 10ml 2B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-275-4B - 10ml 3B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-275-5B - 10ml 4B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-275-6B - 10ml 5B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 16 hrs.

NO. COLONIES 41 hrs.

OCH-275-1C - 1.04a ASH/100ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-275-2C - 10ml 1C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-275-3C - 10ml 2C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

GROWTH AROUND FILTER

OCH-275-4C - 10ml 3C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-275-5C - 10ml 4C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-275-6C - 10ml 5C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE ID: RADIAN INCINERATOR ASH
 SAMPLE ID NUMBERS: CCH - 276 - Run 7
 SAMPLE DESCRIPT: ASH FROM MEDICAL WASTE INCINERATOR
 SAMPLE SITE: CENTRAL CAROLINA HOSPITAL
 DATE ANALYZED: 11-15-90
 COMMENTS: DILUTION 1A, 1B, AND 1C FILTERS ALL HAD A
 LIGHT COAT OF ASH.

RESULTS

SAMPLE-DIL-UAN	NO. COLONIES 17 hrs.	NO. COLONIES 41 hrs.
CCH-276-1A - 1.08g ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-276-2A - 10ml 1A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-276-3A - 10ml 2A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-276-4A - 10ml 3A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-276-5A - 10ml 4A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-276-6A - 10ml 5A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN	NO. COLONIES 17 hrs.	NO. COLONIES 41 hrs.
DCH-276-1B - 1.10g ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DCH-276-2B - 10ml 1B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DCH-276-3B - 10ml 2B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DCH-276-4B - 10ml 3B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DCH-276-5B - 10ml 4B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DCH-276-6B - 10ml 5B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN	NO. COLONIES 17 hrs.	NO. COLONIES 41 hrs.
DCH-276-1C - 0.98a ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DCH-276-2C - 10ml 1C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DCH-276-3C - 10ml 2C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DCH-276-4C - 10ml 3C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DCH-276-5C - 10ml 4C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DCH-276-6C - 10ml 5C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE ID: RADIAN INCINERATOR ASH

SAMPLE ID NUMBERS: CCH - 279

SAMPLE DESCRIPT: ASH FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE ANALYZED: 10-11-90

COMMENTS: DILUTION 1A, 1B, AND 1C FILTERS ALL HAD A LIGHT COAT OF ASH.

RESULTS

SAMPLE-DIL-QUAN	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
-----------------	----------------------	----------------------

CCH-279-1A - 0.99g ASH/100ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

CCH-279-2A - 10ml 1A/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

Probably
typo?

CCH-295-3A - 10ml 2A/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

CCH-279-4A - 10ml 3A/90ml BUFFER

FILTER #	-1	1	1
	-2	0	0
	-3	1	1

CCH-279-5A - 10ml 4A/90ml BUFFER

FILTER #	-1	2	2
	-2	2	2
	-3	0	0

CCH-279-6A - 10ml 5A/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 16 hrs.

NO. COLONIES 41 hrs.

DCH-279-1B - 1.00d ASH/100ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-279-2B - 10ml 1B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-279-3B - 10ml 2B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-279-4B - 10ml 3B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-279-5B - 10ml 4B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-279-6B - 10ml 5B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 16 hrs.

NO. COLONIES 41 hrs.

DCH-279-1C - 1.17a ASH/100ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-279-2C - 10ml 1C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-279-3C - 10ml 2C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

GROWTH AROUND FILTER

probably n. type DCH-295-4C - 10ml 3C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

probably n. type DCH-295-5C - 10ml 4C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

DCH-279-6C - 10ml 5C/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE ID: RADIAN INCINERATOR ASH

SAMPLE ID NUMBERS: CCH - 313

SAMPLE DESCRIPT: ASH FROM MEDICAL WASTE INCINERATOR

SAMPLE SITE: CENTRAL CAROLINA HOSPITAL

DATE ANALYZED: 10-11-90

COMMENTS: DILUTION 1A, 1B, AND 1C FILTERS ALL HAD A
LIGHT COAT OF ASH.

RESULTS

SAMPLE-DIL-OUAN	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
CCH-313-1A - 1.02a ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-313-2A - 10ml 1A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-313-3A - 10ml 2A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-313-4A - 10ml 3A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-313-5A - 10ml 4A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-313-6A - 10ml 5A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN

NO. COLONIES 16 hrs.

NO. COLONIES 41 hrs.

OCH-313-1B - 1.23a ASH/100ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-313-2B - 10ml 1B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-313-3B - 10ml 2B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-313-4B - 10ml 3B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-313-5B - 10ml 4B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

OCH-313-6B - 10ml 5B/90ml BUFFER

FILTER #	-1	0	0
	-2	0	0
	-3	0	0

SAMPLE-DIL-OUAN	NO. COLONIES 16 hrs.	NO. COLONIES 41 hrs.
OCH-313-1C - 1.02a ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
OCH-313-2C - 10ml 1C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
OCH-313-3C - 10ml 2C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
OCH-313-4C - 10ml 3C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
OCH-313-5C - 10ml 4C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
OCH-313-6C - 10ml 5C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

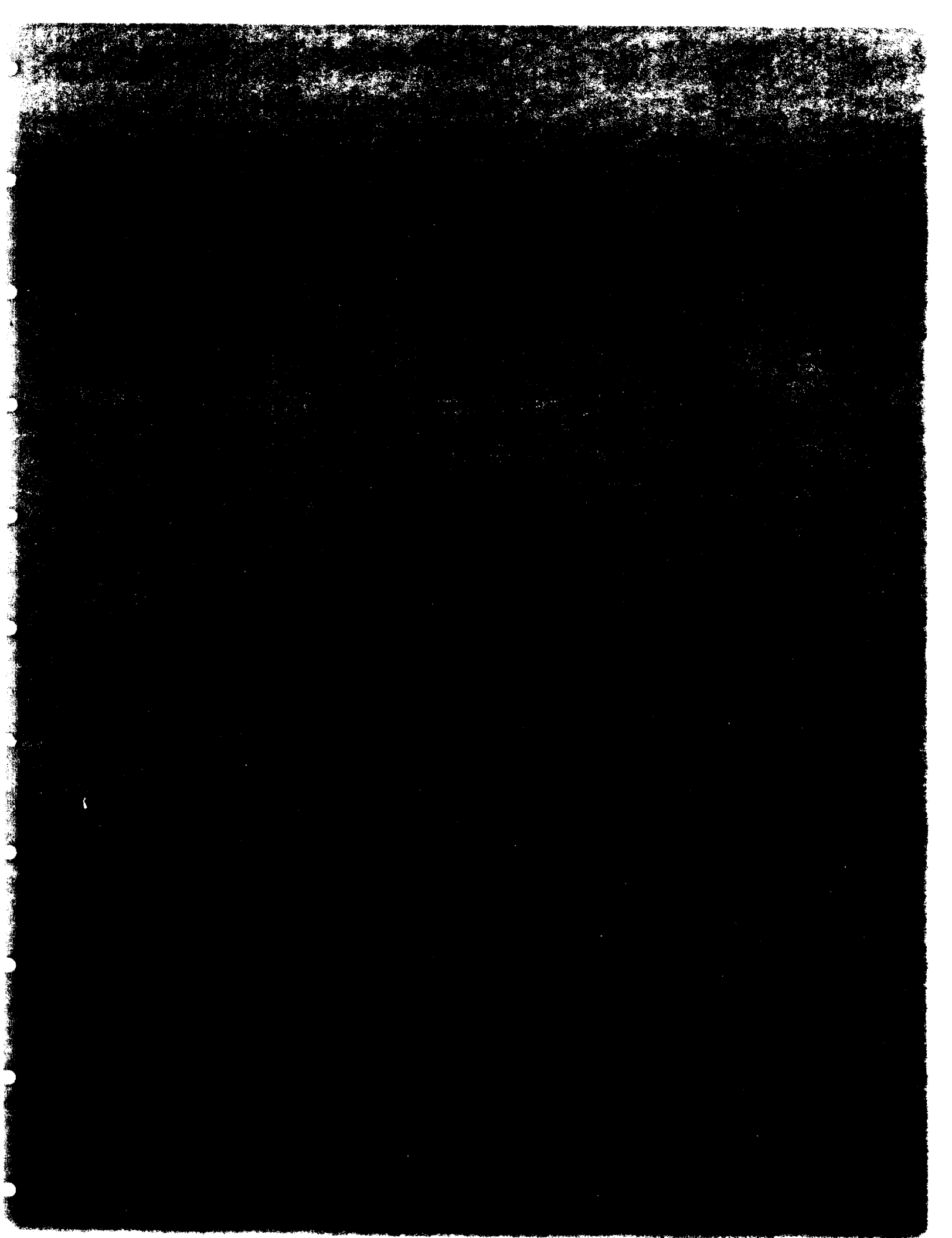
SAMPLE ID: RADIAN INCINERATOR ASH
 SAMPLE ID NUMBERS: CCH - 374
 SAMPLE DESCRIPT: ASH FROM MEDICAL WASTE INCINERATOR
 SAMPLE SITE: CENTRAL CAROLINA HOSPITAL
 DATE ANALYZED: 11-15-90
 COMMENTS: DILUTION 1A, 1B, AND 1C FILTERS ALL HAD A
 LIGHT COAT OF ASH.

RESULTS

SAMPLE-DIL-OVAN	NO. COLONIES 17 hrs.	NO. COLONIES 41 hrs.
CCH-374-1A - 1.00g ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-374-2A - 10ml 1A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-374-3A - 10ml 2A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-374-4A - 10ml 3A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-374-5A - 10ml 4A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
CCH-374-6A - 10ml 5A/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-OUAN	NO. COLONIES 17 hrs.	NO. COLONIES 41 hrs.
DOH-374-1B - 1.02g ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DOH-374-2B - 10ml 1B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DOH-374-3B - 10ml 2B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DOH-374-4B - 10ml 3B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DOH-374-5B - 10ml 4B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DOH-374-6B - 10ml 5B/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0

SAMPLE-DIL-QUAN	NO. COLONIES 17 hrs.	NO. COLONIES 41 hrs.
DOH-374-1C - 1.23a ASH/100ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DOH-374-2C - 10ml 1C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DOH-374-3C - 10ml 2C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DOH-374-4C - 10ml 3C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DOH-374-5C - 10ml 4C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0
DOH-374-6C - 10ml 5C/90ml BUFFER		
FILTER # -1	0	0
-2	0	0
-3	0	0





Radian Work Order P0-10-080

Analytical Report
11/08/90

Amford Hargens

EPA EMB EPA EMB Radian Corporation 3200 E. Chapel Hill Road RTP, NC 27709 Winton Kelly
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Customer Work Identification Central C Hospital Purchase Order Number 275-026-26-35
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Contents: 1 Analytical Data Summary 2 Sample History 3 Comments Summary 4 Notes and Definitions

Radian Analytical Services
900 Perimeter Park
Morrisville, NC 27560

919-481-0212

Client Services Coordinator: JDLOPEZ

Certified by:

A handwritten signature in black ink, appearing to read "Amford Hargens", written over a horizontal line.

EPA EMB

Method/Analyte		Sample Identifications					
	3A	3B		4A			
	CCH-102	CCH-104		CCH-116			
Matrix	01 Cl/Br/F	02 Cl/Br/F		03 Cl/Br/F			
Bromide, IC - Trains	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	
Bromide	<u>0.0652</u>	total mg 0.013	<u>0.0908</u>	total mg 0.013	<u>0.211</u>	total mg 0.013	
Chloride, by IC - Trains							
Chloride	<u>9.82</u>	total mg 0.011	<u>11.6</u>	total mg 0.011	<u>37.8</u>	total mg 0.011	
Fluoride, by IC - Trains							
Fluoride	<u>0.173 @</u>	total mg 0.040	<u>0.393</u>	total mg 0.040	<u>0.809</u>	total mg 0.040	

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

EPA EMB

Radian Work Order: P0-10-080

Method/Analyte		Sample Identifications					
4B CCH-132		RB-H ₂ SO ₄ CCH-36		LPB-H ₂ SO ₄ CCH-38			
Matrix		04 Cl/Br/F		05 Cl/Br/F		06 Cl/Br/F	
Bromide, IC - Trains Bromide Chloride, by IC - Trains Chloride Fluoride, by IC - Trains Fluoride	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	
	0.233	total mg 0.013	ND	total mg 0.011	ND	total mg 0.013	
	145	total mg 0.011	ND	total mg 0.0096	ND	total mg 0.011	
	0.331	total mg 0.040	ND	total mg 0.035	ND	total mg 0.041	

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

EPA EMB

Radian Work Order: P0-10-080

Method/Analyte	Sample Identifications					
	LPB - H ₂ SO ₄	2B	1B			
	CCH-37	CCH-59	CCH-41			
Matrix	07 Cl/Br/F	08 Cl/Br/F	09 Cl/Br/F			
Bromide, IC - Trains	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromide	ND	total mg 0.013	0.100	total mg 0.013	0.0821	total mg 0.013
Chloride, by IC - Trains						
Chloride	ND	total mg 0.011	78.4	total mg 0.011	5.97	total mg 0.011
Fluoride, by IC - Trains						
Fluoride	ND	total mg 0.041	2.24	total mg 0.040	0.116 @	total mg 0.040

ND Not detected at specified detection limit
 @ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

EPA EMB

Radian Work Order: P0-10-080

Method/Analyte		Sample Identifications				
	1A	1C	2A			
	CCH-40	CCH-43	CCH-58			
Matrix	10 Cl/Br/F	11 Cl/Br/F	12 Cl/Br/F			
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromide, IC - Trains						
Bromide	0.0788	total mg 0.013	0.0727	total mg 0.013	0.225	total mg 0.013
Chloride, by IC - Trains						
Chloride	3.32	total mg 0.011	6.78	total mg 0.011	76.5	total mg 0.011
Fluoride, by IC - Trains						
Fluoride	0.0689 a	total mg 0.040	0.129 a	total mg 0.040	0.673	total mg 0.040
a Est. result less than 5 times detection limit						
(1) For a detailed description of flags and technical terms in this report refer to the glossary.						

EPA EMB

Method/Analyte	4C CCH-134	5C CCH-163	Sample Identifications 5B CCH-161
Matrix	13 Cl/Br/F	14 Cl/Br/F	15 Cl/Br/F
Bromide, IC - Trains	Result 0.104 total mg 0.013	Result ND total mg 0.013	Result ND total mg 0.013
Bromide			
Chloride, by IC - Trains	Result 155 total mg 0.011	Result 8.55 total mg 0.011	Result 5.59 total mg 0.011
Chloride			
Fluoride, by IC - Trains	Result 0.475 total mg 0.040	Result 0.164 @ total mg 0.040	Result 0.147 @ total mg 0.040
Fluoride			

ND Not detected at specified detection limit @ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.



Radian Work Order: P0-10-080

Method/Analyte	SA CCH-160	GA CCH-203	Sample Identifications 6c CCH-206
Matrix	16 Cl/Br/F	17 Cl/Br/F	18 Cl/Br/F
Bromide, IC - Trains	Result	Result	Result
Bromide	Det. Limit	Det. Limit	Det. Limit
Chloride, by IC - Trains	ND	0.0642 a	ND
Chloride	total mg 0.013	total mg 0.013	total mg 0.013
Fluoride, by IC - Trains	5.84	5.70	5.75
Fluoride	total mg 0.011	total mg 0.011	total mg 0.011
	0.0957 a	0.0853 a	0.105 a
	total mg 0.040	total mg 0.040	total mg 0.040

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

EPA EMB

Radian Work Order: P0-10-080

Method/Analyte		Sample Identifications				
7C CCH-223		8A CCH-246		8B CCH-247		
Matrix	22 Cl/Br/F	23 Cl/Br/F	24 Cl/Br/F			
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromide, IC - Trains						
Bromide	0.177	total mg 0.013	0.241	total mg 0.013	0.279	total mg 0.013
Chloride, by IC - Trains						
Chloride	84.0	total mg 0.011	71.4	total mg 0.011	96.1	total mg 0.011
Fluoride, by IC - Trains						
Fluoride	0.111 @	total mg 0.040	0.983	total mg 0.040	0.753	total mg 0.040

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

EPA EMB

Radian Work Order: P0-10-080

Method/Analyte		Sample Identifications	
8C CCH-249		7A CCH-256	7B CCH-257
Matrix		25 Cl/Br/F	26 Cl/Br/F
		27 Cl/Br/F	
Result		Det. Limit	Result
		Det. Limit	Result
Bromide, IC - Trains			Det. Limit
Bromide			
Chloride, by IC - Trains			
Chloride			
Fluoride, by IC - Trains			
Fluoride			
0.290 total mg 0.013			0.0741 total mg 0.013
159 total mg 0.011			13.9 total mg 0.011
0.433 total mg 0.040			0.106 @ total mg 0.040
			0.140 @ total mg 0.040
@ Est. result less than 5 times detection limit ND Not detected at specified detection limit (1) For a detailed description of flags and technical terms in this report refer to the glossary.			

EPA EMB

Method/Analyte	9C CCH-259	FB-A CCH-326	Sample Identifications	FB-B CCH-327
Matrix	28 Cl/Br/F	29 Cl/Br/F		30 Cl/Br/F
Bromide, IC - Trains	Result	Det. Limit	Result	Det. Limit
Bromide	0.0596 a total mg 0.013		0.0629 a total mg 0.013	ND total mg 0.013
Chloride, by IC - Trains	Result	Det. Limit	Result	Det. Limit
Chloride	11.6 total mg 0.011		0.238 total mg 0.011	0.243 total mg 0.011
Fluoride, by IC - Trains	Result	Det. Limit	Result	Det. Limit
Fluoride	0.155 a total mg 0.040		ND total mg 0.040	ND total mg 0.040

a Est. result less than 5 times detection limit

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.



Radian Work Order: P0-10-080

Method/Analyte	Sample Identifications					
	10A		10B		10C	
	CCH-349		CCH-350		CCH-352	
Matrix	31 Cl/Br/F		32 Cl/Br/F		33 Cl/Br/F	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromide, IC - Trains						
Bromide	0.0705	total mg 0.013	0.0824	total mg 0.013	0.0603 @	total mg 0.013
Chloride, by IC - Trains						
Chloride	11.0	total mg 0.011	4.40	total mg 0.011	3.96	total mg 0.011
Fluoride, by IC - Trains						
Fluoride	0.368	total mg 0.040	0.103 @	total mg 0.040	0.120 @	total mg 0.040

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

EPA EMB

Radian Work Order: PO-10-080

Q ALL METHODS EXCEPT CLP

The results which are less than five times the method specified detection limit.

EXPLANATION

Uncertainty of the analysis will increase as the method detection limit is approached. These results should be considered approximate.

ND ALL METHODS EXCEPT CLP

This flag is used to denote analytes which are not detected at or above the specified detection limit.

EXPLANATION

The value to the right of the < symbol is the method specified detection limit for the analyte.

EPA EMB

Radian Work Order: PO-10-080

TERMS USED IN THIS REPORT:

Analyte - A chemical for which a sample is to be analyzed. The analysis will meet EPA method and QC specifications.

Compound - See Analyte.

Detection Limit - The method specified detection limit, which is the lower limit of quantitation specified by EPA for a method. Radian staff regularly assess their laboratories' method detection limits to verify that they meet or are lower than those specified by EPA. Detection limits which are higher than method limits are based on experimental values at the 99% confidence level. The detection limits for EPA CLP (Contract Laboratory Program) methods are CRQLs (contract required quantitation limits) for organics and CRDLs (contract required detection limits) for inorganics. Note, the detection limit may vary from that specified by EPA based on sample size, dilution or cleanup. (Refer to Factor, below)

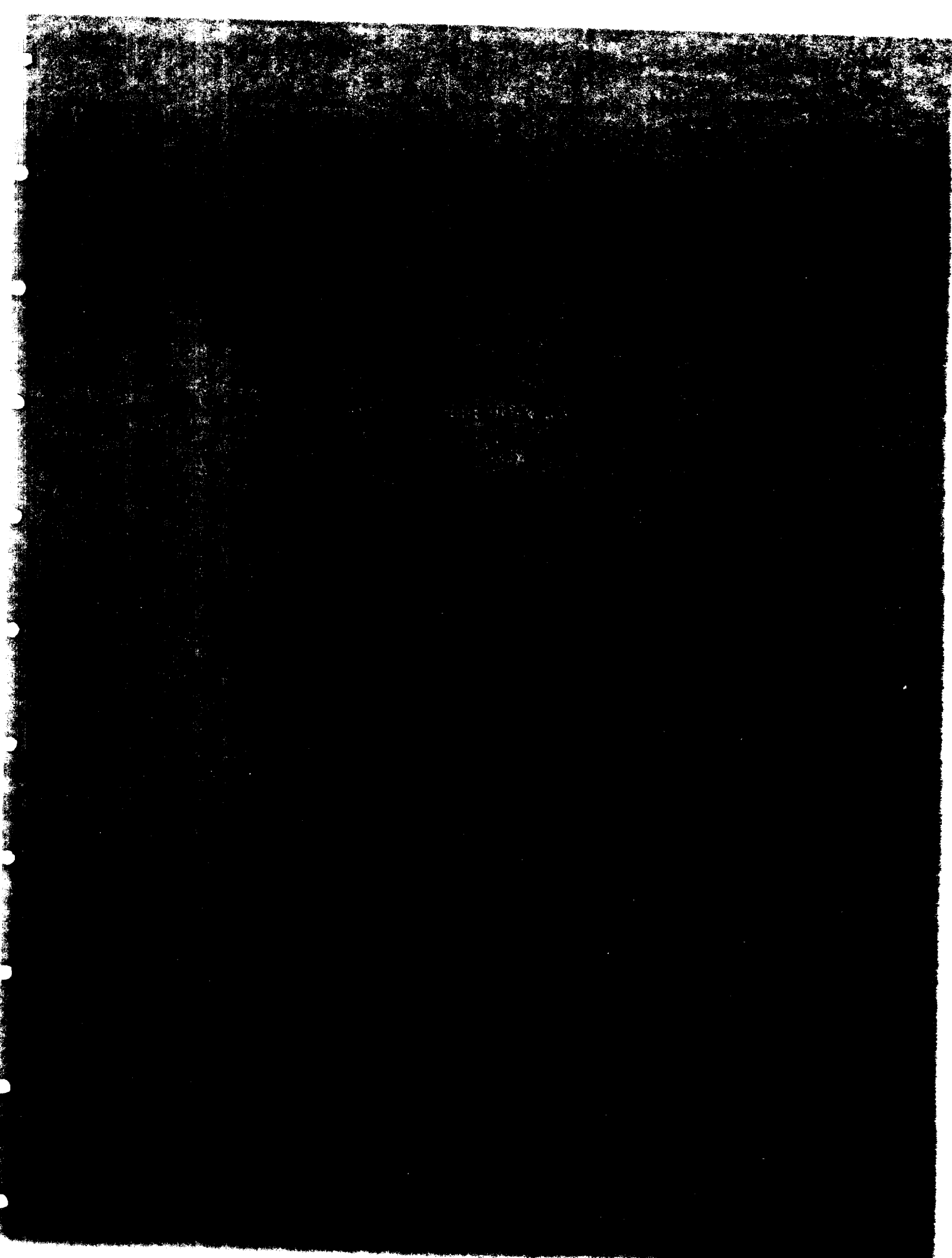
EPA Method - The EPA specified method used to perform an analysis. EPA has specified standard methods for analysis of environmental samples. Radian will perform its analyses and accompanying QC tests in conformance with EPA methods unless otherwise specified.

Factor - Default method detection limits are based on analysis of clean water samples. A factor is required to calculate sample specific detection limits based on alternate matrices (soil or water), reporting units, use of cleanup procedures, or dilution of extracts/digestates. For example, extraction or digestion of 10 grams of soil in contrast to 1 liter of water will result in a factor of 100.

Matrix - The sample material. Generally, it will be soil, water, air, oil, or solid waste.

Radian Work Order - The unique Radian identification code assigned to the samples reported in the analytical summary.

Units - ug/L	micrograms per liter (parts per billion); liquids/water
ug/kg	micrograms per kilogram (parts per billion); soils/solids
ug/M3	micrograms per cubic meter; air samples
mg/L	milligrams per liter (parts per million); liquids/water
mg/kg	milligrams per kilogram (parts per million); soils/solids
%	percent; usually used for percent recovery of QC standards
uS/cm	conductance unit; microSiemens/centimeter
mL/hr	milliliters per hour; rate of settlement of matter in water
NTU	turbidity unit; nephelometric turbidity unit
CU	color unit; equal to 1 mg/L of chloroplatinate salt



Run	Stage	ID	Tare	Final	NET
3	P *	M6, 95mls	102.81085	102.8197	0.0087075
3	0	0-0	.492865	.515555	0.02269
3	1	0-1	.667595	.68856	0.030965
3	2	0-2	.65686	.68726	0.0304
3	3	0-3	.646575	.676655	0.03014
3	4	0-4	.699485	.731865	0.03238
3	5	0-5	.719215	.752555	0.03334
3	6	0-6	.60953	.637905	0.028375
3	7	0-7	.65239	.68295	0.03056
3	8	0-8	.656015	.68728	0.031265
3	9	0-9	.72110	.757485	0.036385

4	P *	M5, 110mls	109.6259	109.6326	.006535
	0	F-0	.665085	.6986335	.03125
	1	F-1	.831225	.87093	.039705
	2	F-2	.670165	.702375	0.03221
	3	F-3	.734535	.77045	0.035915
	4	F-4	.723565	.759895	0.03533
	5	F-5	.761385	.79863	0.037245
	6	F-6	.80317	.841655	0.038485
	7	F-7	.833585	.873445	0.03986
	8	F-8	.80539	.843745	0.038355
	9	F-9	.797335	.84043	0.043095

* action blank 1.5×10^{-6} g/ml

Pre-impactor + stage 0 combined

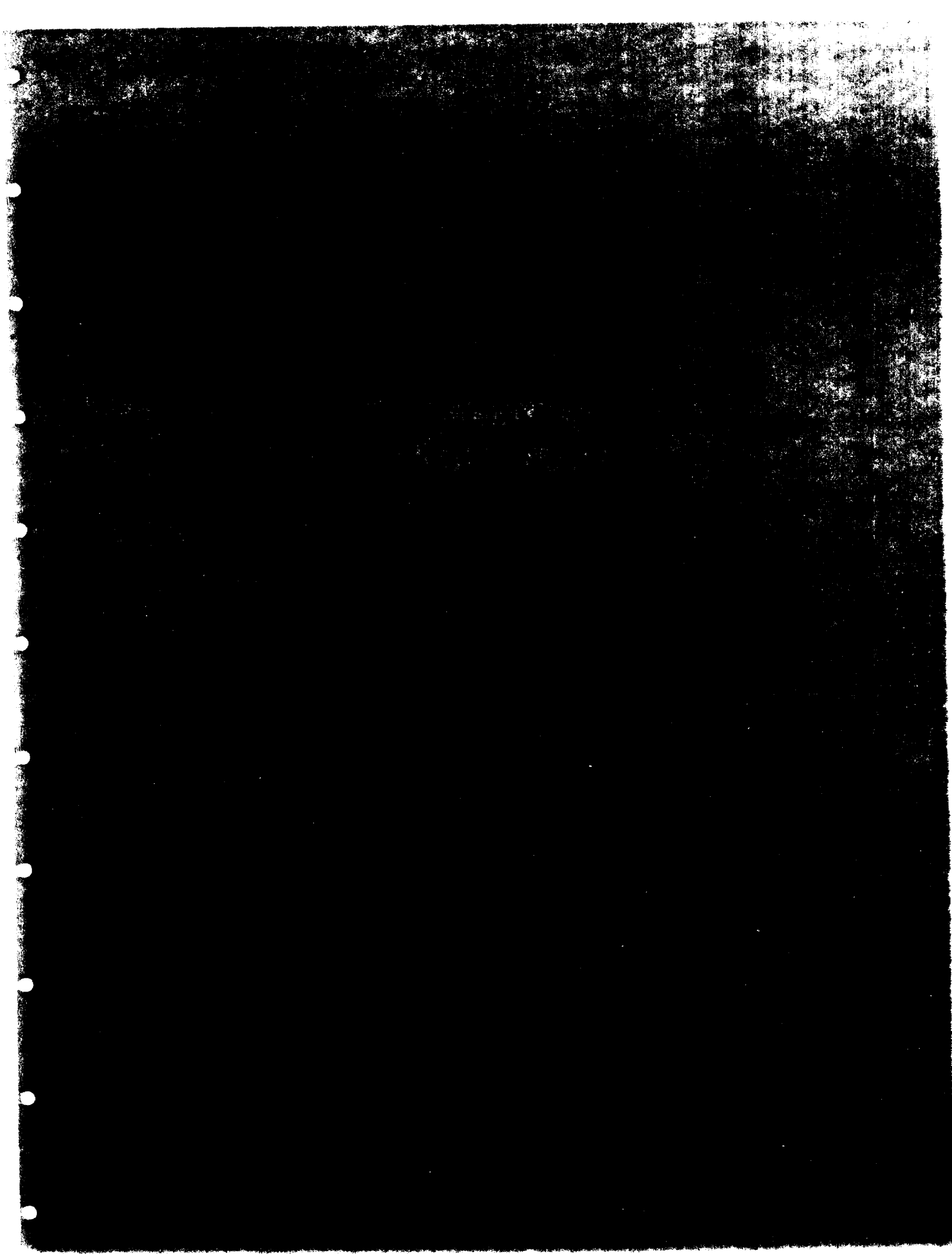
Run	Stage	ID	Tare	Final	Net (g)	
1	PX	M+10, 150 ml	110.64085	110.6628	0.015725	PSD OVERLOAD
1	0	E-0	0.66420	0.67513	0.03093	
1	1	E-1	0.91033	0.95546	0.04513	
1	2	E-2	0.69034	0.725525	0.034685	
1	3	E-3	0.71690	0.753035	0.036135	
1	4	E-4	0.63609	0.66888	0.03289	
1	5	E-5	0.72232	0.75455	0.03223	
1	6	E-6	0.66748	0.703605	0.036125	
1	7	E-7	0.65846	0.69679	0.03823	
1	8	E-8	0.78804	0.83238	0.04434	LIGHTLY OVERLOAD
1	9	Final	0.89557	0.96858	0.07301	
2	P	M-17, 120 ml	105.0017	105.0201	0.01822	
2	0	L-0	0.494945	0.517835	0.02289	
2	1	L-1	0.63482	0.665175	0.030355	
2	2	L-2	0.662125	0.693565	0.03144	
2	3	L-3	0.756005	0.79169	0.035685	
2	4	L-4	0.75564	0.79119	0.03555	
2	5	L-5	0.71169	0.74523	0.03354	
2	6	L-6	0.68709	0.71936	0.03227	
2	7	L-7	0.630875	0.660865	0.02999	
2	8	L-8	0.611835	0.64092	0.029085	
2	9	L-9	0.73224	0.78090	0.04866	
		Cond. Filter		0.10680		

* aretane correction factor = 1.5×10^{-6}

Run	Sample	ID	Tare	Final	Net
5	P *	m 11, 110 ml	111.21275	111.2133	0.000 39
	0	J-0	.50919 5	.69633 5	.53319 0.187 0.023 995
	1	J-1	.71039	.87093	.744785 0.034 345
	2	J-2	.69614.5	.70237 5	.72855 5 0.032 41
	3	J-3	.70491 5	.77045	.73784 5 0.032 93
	4	J-4	.72215 5	.75889 5	.75587 5 0.033 72
	5	J-5	.80730	.79863	.84492 5 0.037 625
	6	J-6	.68651	.84165 5	.70288 0.016 37
	7	J-7	.72714	.87344 5	0.76118 0.034 04
	8	J-8	.68647	.84374 5	0.71949 5 0.032 025
	9	J-9	.72772 5	.84043	0.77265 0.044 925

6	P *	m 9, 120 ml	114.4488 5	114.4506	0.001 57
	0	B-0	.45597	.47731 5 0.44431 5	0.021 345
	1	B-1	.69978 5	.73258 5	0.032 8
	2	B-2	.62260 3	.65181	0.029 18
	3	B-3	.59743 5	.62560	0.028 165
	4	B-4	.08186	.71360 5	0.031 745
	5	B-5	.58628	.61379 5	0.027 575
	6	B-6	.71076 5	.74412 5	0.033 36
	7	B-7	.55793 5	.58452 5	0.026 59
	8	B-8	.59222 5	.62064	0.028 415
	9	B-9	.73963	.78917 5	0.049 545

* acetone blank 1.5×10^{-6} g/ml



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812/425-9288

ANALYSIS REPORT

RADIAN CORPORATION
ATTN: LARRY ROMESBERG
P.O. BOX 13000
RESEARCH TRIANGLE PARK
RESEARCH TRIANGLE PARK, NC 27709

DATE: 11/12/90

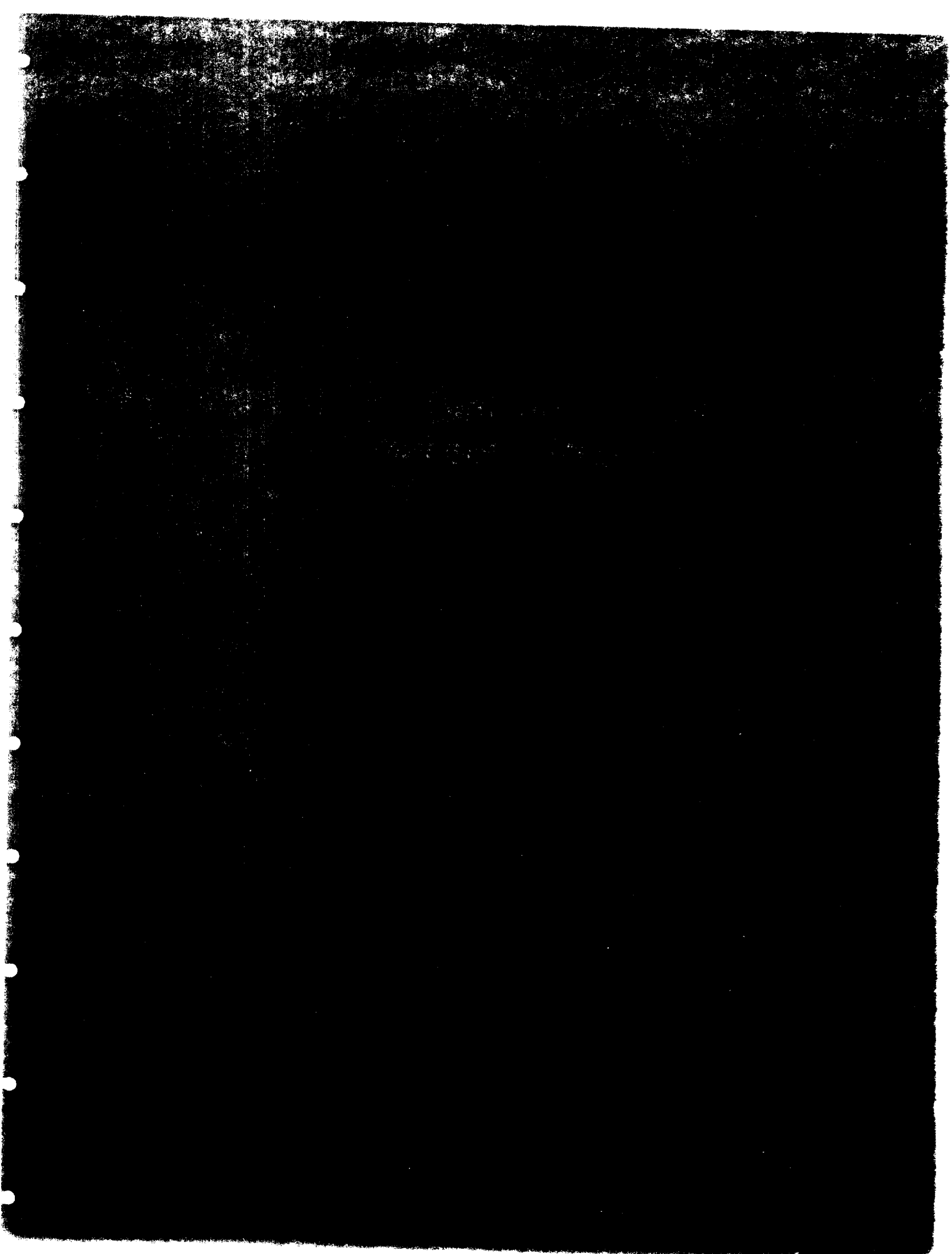
REPORT NO: SEE BELOW

LOSS ON IGNITION

REPORT NO.	IDENTIFICATION	DATE	MOISTURE	L.O.I.	TOTAL LOSS	AS RECEIVED CARBON
901025111M	MD ID	10/03/90	0.27%	17.80%	18.02%	9.77%
901025112M	CCH-310	9/29/90	1.13%	27.63%	28.45%	20.41%
901025113M	CCH-79	9/20/90	28.55%	62.69%	73.34%	18.12%
901025114M	CCH-192	9/25/90	3.16%	23.64%	26.05%	20.36%
901025115M	CCH-95	9/22/90	2.12%	45.72%	46.87%	30.17%
901025116M	CCH-174	9/24/90	34.92%	35.90%	58.28%	16.39%
901025117M	CCH-322	9/28/90	44.26%	78.02%	87.75%	35.70%
901025118M	CCH-76	9/19/90	15.83%	58.88%	65.39%	28.25%
901025119M	CCH-191	9/25/90	0.64%	23.79%	24.28%	22.80%
901025120M	CCH-84	9/21/90	0.41%	23.86%	24.17%	15.03%
901025121M	CCH-153	9/23/90	0.30%	19.19%	19.43%	17.87%
901025122M	CCH-319	9/27/90	26.57%	65.04%	74.33%	28.33%
901025123M	CCH-315	9/26/90	30.03%	40.39%	58.29%	21.85%
901025124M	CCH-316	9/26/90	0.47%	32.45%	32.77%	16.66%

P.O. #114522

Submitted by



Sanford Sample Identification Log

Project No. 23788 **RADIAN CORPORATION**

TITLE MW13

From Page No. —						
CCH-01	CCH-0914-MET-PR-LPB-01	9/14/90	Radian	Lab Proof Blank, Set 1, Metal		
CCH-02	APR-LPB-01					
CCH-03	F-LPB-01	*MP38				
CCH-04	HN-LPB-01	485.1				
CCH-05	KM-LPB-01	384.2				
CCH-06	CCH-0914-MET-PR-LPB-02	9/14/90	Radian (Archive)	Lab Proof Blank, Set 2, Metal		
CCH-07	APR-LPB-02					
CCH-08	F-LPB-02					
CCH-09	HN-LPB-02	210.8				
CCH-10	KM-LPB-02	271.8				
CCH-11	CCH-0914-M23-PR-AM-LPB-01	9/14/90	Δ Labs	M23 Lab Proof Blank, Set 1		
CCH-12	PR-T-LPB-01					
CCH-13	F-LPB-01					
CCH-14	Sm-LPB-01					
CCH-15	IR-H2O-LPB-01	207.2				
CCH-16	IR-AM-LPB-01	520.0				
CCH-17	CCH-0914-M23-PR-AM-LPB-02	9/14/90	Archive	M23 Lab Proof Blank, Set 2		
CCH-18	CCH-0914-M23-PR-T-LPB-02					
CCH-19	CCH-0914-M23-F-LPB-02					
CCH-20	CCH-0914-IR-H2O-LPB-02	74.1				
CCH-21	CCH-0914-IR-AM-LPB-02	406.2				
CCH-22	CCH-0914-MET-RB-ACC-01	9/14/90 409.6	Radian	Metal Reagent Blank		
CCH-23	HN-01	803.0				
CCH-24	KM-01	528.6				
CCH-25	H2O-01	422.9				
CCH-26	HCl-01	143.0				
CCH-27	CCH-0914-MET-LB-F	9/14/90 MP87	Radian	" " "		
CCH-28	CCH-0914-MET-RB-ACC-01	"	"	" " "		
CCH-29	CCH-0914-M23-RB-H2O-01	" 310.1	"	M23 Reagent Blank		
CCH-30	CCH-0914-M23-RB-ACC-01	" 450.1	"	" " "		
CCH-31	" " " " - ACC-01	" 279.9	"	" " "		
CCH-32	" " " " - TOL-01	" 228.1	"	" " "		
CCH-33	CCH-0919-HCl-RB-NaOH-01	9/17/90 55.8	Radian	HCl Reagent Blank NaOH		
CCH-34	" " " " - LB-01 - NaOH	" 45.3	"	" Lab Proof NaOH		
CCH-35	" " " " - 02 - NaOH	" 58.2	"	" Lab Proof 2 NaOH		
CCH-36	" " " " - RB - H2SO4-01	" 78.4	"	" Reagent Blank H2SO4		

To Page No. —

Witnessed & Understood by me,	Date	Invented by	Date
		Recorded by	

From Page No. —

CCM-37	CCM-0919	HCl - DR - G1 - H ₂ SO ₄	9/15/90	RADIAN	102.0	HCl LAB DRUG 1 H ₂ SO ₄
CCM-38	"	" " " " " " " " " " " " " "	"	"	102.7	" LAB DRUG 2 H ₂ SO ₄
CCM-39	CCM-0920	MET - RB - ABS - 02	9/16/90	"	410.0	ABS Radiant Blank
CCM-40	CCM-0920	HCl - H ₂ SO ₄ - ST-01-A	"	"	100.1	Impure Contents H ₂ SO ₄
CCM-41	CCM-0920	HCl - H ₂ SO ₄ - ST-02-B	"	"	99.3	" " "
CCM-42	CCM-0920	HCl - NaOH - ST-01-B	"	"	34.9	" " NaOH
CCM-43	CCM-0920	HCl - H ₂ SO ₄ - ST-02-C	"	"	99.3	" " H ₂ SO ₄
CCM-44	CCM-0920	MET - RB - KM - 02	"	"	252.2	KMdy Radiant Blank
CCM-45	CCM-0920	MET - DR - ST-01	"	"	208.7	FRONT 1/2 Acetone
CCM-46	"	" " " - APR - ST-01	"	"	185.7	FRONT 1/2 Nitric
CCM-47	"	" " " - HW - ST-01	"	"	709.8	ABS Impure
CCM-48	"	" " " - KM - ST-01	"	"	410.2	KMdy Impure
CCM-49	"	" " " - F - ST-01	"	"	—	FRONT MP-88
CCM-50	CCM-0920	M23 - DR - AM - ST-01	"	TRAVEL	743.8	FRONT 1/2 Ace & MeCl ₂
CCM-51	"	" " " - PR - T - ST-01	"	"	301.7	FRONT 1/2 Toward
CCM-52	"	" " " - IR - H ₂ O - ST-01	"	Archive	397.8	BACK 1/2 H ₂ O
CCM-53	"	" " " - AM - ST-01	"	"	469.5	BACK 1/2 Ace & MeCl ₂
CCM-54	"	" " " - F - ST-01	"	TRAVEL	—	FILTER
CCM-55	"	" " " - SM - ST-01	"	"	—	XAD TRAP #2
CCM-56	CCM-0921	MET - RB - KMdy - 03	9/20/90	RADIAN	454.2	KMdy Radiant Blank
CCM-57	CCM-0921	MET - RB - ABS - 03	"	"	263.8	ABS Radiant Blank
CCM-58	CCM-0921	HCl - H ₂ SO ₄ - ST-02-A	"	"	99.1	Impure Contents
CCM-59	"	" " " - ST-02-B	"	"	99.3	Impure Contents
CCM-60	"	" " " - NaOH - ST-02-B	"	"	81.8	NaOH Impure Contents
CCM-61	CCM-0921	MET - DR - ST-02	"	"	268.8	FRONT 1/2 Acetone
CCM-62	"	" " " - APR - ST-02	"	"	165.7	FRONT 1/2 Nitric
CCM-63	"	" " " - HW - ST-02	"	"	734.2	Impure Contents
CCM-64	"	" " " - KM - ST-02	"	"	475.6	KMdy Impure Contents
CCM-65	"	" " " - F - ST-02	"	"	—	MP-41 FILTER
CCM-66	CCM-0921	M23 - DR - AM - ST-02	"	TRAVEL	572.3	FRONT 1/2 Ace & MeCl ₂
CCM-67	"	" " " - PR - T - ST-02	"	"	148.4	FRONT 1/2 Toward
CCM-68	"	" " " - IR - H ₂ O - ST-02	"	Archive	353.7	Impure Contents
CCM-69	"	" " " - AM - H ₂ O - ST-02	"	"	421.3	BACK 1/2 Ace & MeCl ₂
CCM-70	"	" " " - F - ST-02	"	TRAVEL	—	M23 FILTER
CCM-71	"	" " " - SM - ST-02	"	"	—	XAD #3
CCM-72	CCM-0922	MET - RB - KM - 04	9/22/90	RADIAN	250.7	KMdy Radiant Blank

To Page No. —

Witnessed & Understood by me,

Date

Invented by

Date

Recorded by

TITLE

Project No.

Book No. 23788

RADIAN
CORPORATION

From Page No. _____

	CCH-73	CCH-0921-MAT-23-ASH-04	9/22/90	Radian	298.9	Asb Budget Base
	CCH-74	CCH-0919-ASH-A	9/19/90	Radian PPK	627.6T	Archive Ash (REF)
	CCH-75	CCH-0919-ASH-B	9/19/90	RTI	632.4T	Spore Count Ash (REF)
M	CCH-76	CCH-0919-ASH-M	9/19/90	McCoy Labs	378.3T	LOI, Carbon, Moisture
	CCH-77	CCH-0920-ASH-A	9/20/90	Radian PPK	796.8T	Archive Ash (REF)
	CCH-78	CCH-0920-ASH-B	9/20/90	RTI	804.3T	Spore Count Ash (REF)
M	CCH-79	CCH-0920-ASH-M	9/20/90	McCoy Labs	573.8T	LOI, Carbon, Moisture
	CCH-80	CCH-0921-ASH-A	9/21/90	Radian PPK	725.8T	Archive Ash (REF)
	CCH-81	CCH-0921-ASH-B	9/21/90	RTI	692.4T	Spore Count Ash (REF)
	CCH-82	CCH-0921-ASH-C	9/21/90	Radian PPK	735.2T	Metals
Asb Pur 1	CCH-83	CCH-0921-ASH-D	9/21/90	Triangle Labs	712.3T	Dioxins
	CCH-84	CCH-0921-ASH-M	9/21/90	McCoy Labs	471.5T	LOI, Carbon, Moist
	CCH-85	CCH-0921-PIP-01	9/21/90	RTI	-	Spore Count (REF)
	CCH-86	CCH-0921-PIP-02	9/21/90	RTI	-	
	CCH-87	CCH-0921-PIP-03	9/21/90	RTI	-	
	CCH-88	CCH-0921-PIP-04	9/21/90	RTI	-	
	CCH-89	CCH-0921-PIP-05	9/21/90	RTI	-	
	CCH-90	CCH-0921-PIP-06	9/21/90	RTI	-	
	CCH-91	CCH-0922-ASH-A	9/22/90	Radian PPK		Archive Ash (REF)
	CCH-92	CCH-0922-ASH-B		RTI		Spore Count (REF)
Asb Pur 2	CCH-93	CCH-0922-ASH-C		Radian PPK		Metals
	CCH-94	CCH-0922-ASH-D		Triangle Labs		Dioxins
	CCH-95	CCH-0922-ASH-M		McCoy Labs		LOI, Carbon, Moistur
WTS	CCH-96	CCH-0922-PIP-01		RTI		Spore Count (REF)
	CCH-97	CCH-0922-PIP-02		RTI		
	CCH-98	CCH-0922-PIP-03		RTI		
	CCH-99	CCH-0922-PIP-04		RTI		
WTS	CCH-100	CCH-0922-PIP-05		RTI		
	CCH-101	CCH-0922-PIP-06		RTI		
	CCH-102	CCH-0922-HCI-H ₂ SO ₄ -ST-03-A	9/2/90	Radian	99.2	Indurated Carbons H ₂ SO ₄
	CCH-103	CCH-0922-HCI-H ₂ SO ₄ -ST-03-B	"	"	99.0	Indurated Carbons H ₂ SO ₄
	CCH-104	CCH-0922-HCI-H ₂ SO ₄ -ST-03-C	"	"	99.0	Indurated Carbons H ₂ SO ₄
	CCH-105	CCH-0922-023-DB-AM-ST-03	"	Tamule	654.5	Flint 1/2 Ash + Mac 1/2
	CCH-106	" " " DB-T-ST-03	"	"	173.3	Flint 1/2 Tamule
	CCH-107	" " " IR-H ₂ O-ST-03	"	Archive	508.3	Indurated Carbons
	CCH-108	" " " IR-AM-ST-03	"	"	459.6	Reac 1/2 Ash + Mac 1/2

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CCH-109	CCH-0910 - M23 - SM - ST - 03	9/22/90	TRAVEL	-	XAD # 4
CCH-110	" " " - F - ST - 03	"	"	-	M23 FILTER
CCH-111	CCH-0922 - MET - PR - ST - 03	"	RADIAN	126.0	FRONT 1/2 ACETONE
CCH-112	" " " - APR - ST - 03	"	"	162.3	FRONT 1/2 NITRIC
CCH-113	" " " - HW - ST - 03	"	"	665.5	INCREASE CONTENTS ABS
CCH-114	" " " - KM - ST - 03	"	"	421.5	INCREASE CONTENTS KNOX
CCH-115	" " " - F - ST - 03	"	"	-	FILTER MP-70
CCH-116	CCH-0923 - HCl - H ₂ SO ₄ - ST - 04 - A	"	"	99.5	INCREASE CONTENTS H ₂ SO ₄
CCH-117	CCH-0923 - MET - RB - ABS - 05	"	ANALYST	443.9	REAGENT BLANK ABS
CCH-118	" " " - RB - KNOX - 05	"	"	200.5	REAGENT BLANK KNOX
CCH-119	CCH-0920 - SPO - IMP - 01A	9/20/90	RTI	-	INDICATOR SPORE
CCH-120	" " " " - 01B	"	RTI	-	" "
CCH-121	CCH-0921 - SPO - IMP - 02A	"	"	-	" "
CCH-122	" " " " - 02B-1	"	"	-	" "
CCH-123	" " " " - 02B-2	"	"	-	" "
CCH-124	CCH-0922 - SPO - IMP - 03A	"	"	-	" "
CCH-125	" " " " - 03B	"	"	-	" "
CCH-126	CCH-0921 - SPO - RB - LRB	9/21	"	-	" "
CCH-127	CCH-0923 - SPO - IMP - RB - 01	9/23	"	-	REAGENT BLANK
CCH-128	CCH-0920 - SPO - IMP - LRB - A	9/20	"	-	" "
CCH-129	CCH-0920 - SPO - IMP - LRB - B	"	"	-	" "
CCH-130	CCH-0923 - SPO - IMP - 04A	9/23	"	-	" "
CCH-131	" " " " - 04B	"	"	-	" "
CCH-132	CCH-0923 - HCl - H ₂ SO ₄ - 04 - A	9/23	RADIAN	99.3	INCREASE CONTENTS H ₂ SO ₄
CCH-133	" " " - NaOH - 04 - B	"	"	54.5	INCREASE CONTENTS NaOH
CCH-134	" " " - H ₂ SO ₄ - 04 - C	"	"	99.0	INCREASE CONTENTS H ₂ SO ₄
CCH-135	CCH-0923 - SPO - IMP - 4C	"	RTI	-	PROBE PULSE
CCH-136	CCH-0923 - M23 - PR - AM - ST - 04	9/23/90	TRAVEL	622.2	FRONT 1/2 ACETONE + M23
CCH-137	CCH-0923 - M23 - PR - T - ST - 04	"	"	181.2	FRONT 1/2 Toluene
CCH-138	CCH-0923 - M23 - IR - H ₂ O - ST - 04	"	ANALYST	347.2	INCREASE CONTENTS H ₂ O
CCH-139	CCH-0923 - M23 - IR - AM - ST - 04	"	"	495.7	BACK 1/2 ACETONE + M23
CCH-140	CCH-0923 - M23 - F - ST - 04	"	TRAVEL	-	M23 FILTER
CCH-141	CCH-0923 - M23 - SM - ST - 04	"	"	-	XAD # 5
CCH-142	CCH-0923 - MET - F - ST - 04	"	RADIAN	-	FILTER MP - 80
CCH-143	CCH-0923 - MET - PR - ST - 04	"	"	172.9	FRONT 1/2 ACETONE
CCH-144	CCH-0923 - MET - APR - ST - 04	"	"	191.5	FRONT 1/2 NITRIC

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CCM-145	CCM-0923-MET-KM-ST-04	9/23/90	RADIAN	650.0	IMPINGER CONTENTS ABS	
CCM-146	CCM-0923-MET-KM-ST-04	"	"	"	IMPINGER CONTENTS KMWAY	
CCM-147	CCM-0924-MET-RB-ABS-06	9/24/90	"	295.0	REAGENT BLANK ABS	
CCM-148	CCM-0924-MET-RB-KMWAY-06	"	"	"	REAGENT BLANK KMWAY	
CCM-149	CCM-0923-ASH-A	9/23/90	PPK		Archive Ash	(REF)
CCM-150	CCM-0923-ASH-B		RTI		Spore Count	(REF)
CCM-151	CCM-0923-ASH-C		PPK		Metals	
CCM-152	CCM-0923-ASH-D		Triangle Labs		Dioxins	
CCM-153	CCM-0923-ASH-M		McCoy		LOI, Carbon	
CCM-154	CCM-0923-PIP-01		RTI		Spore Count	REF.
CCM-155	CCM-0923-PIP-02					
CCM-156	CCM-0923-PIP-03					
CCM-157	CCM-0923-PIP-04					
CCM-158	CCM-0923-PIP-05					
CCM-159	CCM-0923-PIP-06					
CCM-160	CCM-0924-HCl-H ₂ SO ₄ -ST-05-A		RADIAN	99.5	IMPINGER CONTENTS H ₂ SO ₄	
CCM-161	" " " - H ₂ SO ₄ -ST-05-B		"	99.2	IMPINGER CONTENTS H ₂ SO ₄	
CCM-162	" " " - NaOH-ST-05-B		"	54.8	IMPINGER CONTENTS NaOH	
CCM-163	" " " - H ₂ SO ₄ -ST-05-C		"	99.0	IMPINGER CONTENTS H ₂ SO ₄	
CCM-164	CCM-0924-M23-PB-AM-ST-05		Triangle	464.1	FRONT 1/2 Acc & MeCl ₂	
CCM-165	" " " - PB-T-ST-05		"	101.2	FRONT 1/2 Toluene	
CCM-166	" " " - IR-H ₂ O-ST-05		ABRAMS	375.3	IMPINGER CONTENTS	
CCM-167	" " " - IR-AM-ST-05		"	493.4	IMPINGER 2nd Acc & MeCl ₂	
CCM-168	" " " - F-ST-05		Triangle	-	M23 FILTER	
CCM-169	" " " - SM-ST-05		"	-	XAD TRAP # 6	
CCM-170	CCM-0924-ASH-A	9/24/90	PPK		Archive	REF.
CCM-171	CCM-0924-ASH-B		RTI		Spore Count	REF.
CCM-172	CCM-0924-ASH-C		PPK		Metals	
CCM-173	CCM-0924-ASH-D		Triangle Labs		Dioxins	
CCM-174	CCM-0924-ASH-M		McCoy		LOI, Carbon	
CCM-175	CCM-0924-PIP-01		RTI		Spore Count	REF.
CCM-176	CCM-0924-PIP-02					
CCM-177	CCM-0924-PIP-03					
CCM-178	CCM-0924-PIP-04					
CCM-179	CCM-0924-PIP-05					
CCM-180	CCM-0924-PIP-06					

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CCH-181	CCH-0925-MET-PR-ST-05	9/24/90	RADIAN	177.3	FRONT 1/2 AC
CCH-182	" " " - PR-ST-05	"	"	220.5	FRONT 1/2 NITRIC
CCH-183	" " " - MA-ST-05	"	"	670.3	INTERNAL CONTENTS ABS
CCH-184	" " " - KM-ST-05	"	"	332.0	INTERNAL CONTENTS KMNO ₄
CCH-185	CCH-0925-MET-PR-KM-07	9/25/90	RADIAN	286.0	FRONT 1/2 KMNO ₄
CCH-186	CCH-0925-MET-PR-ABS-07	"	"	285.8	FRONT 1/2 ABS
CCH-187	CCH-0925-ASH-A	"			
CCH-188	CCH-0925-ASH-B	"			
CCH-189	CCH-0925-ASH-C	"			
CCH-190	CCH-0925-ASH-D	"			
CCH-191	CCH-0925-ASH-ME	"			
CCH-192	CCH-0925-ASH-MC	"			
CCH-193	CCH-0925-PIP-01	"			
CCH-194	CCH-0925-PIP-02	"			
CCH-195	CCH-0925-PIP-03	"			
CCH-196	CCH-0925-PIP-04	"			
CCH-197	CCH-0925-PIP-05	"			
CCH-198	CCH-0925-PIP-06	"			
CCH-199	CCH-0925-SPO-LMP-05A	9/24			INDICATE SPORE IMPROVE SA
CCH-200	-05B	9/24			
CCH-201	-06A	9/25			
CCH-202	-06B	9/25			
CCH-203	CCH-0925-HCl-H ₂ SO ₄ -ST-06-A	9/25	RADIAN	99.3	INTERNAL CONTENTS H ₂ SO ₄
CCH-204	CCH-0925-HCl-H ₂ SO ₄ -ST-06-B	"	"	99.2	INTERNAL CONTENTS H ₂ SO ₄
CCH-205	CCH-0925-HCl-NaOH-ST-06-B	"	"	66.4	INTERNAL CONTENTS NaOH
CCH-206	CCH-0925-HCl-H ₂ SO ₄ -ST-06-C	"	"	99.4	INTERNAL CONTENTS H ₂ SO ₄
CCH-207	CCH-0925-MET-PR-ST-06	"	"	206.6	FRONT 1/2 ACETONE
CCH-208	" " " - APP-ST-06	"	"	138.3	FRONT 1/2 NITRIC
CCH-209	" " " - MW-ST-06	"	"	708.3	INTERNAL CONTENTS ABS
CCH-210	" " " - KM-ST-06	"	"	334.7	INTERNAL CONTENTS KMNO ₄
CCH-211	" " " - F-ST-06	"	"	-	FRONT 1/2 AC
CCH-212	CCH-0925-M23-PR-AN-ST-06	9/25/90	TRAVEL	487.2	FRONT 1/2 AC & H ₂ O
CCH-213	" " " - PR-T-ST-06	"	"	155.7	FRONT 1/2 TOWNE
CCH-214	" " " - IR-AN-ST-06	"	ANAL	394.9	INTERNAL CONTENTS H ₂ O
CCH-215	" " " - IR-AN-ST-06	"	"	493.1	INTERNAL RISE AC & H ₂ O
CCH-216	" " " - F-ST-06	"	TRAVEL	-	M23 FRONT
CCH-217	" " " - SA-ST-06	"	"	-	LAB # 7 To Page No.

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CCM-218	CCM-0926-MET-22-A21-08	9/24/90	RADIAN	297.0	Reagent Blank ABS
CCM-219	CCM-0926-MET-R3-KM-05	"	"	379.1	Reagent Blank KMnO ₄
CCM-220	CCM-0926-HCL-H ₂ SO ₄ -ST-07-A	"	"	99.4	Known Contents H ₂ SO ₄
CCM-221	CCM-0926-HCL-H ₂ SO ₄ -ST-07-B	"	"	99.3	Known Contents H ₂ SO ₄
CCM-222	CCM-0926-HCL-NaOH-ST-07-B	"	"	40.6	Known Contents NaOH
CCM-223	CCM-0926-HCL-H ₂ SO ₄ -ST-07-C	"	"	99.0	Known Contents H ₂ SO ₄
CCM-224	CCM-0926-MET-22-ST-07	"	"	250.5	Front 1/2 Ace
CCM-225	" " " - A21-ST-07	"	"	190.6	Front 1/2 Nitric
CCM-226	" " " HN-ST-07	"	"	639.7	Known Contents ABS
CCM-227	" " " KM-ST-07	"	"	362.2	Known Contents KMnO ₄
CCM-228	" " " F-ST-07	"	"	—	Filter MP-10
CCM-229	CCM-0926-M22-PR-AN-ST-07	"	Thence	672.0	Front 1/2 Ace + H ₂ O
CCM-230	" " " PR-T-ST-07	"	"	112.1	Front 1/2 Thence
CCM-231	" " " IR-H ₂ O-ST-07	"	RADIAN	347.0	Known Contents H ₂ O
CCM-232	" " " IR-AN-ST-07	"	"	387.2	Back 1/2 Ace + H ₂ O
CCM-233	" " " F-ST-07	"	Thence	—	M22 Filter
CCM-234	" " " SM-ST-07	"	"	—	XAD + B
CCM-235	CCM-0927-MET-22-KM-09	9/27/90	RADIAN	248.9	Reagent Blank KMnO ₄
CCM-236	CCM-0927-MET-22-ABS-09	"	"	286.9	Reagent Blank ABS
CCM-237	CCM-0927-MET-22-ST-08	"	"	258.4	Front 1/2 Ace
CCM-238	" " " A21-ST-08	"	"	225.0	Front 1/2 Nitric
CCM-239	" " " HCL-ST-08	"	"	672.2	Known Contents ABS
CCM-240	" " " KM-ST-08	"	"	—	Known Contents KMnO ₄
CCM-241	" " " F-ST-08	"	"	—	Filter MP-43
CCM-242	CCM-0927-M22-PR-AN-ST-08	"	Thence	557.9	Front 1/2 Ace + H ₂ O
CCM-243	" " " PR-T-ST-08	"	"	145.3	Front 1/2 Thence
CCM-244	" " " IR-H ₂ O-ST-08	"	RADIAN	352.5	Known Contents H ₂ O
CCM-245	" " " IR-AN-ST-08	"	"	449.3	Back 1/2 Ace + H ₂ O
CCM-246	CCM-0927-HCL-H ₂ SO ₄ -ST-08-A	"	"	99.1	Known Contents H ₂ SO ₄
CCM-247	" " " H ₂ SO ₄ -ST-08-B	"	"	99.3	Known Contents H ₂ SO ₄
CCM-248	" " " NaOH-ST-08-B	"	"	52.0	Known Contents NaOH
CCM-249	" " " H ₂ SO ₄ -ST-08-C	"	"	99.4	Known Contents H ₂ SO ₄
CCM-250	CCM-0927-M22-F-ST-08	"	Thence	—	M22 Filter
CCM-251	" " " SM-ST-08	"	"	—	XAD + B
CCM-252	CCM-0926-SPU-SPU-07A	9/26/90	R.T.I.	—	Traps Sample
CCM-253	CCM-0926-SPU-SPU-07B	9/26/90	"	—	"
CCM-254	CCM-0926-SPU-SPU-07A	9/27/90	"	—	"

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CCM-255	CCM-0927-2po-IMP-8B	2/27/90	RTI	Impinger Sample
CCM-256	CCM-0928-HCl-H ₂ SO ₄ -ST-09-A	9/26/90	RADIAN	99.1 Inorganic Contents H ₂ SO ₄
CCM-257	CCM-0928-HCl-H ₂ SO ₄ -ST-09-B	"	"	99.4 Inorganic Contents H ₂ SO ₄
CCM-258	CCM-0928-HCl-NaOH-ST-09-B	"	"	42.8 Inorganic Contents NaOH
CCM-259	CCM-0928-HCl-H ₂ SO ₄ -ST-09-C	"	"	99.4 Inorganic Contents H ₂ SO ₄
CCM-260	CCM-0928-MET-PR-ST-09	"	"	146.6 Front 1/2 Acc
CCM-261	CCM-0928-MET-APR-ST-09	"	"	178.3 Front 1/2 Nitrogen
CCM-262	" " " - HW - ST-09	"	"	675.5 Inorganic Contents ASD
CCM-263	" " " - KM - ST-09	"	"	334.1 Inorganic Contents KMnO ₄
CCM-264	" " " - F - ST-09	"	"	Front 1/2 - 35
CCM-265	CCM-0928-M21-DR-AN-ST-09	"	TRANS	640.9 Front 1/2 Acc + MeCl ₂
CCM-266	" " " - PR-T-ST-09	"	"	171.7 Front 1/2 Toluene
CCM-267	" " " - IR-H ₂ O-ST-09	"	RADIAN	547.9 Inorganic Contents H ₂ O
CCM-268	" " " - IR-AN-ST-09	"	"	347.9 Back 1/2 Acc + MeCl ₂
CCM-269	" " " - F-ST-09	"	TRANS	M23 Filter
CCM-270	" " " - SN-ST-09	"	"	XAA # 10
CCM-271	CCM-0928-STOCK-W-A	9/28/90	RTI	3.68 x 10" (New) (REF)
CCM-272	CCM-0928-STOCK-W-B	9/28/90	RTI	3.94 x 10" (Old) (REF)
CCM-273	CCM-0928-STOCK-D-	9/28/90	"	Dry Vials X 2 (REF)
CCM-274	CCM-0926-ASH-A	9/26/90	PPK	Archive (REF)
CCM-275	-B	"	RTI	Spore Count (REF)
CCM-276	CCM-0927-ASH-A	9/27/90	PPK	Archive (REF)
CCM-277	-B	"	RTI	Spore Count (REF)
CCM-278	CCM-0928-ASH-A	9/28/90	PPK	Archive (REF)
CCM-279	-B	"	RTI	Spore Count (REF)
CCM-280	CCM-0926-PIP-01	9/26/90	"	"
CCM-281	-02	"	"	"
CCM-282	-03	"	"	"
CCM-283	-04	"	"	"
CCM-284	-05	"	"	"
CCM-285	-06	"	"	"
CCM-286	CCM-0927-PIP-01	9/27/90	"	"
CCM-287	-02	"	"	"
CCM-288	-03	"	"	"
CCM-289	-04	"	"	"
CCM-290	-05	"	"	"
CCM-291	-06	"	"	"

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	CCH - 292	CCH - 0928 - PIP - 01	9/28/90	RTI	Spore Count	(REF)
	CCH - 293	-02				
	CCH - 294	-03				
	CCH - 295	-04				
	CCH - 296	-05				
	CCH - 297	-06				
	CCH - 298	-07				
	CCH - 299	-08				
	CCH - 300	-09				
	CCH - 301	-10				
	CCH - 302	CCH - 0928 - SPU - Imp - 09A		RTI	Field Blank A (Lg)	
	CCH - 303	CCH - 0928 - SPU - Imp - 09B		RTI	Field Blank B (Sm)	
	CCH - 304	CCH - 0929 - PIP - 01	9/29/90	RTI	Ambient A (Lg)	
	CCH - 305	-02			Ambient B (Sm)	
	CCH - 306	-03				
	CCH - 307	-04				
	CCH - 308	-05				
	CCH - 309	-06				
	CCH - 310	CCH - 0929 - ASH - M	9/29/90	McG	Tray Sample	
	CCH - 311	CCH - 0929 - ASH - C	9/29/90	Radian		
	CCH - 312	CCH - 0929 - ASH - D	9/29/90	TLI		
	CCH - 313	CCH - 0929 - ASH - B	9/29/90	RTI	Spore Count	refuge
	CCH - 314	CCH - 0929 - ASH - A	9/29/90	Radian	archive	refuge
	CCH - 315	CCH - 0926 - ASH - MC	9/26/90	McG	COI/%C	
	CCH - 316	CCH - 0926 - ASH - MF	9/26/90	McG	COI/%C	
	CCH - 317	CCH - 0926 - ASH - D	9/26/90	TLI	COO/COF	
	CCH - 318	CCH - 0926 - ASH - C	9/26/90	Radian	metals	
	CCH - 319	CCH - 0927 - ASH - M	9/27/90	McG	COI/%C	
	CCH - 320	CCH - 0927 - ASH - C	9/27/90	Radian	metals	
	CCH - 321	CCH - 0927 - ASH - D	9/27/90	TLI	COO/COF	
	CCH - 322	CCH - 0928 - ASH - M	9/28/90	McG	COI/%C	
	CCH - 323	CCH - 0928 - ASH - D	9/28/90	TLI	COO/COF	
	CCH - 324	CCH - 0928 - ASH -	9/28/90	Radian	metals	
	CCH - 325	CCH - 0928 - Ground Water	9/28/90	Radian	archive	
	CCH - 326	CCH - 1004 - HCL - H ₂ SO ₄ - ST - F1-A	10/1/90	Radian	99.4	1004002 CONTENTS
	CCH - 327	" " " " - ST - F2-B	"	"	99.4	1004002 CONTENTS

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CCH-328	CCH-1001-MET-PR-ST-FB	10/1/90	Radian	122.6	Front 1/2 Acc
CCH-329	" " " - APR-ST-FB	"	"	151.1	Front 1/2 Nitric
CCH-330	" " " - HW-ST-FB	"	"	458.4	In-house Controls ABS
CCH-331	" " " - KM-ST-FB	"	"	189.1	In-house Controls KM
CCH-332	" " " - F-ST-FB	"	"	—	Filter MP-LS
CCH-333	CCH-1001-M23-F-ST-FB	"	Trane	—	M23 Filter
CCH-334	" " " - PR-AN-ST-FB	"	"	546.2	Front 1/2 Acc + MeCl ₂
CCH-335	" " " - PR-T-ST-FB	"	"	206.4	Front 1/2 Tan
CCH-336	" " " - IR-H ₂ O-ST-FB	"	Radian	214.3	In-house Controls
CCH-337	" " " - IR-AN-ST-FB	"	"	389.9	Back 1/2 Acc + MeCl ₂
CCH-338	CCH-1002-MET-PR-ST-10	10/2/90	Radian	245.9	Front 1/2 Acc
CCH-339	" " " - APR-ST-10	"	"	151.5	Front 1/2 Nitric
CCH-340	" " " - HW-ST-10	"	"	663.9	In-house Controls ABS
CCH-341	" " " - KM-ST-10	"	"	349.3	In-house Controls KM
CCH-342	" " " - F-ST-10	"	"	—	Filter MP-H ₂ O
CCH-343	CCH-1002-M23-PR-AN-ST-10	"	Trane	501.9	Front 1/2 Acc + MeCl ₂
CCH-344	" " " - PR-T-ST-10	"	"	199.1	Front 1/2 Tan
CCH-345	" " " - IR-H ₂ O-ST-10	"	Radian	378.1	In-house Controls
CCH-346	" " " - IR-AN-ST-10	"	"	353.8	Back 1/2 Acc + MeCl ₂
CCH-347	" " " - F-ST-10	"	Trane	—	M23 Filter
CCH-348	" " " - SM-ST-10	"	"	—	XAD #12
CCH-349	CCH-1002-HCl-H ₂ SO ₄ -ST-10-A	"	Radian	—	In-house Controls
CCH-350	" " " - H ₂ SO ₄ -ST-10-B	"	"	—	"
CCH-351	" " " - H ₂ SO ₄ -ST-10-B	"	"	—	"
CCH-352	" " " - H ₂ SO ₄ -ST-10-C	"	"	—	"
CCH-353	CCH-1002-MET-PR-ABS-10	"	"	392.8	Reagent Blank ABS
CCH-354	CCH-1002-MET-PR-KM-10	"	"	308.0	Reagent Blank KM ₂ O ₈
CCH-355	CCH-0923-PSD-01	"	"	—	Reagent Blank Rinse w/ACE
CCH-356	CCH-0925-PSD-02	"	"	—	"
CCH-357	CCH-0926-PSD-03	"	"	—	"
CCH-358	CCH-0926-PSD-04	"	"	—	"
CCH-359	CCH-0928-PSD-05	"	"	—	"
CCH-360	CCH-1002-PSD-06	"	"	—	"
CCH-361	CCH-0923-CON-ORG	"	"	—	Condensable Organics Rinse
CCH-362	CCH-0923-CON-ORG	"	"	—	Condensable Organics H ₂ O Rinse
CCH-363	CCH-1002-PSD-F-0	"	"	—	PSD Filter sets F+O
CCH-363	CCH-1002-PSD-B-5	"	"	—	PSD " " B+O Page No. _____

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CCH-364	CCH-1002-PSD-L-E	10-2-90	Radian	PSD filter sets L+E
CCH-365	CCH-1002-CON- OG -Filter	"	"	Condensable Deposits Filter
CCH-366	CCH-1002-SPU-IMP-FB-A	10/1/90	"	Spore Impinger
CCH-367	CCH-1001-SPU-IMP-FB-B	10/1/90	"	
CCH-368	CCH-1002-SPU-IMP-LOA	10/2/90		
CCH-369	CCH-1002-SPU-IMP-LOB	10/2/90		
CCH-370	CCH-1002-SPU-IMP-RQ-02	"		Poly Breach Response Box
CCH-371	CCH-0924-MET-F-ST-05	10/2/90	RADIAN	FILTER M-46
CCH-372	CCH-0002-M23-SH-R3	10/1/90	TRIANGLE	XAD
CCH-373	CCH-1003-ASH-A	10/3	RADIAN	ARCHIVE (R)
CCH-374	CCH-1003-ASH-B		RTI	SPORE COUNT (R)
CCH-375	CCH-1003-ASH-C		PPK	Metals
CCH-376	CCH-1003-ASH-D		TRIANGLE LABS	Dioxins
CCH-377	CCH-1003-ASH-M		McCoy LABS	LOI, CARBON
CCH-378	CCH-1003-PIP-01		RTI	Spore Count (R)
CCH-379	-02			
CCH-380	-03			
CCH-381	-04			
CCH-382	-05			
CCH-383	-06			

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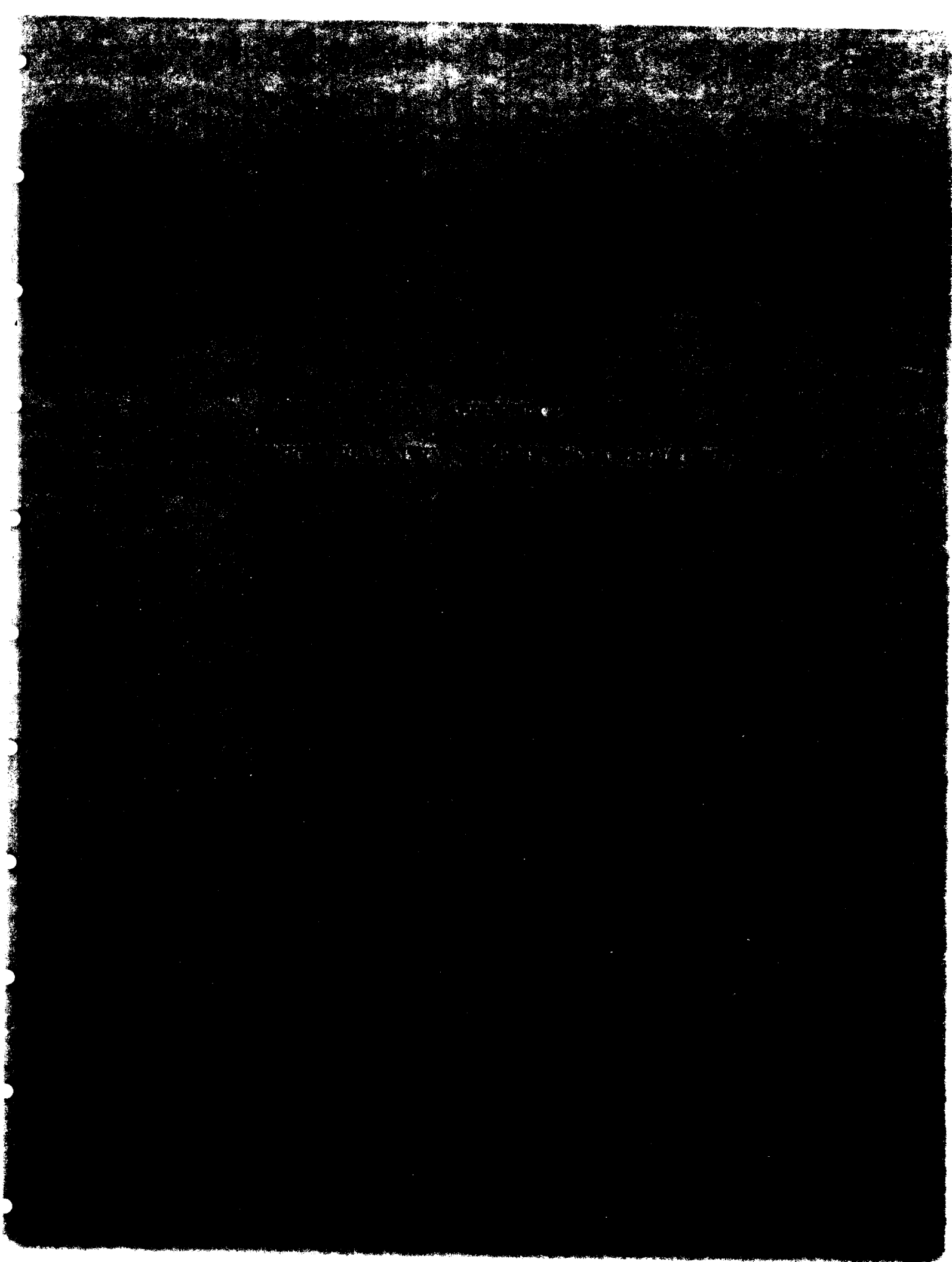
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MICROBIAL SURVIVABILITY CALCULATIONS
Central Carolina Hospital

Flue Gas Microbial Survivability

1. Impinger Samples

$$\text{No. of Spores in Sample} = \frac{\text{Weight(g) of Impinger Solution}}{\text{Specific Gravity(g/ml)}} \times \frac{\text{No. of Spores Detected*}}{\text{mls of Aliquot**}}$$

Run Number	
1	$\frac{5209.5}{1.155} \times \frac{<0.5}{100} = <23$
2	$\frac{5719.1}{1.155} \times \frac{0.5}{100} = <25$
3	$\frac{5073.2}{1.155} \times \frac{200}{100} = 8785$
4	$\frac{5886.5}{1.155} \times \frac{<0.5}{100} = <26$

Run Number	
5	$\frac{4838.4}{1.155} \times \frac{<200}{100} = <8378$
6	$\frac{4487.8}{1.155} \times \frac{30}{100} = 1166$
8	$\frac{5637.2}{1.155} \times \frac{>200}{100} = >9761$
9	$\frac{5274.7}{1.155} \times \frac{100}{100} = 4567$
10	$\frac{4750.2}{1.155} \times \frac{<0.5}{100} = <21$

*Detection limits were estimated to be (<1 spore/aliquot filtration) $\div 2$.

2. Concentration in Flue Gas

$$\text{Concentration in Flue Gas} = \frac{\text{No. of Spores in Sample}}{\text{Gas Sample Volume}}$$

Run Number	
1	$\frac{<23}{4.050 \text{ dscm}} = <6 \text{ spores/dscm}$
2	$\frac{<25}{3.841 \text{ dscm}} = <7 \text{ spores/dscm}$
3	$\frac{8785}{4.025 \text{ dscm}} = 2183 \text{ spores/dscm}$
4	$\frac{<26}{3.837 \text{ dscm}} = <7 \text{ spores/dscm}$
5	$\frac{<8378}{3.660 \text{ dscm}} = <2289 \text{ spores/dscm}$
6	$\frac{1166}{4.309 \text{ dscm}} = 271 \text{ spores/dscm}$

Run Number	
8	$\frac{>9761}{3.795 \text{ dscm}} = >2572 \text{ spores/dscm}$
9	$\frac{4567}{4.077 \text{ dscm}} = 1120 \text{ spores/dscm}$
10	$\frac{<21}{4.096 \text{ dscm}} = <5 \text{ spores/dscm}$

3. Number of Spores Exiting Stack

$$\text{No. of Spores Exiting the Stack} = (\text{Concentration}) \times (\text{Flue Gas Flow}) \times (\text{Minutes of Test})$$

Run Number	
1	$<6 \times 26.7 \times 240 = <3.84 \times 10^4$
2	$<7 \times 25.95 \times 240 = <4.36 \times 10^4$
3	$2183 \times 26.4 \times 240 = 13.8 \times 10^6$
4	$<7 \times 25.7 \times 240 = <4.31 \times 10^4$
5	$<2289 \times 24.5 \times 240 = <13.5 \times 10^6$
6	$271 \times 28.4 \times 240 = 18.5 \times 10^5$
8	$>2572 \times 25.1 \times 240 = >15.5 \times 10^6$
9	$1120 \times 25.8 \times 240 = 6.94 \times 10^6$
10	$<5 \times 26.8 \times 240 = <3.22 \times 10^4$

ASH SURVIVABILITY CALCULATIONS

Assumptions:

1. Detection limits were determined to be:

$$ND = \frac{1 \text{ spore/gram ash}}{2}$$

Run Number	Spores Detected	Dilution/Filtraton Factor	Final Value (spores/gram)
1	< 1	100	< 100
2	< 1	100	< 100
3	< 1	100	< 100
4	< 1	100	< 100
5	ND	NA	< 0.5
6	< 1	100	< 100
8	< 1	100	< 100
9	ND	NA	< 0.5
10	ND	NA	< 0.5

$$ND = \frac{< 1 \text{ spore/gram ash}}{2}$$

Run Number	Analytical Results (spores/g)	Ash Weight (lbs)	Spores in Ash (total spores)
1	< 100	21.2	< 9.62 x 10 ⁵
2	< 100	139	< 6.31 x 10 ⁶
3	< 100	22.4	< 1.02 x 10 ⁶
4	< 100	172.7	< 7.83 x 10 ⁶

Run Number	Analytical Results (spores/g)	Ash Weight (lbs)	Spores in Ash (total spores)
5	< 0.5	45.1	< 1.02 x 10 ⁴
6	< 100	41.4	< 1.88 x 10 ⁶
8	< 100	137.3	< 6.23 x 10 ⁶
9	< 0.5	77	< 1.75 x 10 ⁴
10	< 0.5	17.2	< 3.9 x 10 ³

OVERALL MICROBIAL SURVIVABILITY CALCULATIONS

1. Spore Survivability; MS_w (%)

$$MS_w = \frac{S_E + S_A}{S_S} \times 100$$

S_E = Spores exiting stack during test.
 S_A = Spores in ash.
 S_S = Spores (wet) spiked to incinerator.

Run Number	S_S	S_E	S_A	MS_w (%)*
1	6.0×10^{12}	$<3.84 \times 10^4$	$<9.62 \times 10^5$	$<1.7 \times 10^{-5}$
2	6.0×10^{12}	$<4.36 \times 10^4$	$<6.31 \times 10^6$	$<1.1 \times 10^{-4}$
3	6.0×10^{12}	13.8×10^6	$<1.02 \times 10^6$	2.3×10^{-4}
4	6.0×10^{12}	$<4.31 \times 10^4$	$<7.83 \times 10^6$	$<1.3 \times 10^{-4}$
5	6.0×10^{12}	$<13.5 \times 10^6$	$<1.02 \times 10^4$	$<2.3 \times 10^{-4}$
6	6.0×10^{12}	18.5×10^5	$<1.88 \times 10^6$	3.1×10^{-5}
8	6.0×10^{12}	$>15.5 \times 10^6$	$<6.23 \times 10^6$	$>2.6 \times 10^{-4}$
9	6.0×10^{12}	6.94×10^6	$<1.75 \times 10^4$	1.2×10^{-4}
10	6.0×10^{12}	$<3.22 \times 10^4$	$<3.9 \times 10^3$	$<6.0 \times 10^{-7}$

- *1) When either S_A or S_E is a positive value, but not both, the other DL is considered a zero in the calculations.
- 2) When both values are DL's (S_A and S_E), they are added to determine microbial survivability.

2. Microbial Log Survivability (MLR)

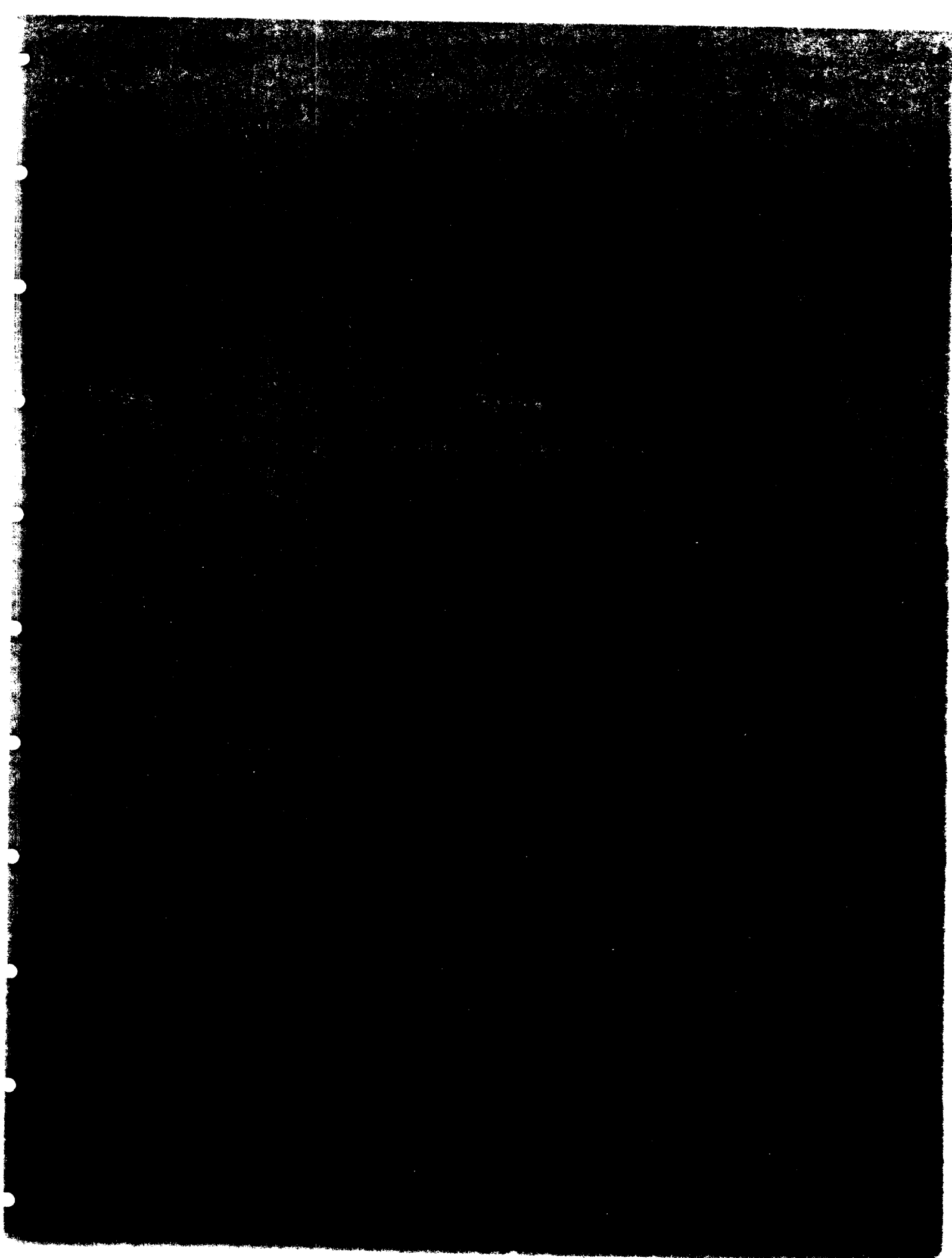
$$\text{MLR} = \text{Log } (S_s) - \text{Log } (S_A + S_E)$$

where nomenclature same as previous.

Run Number	Log S_s	Log ($S_A + S_E$)	MLR
1	12.8	< 6.0	> 6.8
2	12.8	< 6.8	> 6.0
3	12.8	7.1	5.7
4	12.8	< 6.9	> 5.9
5	12.8	< 7.1	> 5.6
6	12.8	6.3	6.5
8	12.8	> 7.2	< 5.6
9	12.8	6.8	5.9
10	12.8	< 4.6	> 8.2

Log ($S_A + S_E$) value may only incorporate the S_E value in the calculation as described in the previous section (a non-detect is not added to a detected value).

MLR Values shown above use the unrounded Log ($S_A + S_E$) value for calculations.



FULL CALIBRATION

DRY GAS METER CALIBRATION DATA

Date 3/30/90 Calibration Meter # 6837014 Meter Box # 9
 Barometric 29.98812 Cal Meter Factor 0.9965 Vacuum = 5"hg

Orifice Manometer in. H ₂ O	Manometer Pressure		Gas Volume Calibration		Gas Volume Dry Gas Meter		Calibration Meter		Dry Gas Meter		Time	Meter γ	Delta H ₂
	Cal. Meter	Meter	Calibration Meter	Meter	Dry Gas	Meter	In	Out	In	Out			
0.50	-0.11	Final 295.639	Init. 210.142	Final 210.142	Init. 210.142	Final 210.142	64	64	Init. 65	72	11.25		
		Init. 291.248	Mid 205.700	Mid 205.700	Mid 205.700	Mid 205.700	64	64	Mid 65	76		0.9955	1.81
		Total 4.391	Total 4.442	Total 4.442	Total 4.442	Total 4.442	64	64	Final 66	78			
1.00	-0.15	Final 306.114	Final 220.753	Final 220.753	Final 220.753	Final 220.753	64	64	Init. 66	80	16		
		Init. 297.600	Init. 212.125	Init. 212.125	Init. 212.125	Init. 212.125	64	64	Mid 68	85		1.0033	1.93
		Total 8.514	Total 8.628	Total 8.628	Total 8.628	Total 8.628	65	65	Final 70	90			
1.80	-0.24	Final 315.002	Final 229.759	Final 229.759	Final 229.759	Final 229.759	65	65	Init. 70	87	11.75		
		Init. 306.261	Init. 220.904	Init. 220.904	Init. 220.904	Init. 220.904	65	65	Mid 72	97		1.0123	1.76
		Total 8.741	Total 8.855	Total 8.855	Total 8.855	Total 8.855	65	65	Final 73	99			
3.05	-0.37	Final 322.810	Final 237.670	Final 237.670	Final 237.670	Final 237.670	65	65	Init. 73	94	8		
		Init. 315.234	Init. 230.000	Init. 230.000	Init. 230.000	Init. 230.000	65	65	Mid 75	102		1.0170	1.82
		Total 7.576	Total 7.670	Total 7.670	Total 7.670	Total 7.670	65	65	Final 75	103			
											Average	1.0070	1.83

DRY GAS METER CALIBRATION DATA

POST SANFORD

Date 10/4/90 Calibration Meter # 6830284 Meter Box # N-30
 Barometric 29.84 Cal Meter Factor 0.986 Vacuum = 16"hg

Orifice Manometer in. H2O	Manometer		Gas Volume		Gas Volume		Dry Gas		Calibration Meter		Dry Gas Meter		Time	Meter y	Delta Ha
	Pressure	Cal. Meter	Calibration	Meter	Final	Init.	Final	Init.	In	Out	In	Out			
0.70	0.00	Final	69.686	Final	46.059	Init.	77	77	Init.	76	74	74	9.25		
		Init.	65.292	Init.	41.700	Mid	77	77	Mid	76	76	76		0.9904	1.823693
		Total	4.394	Total	4.359	Final	77	77	Final	76	78	78			
0.70	0.00	Final	76.140	Final	52.507	Init.	76	76	Init.	77	75	75	13.5		
		Init.	69.686	Init.	46.059	Mid	77	77	Mid	78	76	76		0.9858	1.796052
		Total	6.454	Total	6.448	Final	78	78	Final	80	78	78			
0.70	0.00	Final	80.889	Final	57.255	Init.	77	77	Init.	80	77	77	9.25		
		Init.	76.509	Init.	52.868	Mid	76	76	Mid	81	78	78		0.9885	1.818938
		Total	4.380	Total	4.387	Final	76	76	Final	82	79	79			
0.00	0.00	Final	0.000	Final	0.000	Init.	0	0	Init.	0	0	0	0		
		Init.	0.000	Init.	0.000	Mid	0	0	Mid	0	0	0		ERR	ERR
		Total	0.000	Total	0.000	Final	0	0	Final	0	0	0			
Average													0.9882 1.8129		

DRY GAS METER CALIBRATION DATA

POST SANFORD

Date 10/4/90 Calibration Meter # 6830284 Meter Box # N-31
 Barometric 29.84 Cal Meter Factor 0.986 Vacuum = 17"HG

Orifice	Manometer		Gas Volume		Gas Volume		Calibration Meter		Dry Gas Meter		Time	Meter Y	Delta H ₂ O
	Pressure	Cal.	Cal.	Cal.	Dry Gas	Dry Gas	In	Out	In	Out			
0.67	0.00	Final	52.762	Final	774.965	Init.	76	76	Init.	80	76	7	
		Init.	49.500	Init.	771.700	Mid	76	76	Mid	81	76		1.798121
		Total	3.262	Total	3.265	Final	76	76	Final	82	77		
0.67	0.00	Final	57.927	Final	80.112	Init.	76	76	Init.	77	77	10.25	
		Init.	53.134	Init.	75.333	Mid	76	76	Mid	78	77		1.790193
		Total	4.793	Total	4.779	Final	76	76	Final	78	77		
0.67	0.00	Final	61.780	Final	83.953	Init.	76	76	Init.	79	77	8.25	
		Init.	57.927	Init.	80.112	Mid	76	76	Mid	78	79		1.790750
		Total	3.853	Total	3.841	Final	76	76	Final	77	81		
0.00	0.00	Final	0.000	Final	0.000	Init.	0	0	Init.	0	0	0	
		Init.	0.000	Init.	0.000	Mid	0	0	Mid	0	0		ERR
		Total	0.000	Total	0.000	Final	0	0	Final	0	0		
Average											0.9900 1.7930		

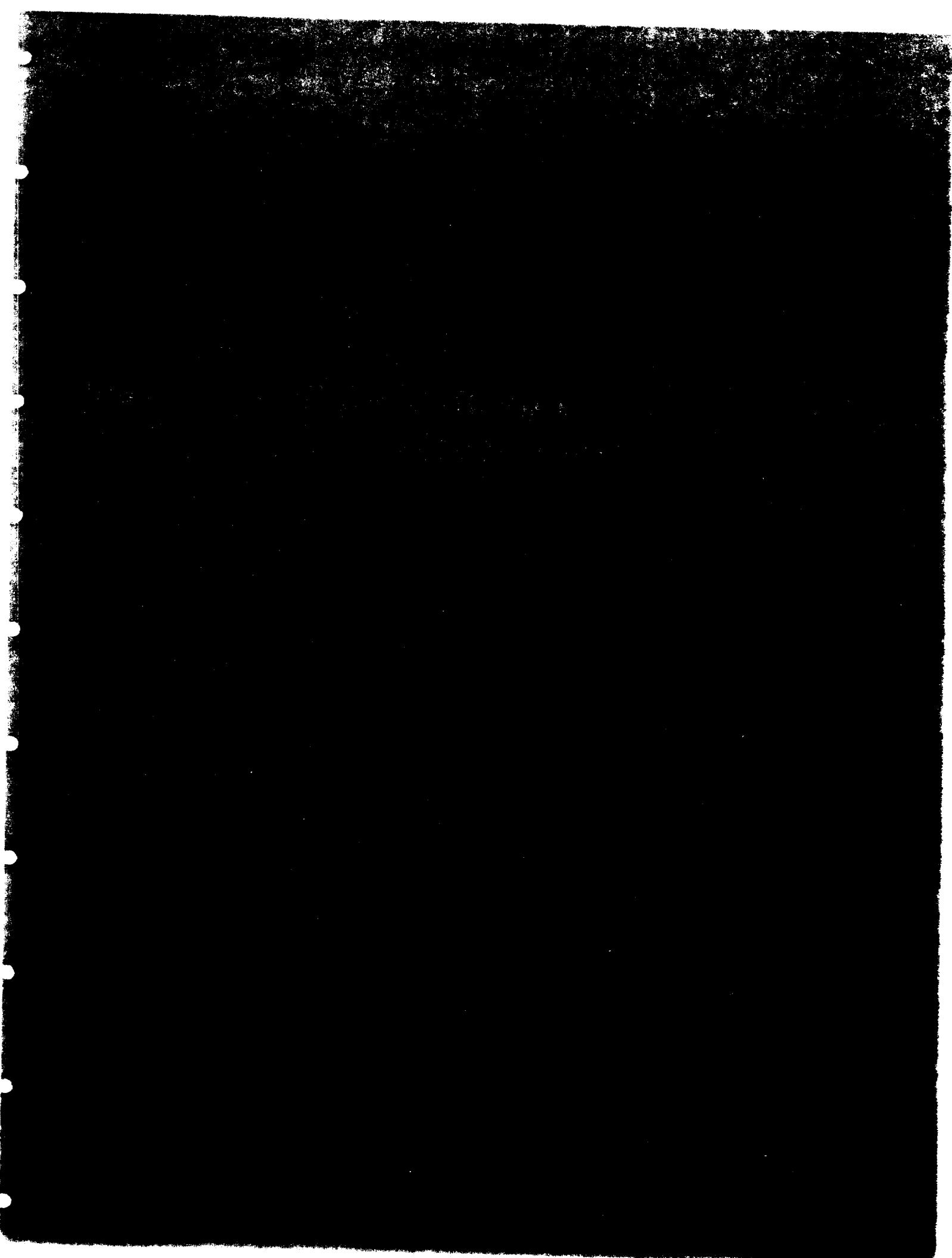
POST SANFORD

Date	10/5/90
Barometric	29.92

Calibration Meter # 6830284
Cal Meter Factor 0.986

Meter Box # N-32
Vacuum = 5"hg

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DEFINITION OF TERMS

SYMBOL	DEFINITIONS	UNITS
As	AREA OF STACK	in. ²
Cp	PITOT COEFFICIENT	--
Ca	CONCENTRATION OF PARTICULATE	grains/ft ³
Dn	DIAMETER OF SAMPLING NOZZLE	in.
ER	EMISSION RATE OF PARTICULATE	lb/hr
Kp	PITOT TUBE COEFFICIENT	--
Mfd	MOLE FRACTION OF DRY STACK GAS	--
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	lb/lb-mole
MWw	MOLECULAR WEIGHT OF WET STACK GAS	lb/lb-mole
	MOISTURE COLLECTED IN IMPINGERS	grams
P(std)	STANDARD PRESSURE (29.92 in. Hg)	in. Hg
Pb	BAROMETRIC PRESSURE	in. Hg
Pmg(avg)	AVERAGE GAUGE METER PRESSURE	in. Hg
Ps	ABSOLUTE STACK PRESSURE	in. Hg
	PARTICULATE CATCH	grams
Qsd	AVERAGE STACK DRY VOLUMETRIC FLOW RATE	dry ft ³ /min.
%CO2	PERCENT CO2 IN STACK GAS	--
%N2	PERCENT N2 IN STACK GAS	--
%O2	PERCENT O2 IN STACK GAS	--
%V	PERCENT MOISTURE IN STACK	--
%XS	PERCENT EXCESS AIR	--
	TOTAL SAMPLING TIME	min.
T(std)	STANDARD TEMPERATURE (68 F)	F
Tm(avg)	AVERAGE TEMPERATURE OF THE METER	F
Ts(avg)	AVERAGE TEMPERATURE OF THE STACK	F
Vm	TOTAL METERED VOLUME	ft ³
Vm(std)	STANDARD METERED VOLUME	dry standard ft ³
Vw(gas)	VOLUME OF WATER IN STACK GAS	standard ft ³
Vs	VELOCITY OF STACK GAS	ft/min
Y	TEST METER CALIBRATION COEFFICIENT	--

SAMPLE CALCULATIONS

```

PLANT SITE      : SANFORD, NC      INPUT PARAMETERS:
SAMPLING LOCATION : EXHAUST STACK  : =====
DATE            : 09/20/90         : As      = 254.47 sq.in.   Ps      = 29.88 in. Hg   PARTICULATE= 0.1013 grams:
                                           : Cp      = 0.84           %CO2    = 15.76       CATCH          :
EXAMPLE #1: TOXIC METALS, RUN 01     : Dn      = 0.385 in.     %N2     = 81.10       MOISTURE   = 223.10 grams:
                                           : Kp      = 84.59         %O2     = 3.14       COLLECTED     :
STANDARD CONDITIONS: 68 F, 29.92 in Hg : P(std)  = 29.92 in. Hg   T(std)  = 68.00 F   SAMPL TIME  = 240 min. :
                                           : Pb      = 29.89 in. Hg   Tm(avg) = 93.99 F   Ts(avg)    = 751.54 F :
                                           : Pmg(avg)= 0.62 in. H2O   Vm      = 106.85 ft^3  Y           = 0.9992 :
                                           : =====

```

- 1) Volume of dry gas sampled at standard conditions:

$$Vm(std) = \frac{Y * Vm * (T(std) + 460) * Ps}{P(std) * (Tm(avg) + 460)}$$

$$Vm(std) = \frac{(0.999 * 106.85 * (68 + 460) * 29.88)}{(29.92 * (93.99 + 460))}$$

$$Vm(std) = 101.62 \text{ dscf}$$

- 2) Volume of water vapor at standard conditions:

$$Vw(gas) = 0.04707 \text{ ft}^3/\text{g} * (\text{moisture collected})$$

$$Vw(gas) = (0.04707 * 223.10)$$

$$Vw(gas) = 10.49 \text{ scf}$$

- 3) Percent moisture in stack:

$$\%V = \frac{100 * Vw(gas)}{Vm(std) + Vw(gas)}$$

$$\%V = \frac{(100 * 10.49)}{(101.62 + 10.49)}$$

$$\%V = 9.35$$

- 4) Mole fraction of dry stack gas:

$$MFd = \frac{100 - \%V}{100}$$

$$MFd = \frac{(100 - 9.35)}{100}$$

$$MFd = 0.906$$

- 5) Average molecular weight of dry stack gas:

$$MWd = (0.44 * \%CO_2) + (0.32 * \%O_2) + (0.28 * \%N_2)$$

$$MWd = (0.44 * 15.76) + (0.32 * 3.14) + (0.28 * 81.10)$$

$$MWd = 30.65 \text{ lb/lb-mole}$$

6) Average molecular weight of wet stack gas:

$$MWw = MWd * MFd + 18.0 * (1.0 - MFd)$$

$$MWw = 30.65 * 0.906 + 18.0 * (1.0 - 0.906)$$

$$MWw = 29.46 \text{ lb/lb-mole}$$

7) Stack velocity (feet/min) at stack conditions:

$$Vs = Kp * Cp * [SQRT(dP)]_{avg} * (SQRT[(Ts)_{avg}]) * [SQRT(1/Ps * MWw)] * 60$$

$$Vs = 1372.275 \text{ fpm}$$

8) Average stack dry volumetric flow rate:

$$Qsd = \frac{Vs * As * MFd * (T(std) + 460) * Ps}{144 \text{ sq.in./cu.ft.} * (Ts(avg) + 460) * P(std)}$$

$$Qsd = 1372.28 * 254.47 * 0.906 * (68.0 + 460) * 29.88 / (144 * (751.54 + 460) * 29.92)$$

$$Qsd = 956.38 \text{ dscfm}$$

9) Isokinetic sampling rate (%):

$$\%I = \frac{1039.5746 * Vm(std) * (Ts(avg) + 460)}{Vs * \text{samp. time} * Ps * MFd * (Dn)^2}$$

$$\%I = (1039.5746 * 101.62 * (751.54 + 460)) / (1372.28 * 240 * 29.88 * 0.906 * (0.385)^2)$$

$$\%I = 96.77$$

10) Excess air (%):

$$\%XS = \frac{100 * \%O_2}{(0.264 * \%N_2) - \%O_2}$$

$$\%XS = (100 * 3.14) / ((0.264 * 81.10) - 3.14)$$

$$\%XS = 17.17$$

11) Concentration of particulate:

$$Ca = (\text{particulate catch}) / Vm(std) / 453.59 * 7000$$

$$Ca = 0.1013 / 101.62 / 453.59 * 7000$$

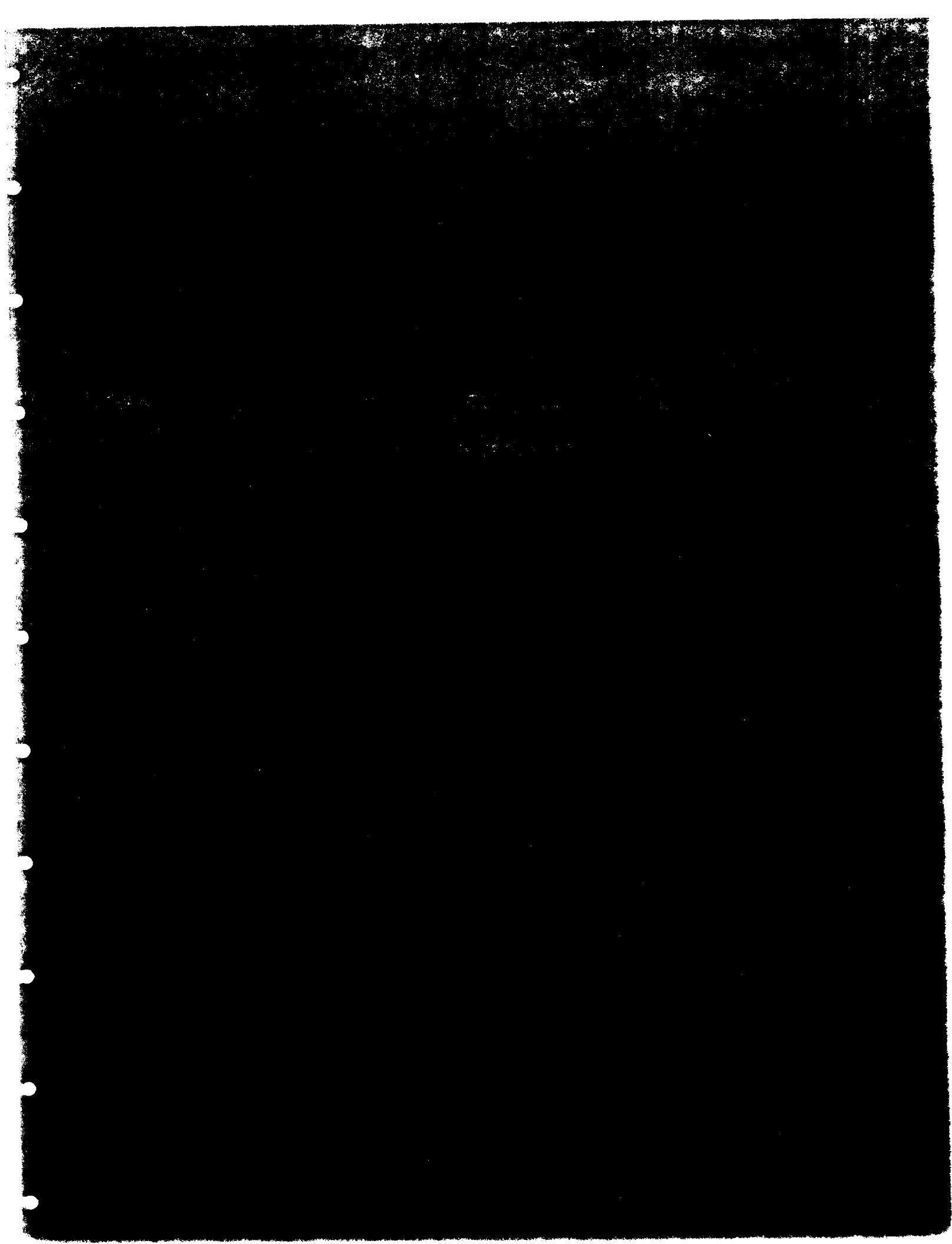
$$Ca = 0.0154 \text{ grains/dscf}$$

12) Particulate Emissions Rate:

$$ER = (\text{concentration}) * (Q_{sd}) * 60 / 7000$$

$$ER = 0.0154 * 956.38 * 60 / 7000$$

$$ER = 0.126 \text{ lb/hr}$$



PROJECT PARTICIPANTS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Mike Toney, Work Assignment Manager

RADIAN CORPORATION

Winton Kelly	Project Director
Larry Romesburg	Task Manager
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Bill Mayhew	CEM Operations Lead
Mike Hartman	CEM Operator and Team Leader
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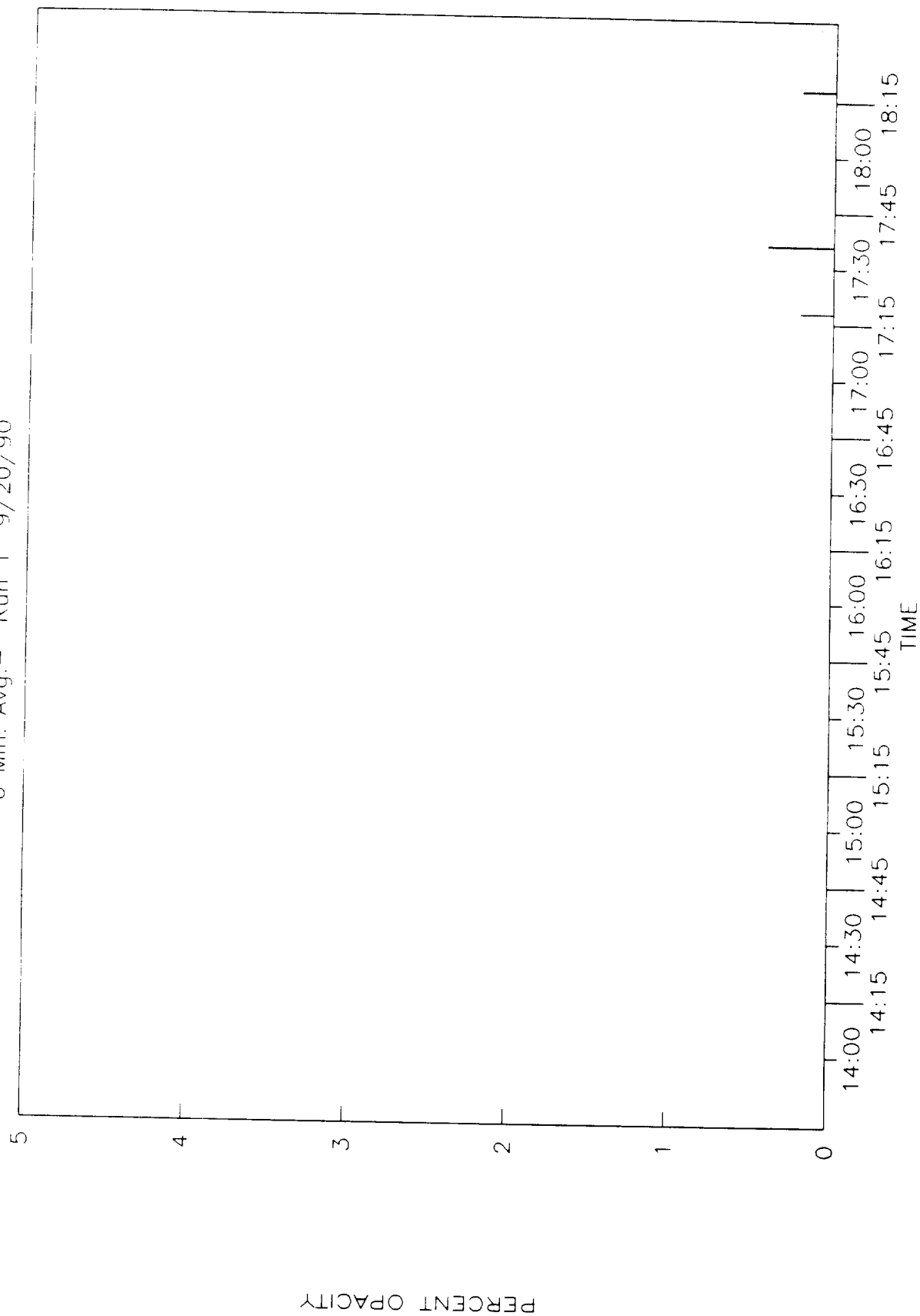
Karen Hendry	Spore Analyses
Keith Leese	Spore Analyses
Lisa Williams	Spore Analyses

APPENDIX I

NIRLE MISSILE OBSERVATION PLOTS

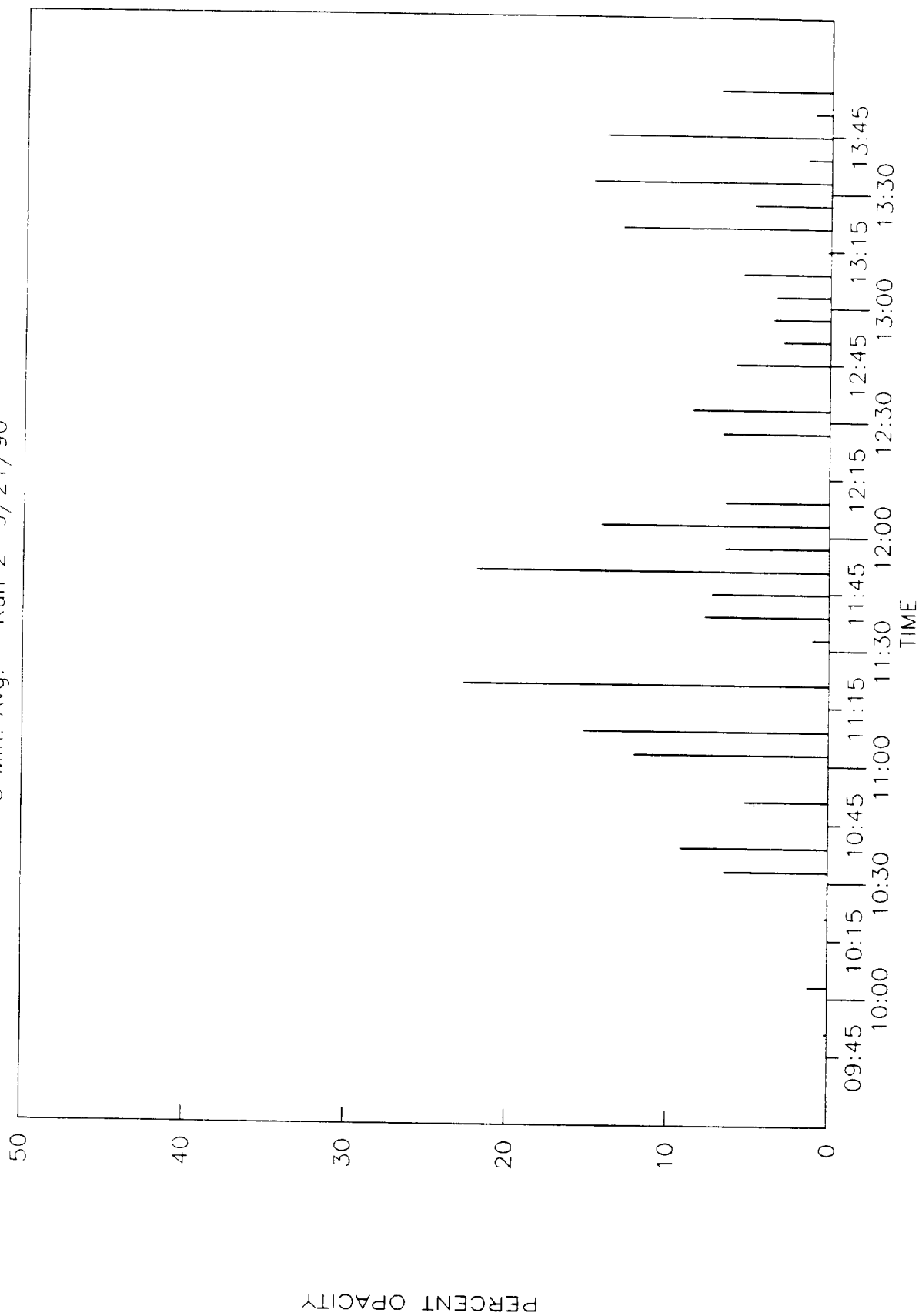
VISIBLE EMISSIONS OBSERVATIONS- CCH

6 Min. Avg.- Run 1 9/20/90



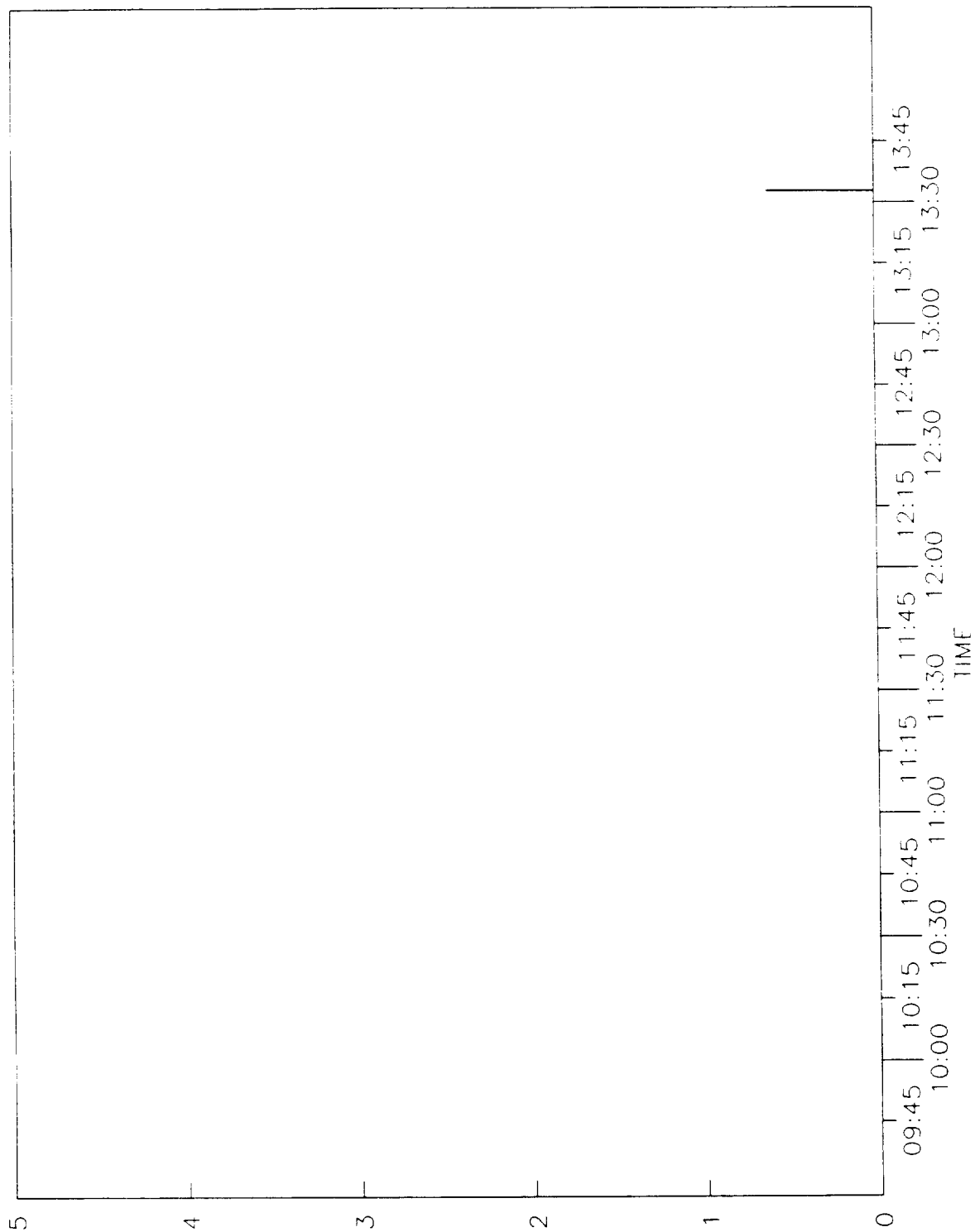
VISIBLE EMISSIONS OBSERVATIONS--CCH

6 Min. Avg.-- Run 2 9/21/90



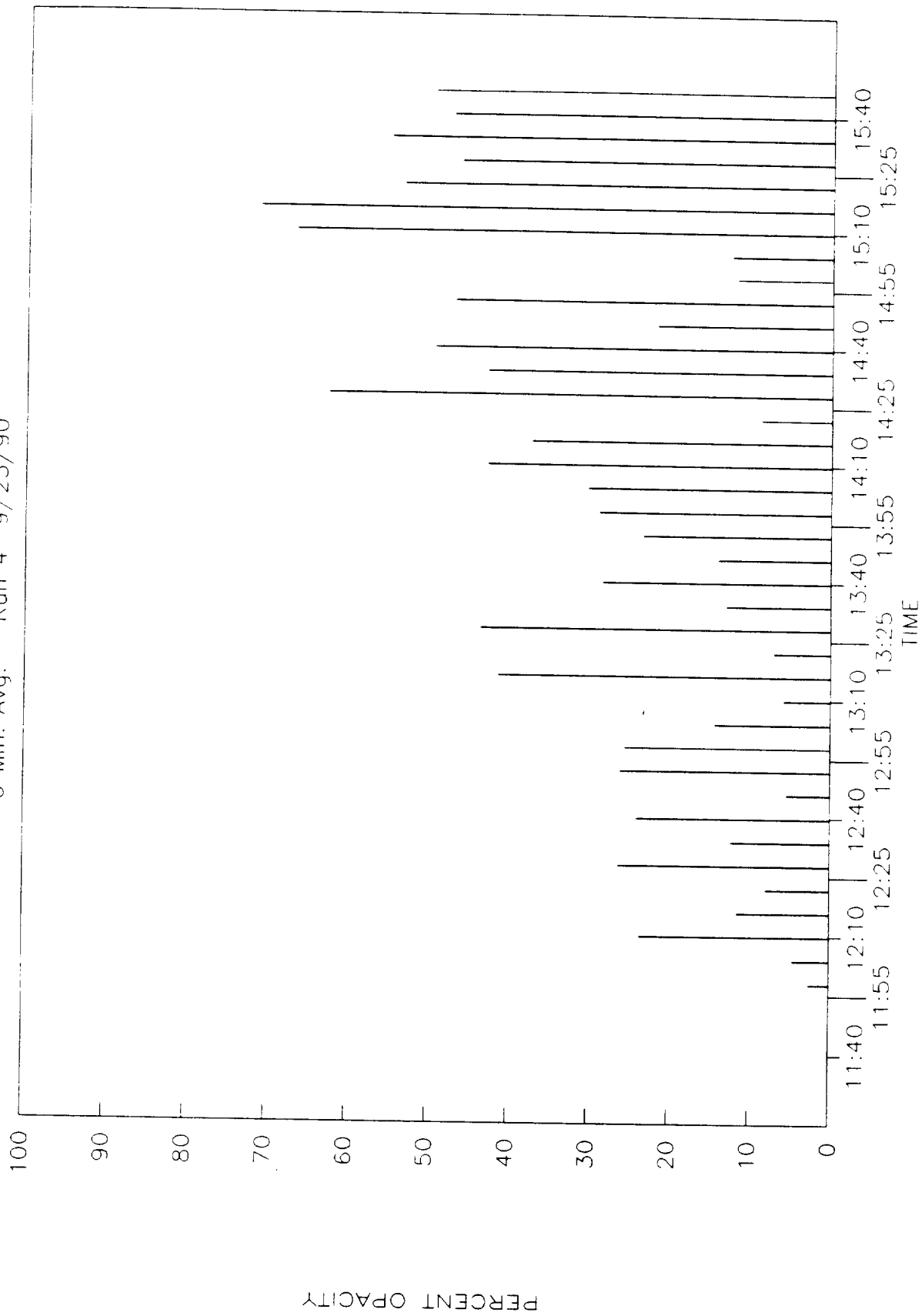
VISIBLE EMISSIONS OBSERVATIONS—CCH

6 Min. Avg. Run 3 9/22/90



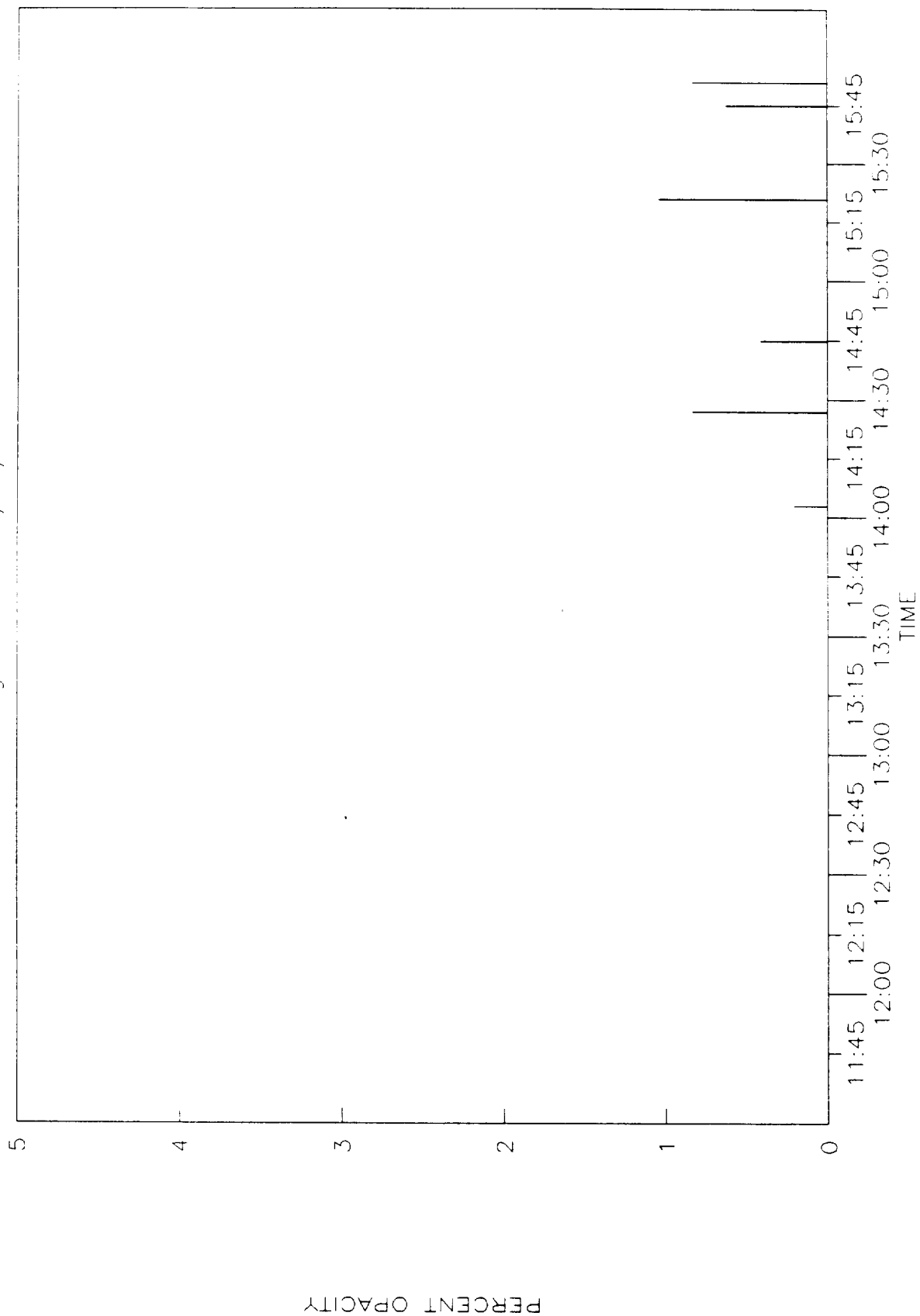
VISIBLE EMISSIONS OBSERVATIONS - CCH

6 Min. Avg. - Run 4 9/23/90



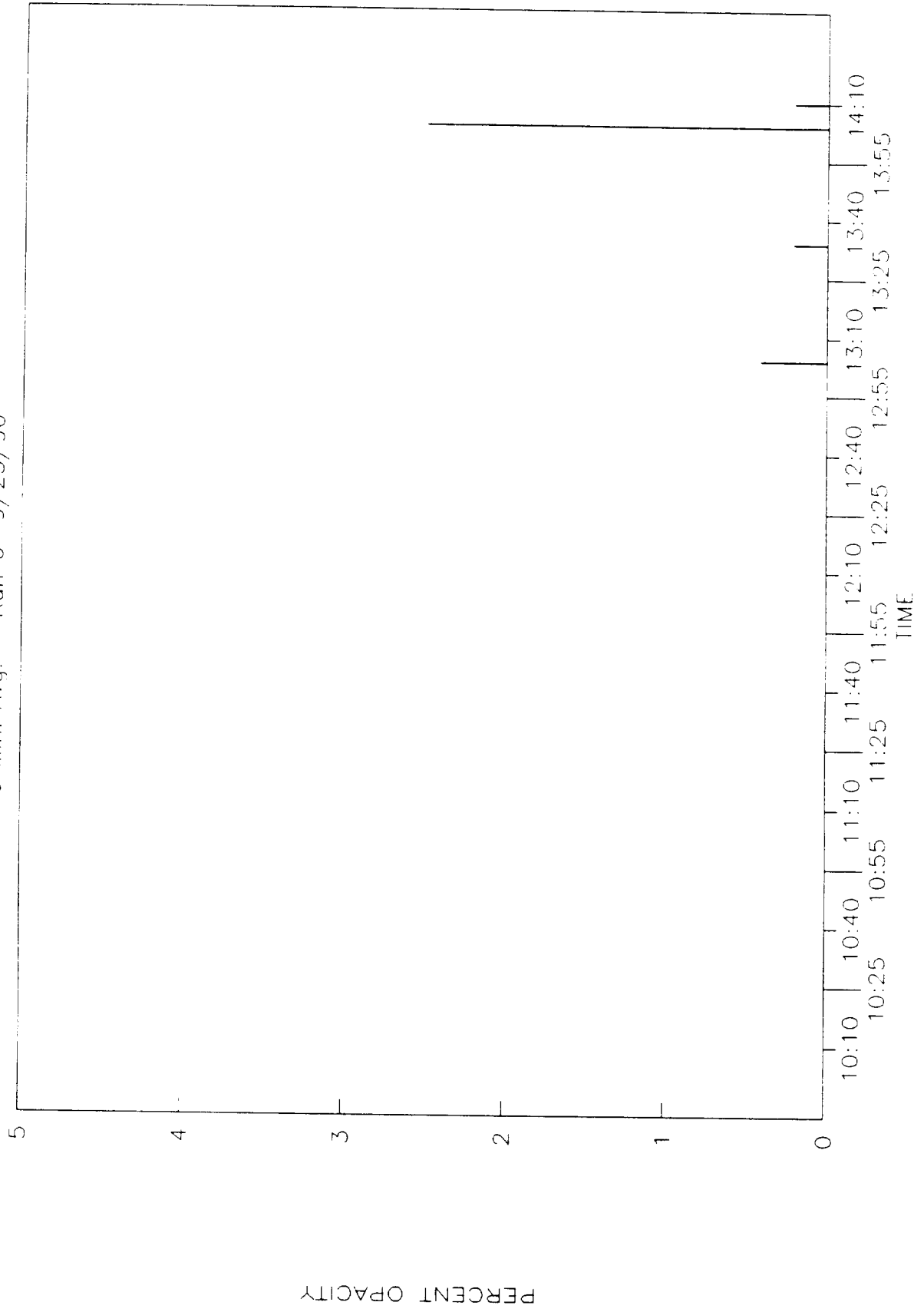
VISIBLE EMISSIONS OBSERVATIONS—CCH

6 Min. Avg.— Run 5 9/24/90



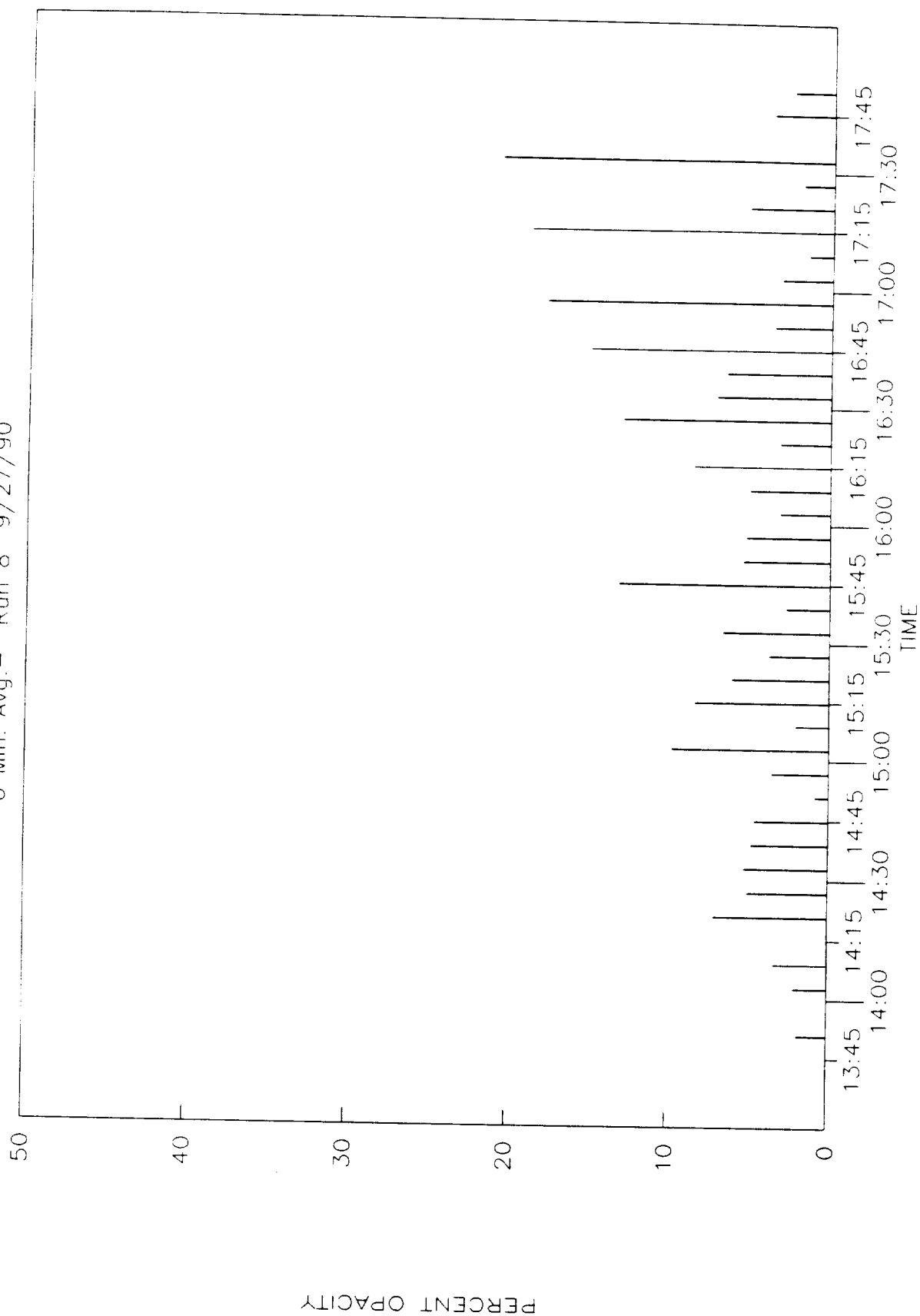
VISIBLE EMISSIONS OBSERVATIONS—CCH

6 Min. Avg. Run 6 9/25/90



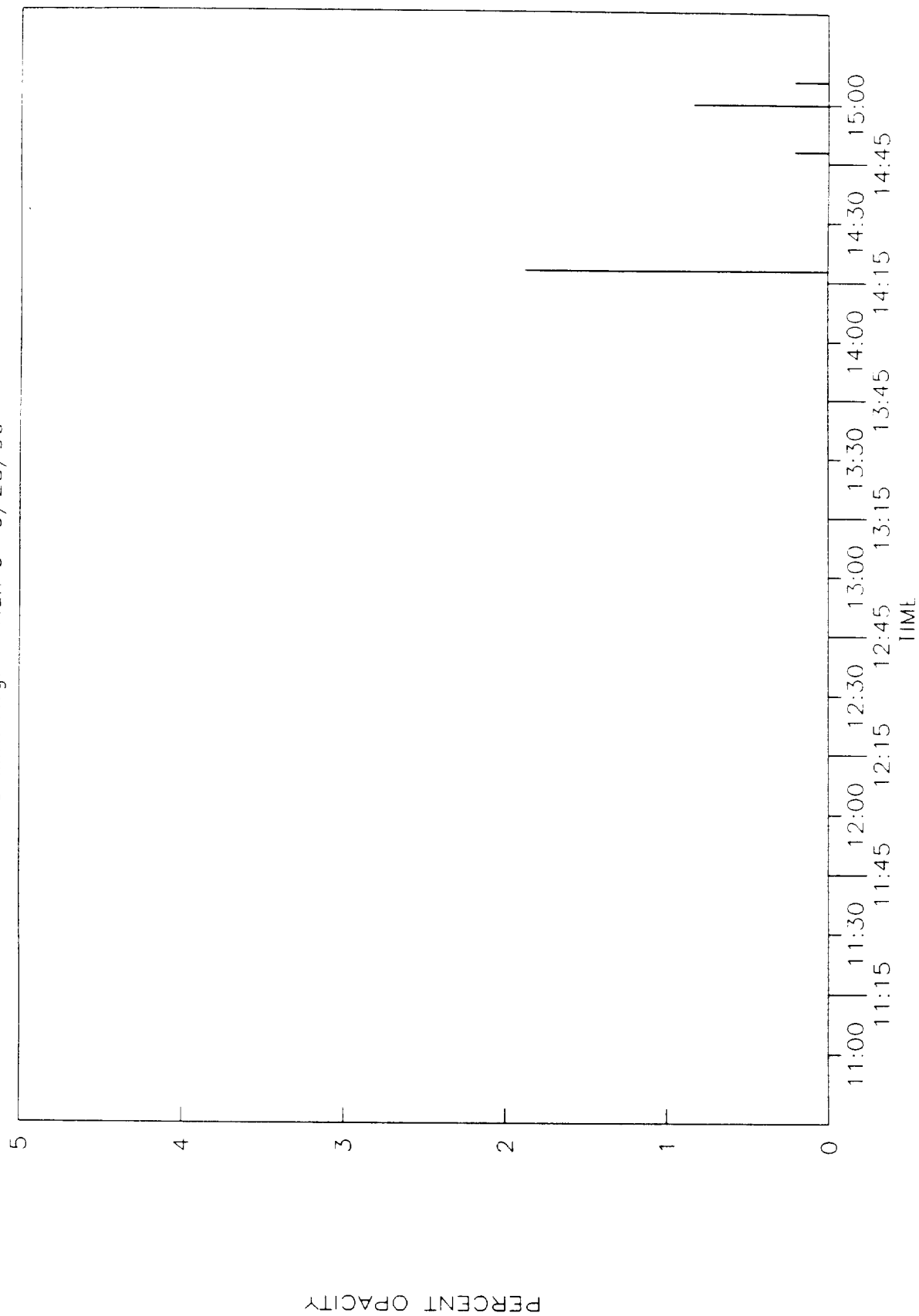
VISIBLE EMISSIONS OBSERVATIONS—CCH

6 Min. Avg.— Run 8 9/27/90



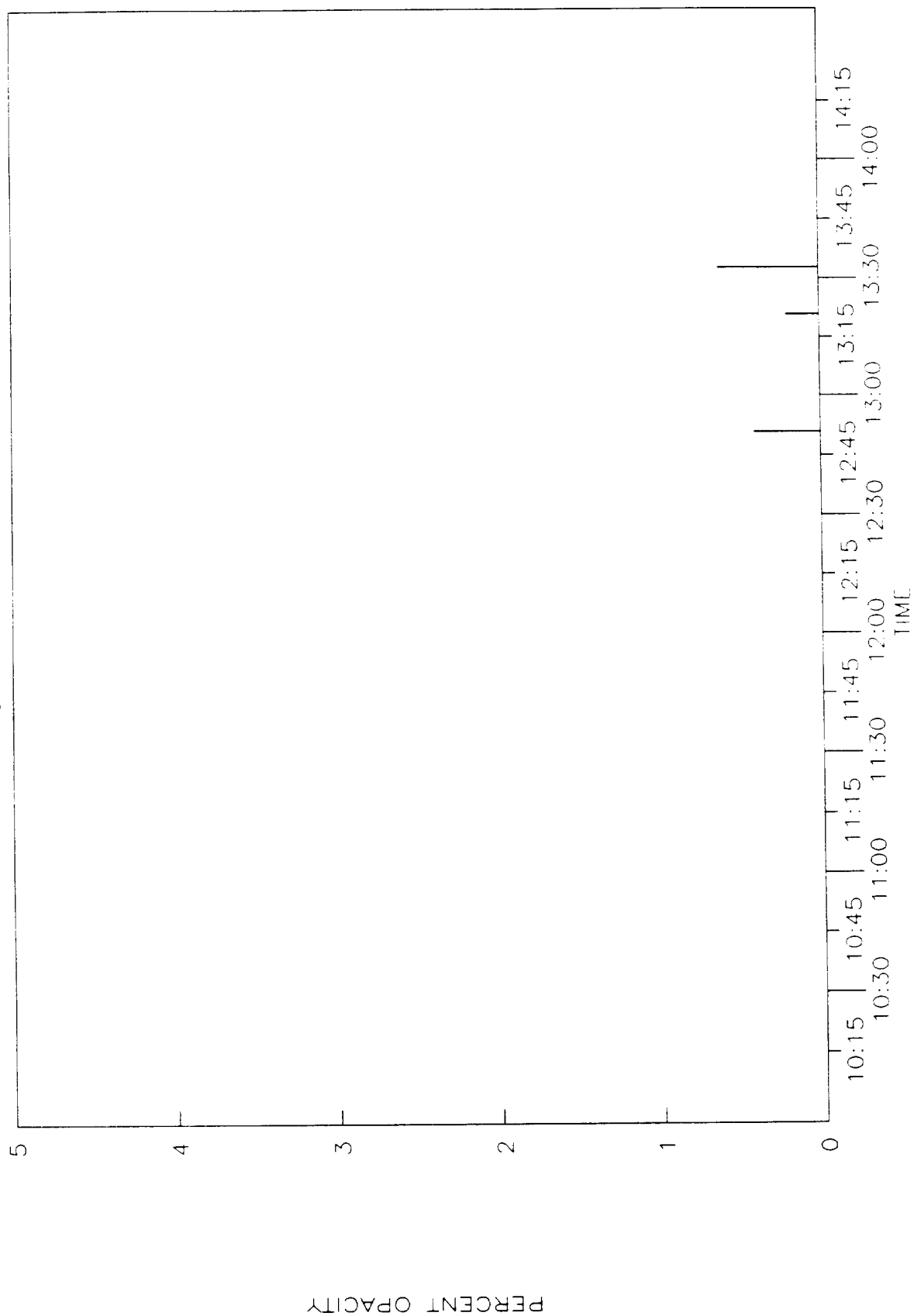
VISIBLE EMISSIONS OBSERVATIONS—CCH

6 Min. Avg.— Run 9 9/28/90



VISIBLE EMISSIONS OBSERVATIONS--CCH

6 Min. Avg.-- Run 10 10/02/90



APPENDIX

SAMPLING AND ANALYTICAL METHODS

Proposed Method

and 1000s from Starbuck.

100-443887-100

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

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APPENDIX K.1

EPA PROPOSED METHOD 82

DETERMINATION OF PCB AND CFC FROM STATIONARY SOURCES

ENVIRONMENTAL PROTECTION AGENCY**40 CFR Part 60****Standards of Performance for New Stationary Sources; Appendix A—Addition of Methods for Measurement of Polychlorinated Dibenzo-p-Dioxins, Polychlorinated Dibenzofurans, and Hydrogen Chloride Emissions From Stationary Sources**

[AD-FRL-3694-2]

AGENCY: Environmental Protection Agency (EPA).**ACTION:** Proposed rule and notice of public hearing.

SUMMARY: The purpose of this proposed rule is to add Method 23, "Determination of Polychlorinated Dibenzo-p-Dioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) from Stationary Sources," and Method 26, "Determination of Hydrogen Chloride Emissions from Stationary Sources" to Appendix A of CFR part 60. These methods are being proposed to determine compliance with subparts Ca and Ea of part 60.

A public hearing will be held, if requested, to provide interested persons an opportunity for oral presentation of data, views, or arguments concerning the proposed rule.

DATES: *Comments.* Comments must be received on or before March 5, 1990.

Public Hearing. If anyone contacts EPA requesting to speak at a public hearing by January 10, 1990, a public hearing will be held February 7, 1990, beginning at 10 a.m. Persons interested in attending the hearing should call the contact mentioned under **ADDRESSES** to verify that a hearing will be held.

Request to Speak at Hearing. Persons wishing to present oral testimony must contact EPA by January 10, 1990.

ADDRESSES: *Comments.* Comments should be submitted (in duplicate if possible) to: Air Docket (LE-131), Attention: Docket Number A-89-11, U.S. Environmental Protection Agency, room M-1500, 1st Floor, Waterside Mall, 401 M Street SW., Washington, DC 20460.

Public Hearing. If anyone contacts EPA requesting a public hearing, it will be held at EPA's Emission Measurement Laboratory Building, Research Triangle Park, North Carolina. Persons interested in attending the hearing or wishing to present oral testimony should notify Gary McAlister, Emission Measurement Branch (MD-19), Technical Support Division, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone (919) 541-1062.

Docket. Docket No. A-89-11, containing materials relevant to this rulemaking, is available for public inspection and copying between 8 a.m. and 3:30 p.m., Monday through Friday, at EPA's Air Docket, room M-1500, 1st Floor, Waterside Mall, 401 M Street SW., Washington, DC 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Cary McAlister or Roger Shigehara, Emission Measurement Branch (MD-19), Technical Support Division, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-1062.

SUPPLEMENTARY INFORMATION:**I. The Rulemaking**

Under subparts Ca and Ea, the EPA is proposing to regulate emissions from municipal waste combustors (MWCs) which will include setting emission limits for polychlorinated dibenzo-p-dioxins (PCDDs, CDDs, or dioxins), polychlorinated dibenzofurans (PCDFs, CDFs, or furans), and hydrochloric acid (HCl). There are presently no methods published in 40 CFR part 60, appendix A, to measure any of these pollutants. This action would propose one method to measure the PCDDs and PCDFs and another method to measure the HCl.

Summary of Reference Methods

Method 23 is used to measure the emission of PCDDs and PCDFs from MWCs. A sample is withdrawn isokinetically from the stack through a probe, a filter, and a trap packed with a solid adsorbent. The PCDDs and PCDFs are collected in the probe, on the filter, and on the solid adsorbent. The PCDDs and PCDFs are extracted from the particulate matter and the adsorbent with a hot organic solvent. The extracted PCDDs and PCDFs are separated by capillary gas chromatography and then each isomer is identified and measured with mass spectrometry (GC/MS). The total PCDDs and PCDFs are the sum of the individual isomers. Toxicity factors are not used in the calculation.

Method 26 is used to measure the emission of HCl from MWCs. A sample is withdrawn at a constant rate from the stack through a probe and impingers filled with a dilute acid. The HCl is collected in the impinger solution. The chloride ion is separated by ion chromatography and measured by a conductivity detector.

Background

In 1983, the American Society of Mechanical Engineers (ASME) recognized that the testing for PCDDs

and PCDFs needed to be standardized. In February of 1984, the ASME convened a committee of government representatives, testing consultants, equipment manufacturers, and incinerator operators to write a standard procedure for PCDDs and PCDFs. This eventually distributed as a draft ASME protocol in December of 1984. The procedure that we are proposing was derived from this draft ASME protocol. We are proposing significant changes in the quality assurance requirements and the solvents used to recover the sample. Because more labeled compounds are available, the proposed method will require additional labeled internal standards and surrogate compounds which will provide better representation of the entire range of PCDDs and PCDFs. Under the proposal the filter and solid adsorbent would be extracted in the laboratory with toluene to assure a high PCDD and PCDF recovery efficiency. Additionally the proposed sample recovery solvents used for rinsing the sample train glassware in the field would be acetone followed by methylene chloride with a final quality assurance rinse using toluene. EPA will continue to review the toluene field rinse quality assurance results and continue to evaluate the desirability of replacing methylene chloride with toluene for field rinsing sample glassware.

II. Administrative Requirements*A. Public Hearing*

A public hearing will be held, if requested, to discuss the proposed test methods in accordance with section 307(d)(5) of the Clean Air Act. Persons wishing to make oral presentations should contact EPA at the address given in the **ADDRESSES** section of this preamble. Oral presentations will be limited to 15 minutes each. Any member of the public may file a written statement with EPA before, during, or within 30 days after the hearing. Written statements should be addressed to the Air Docket address given in the **ADDRESSES** section of this preamble.

A verbatim transcript of the hearing and written statements will be available for public inspection and copying during normal working hours at EPA's Air Docket in Washington, DC (see **ADDRESSES** section of this preamble).

B. Docket

The docket is an organized and complete file of all the information submitted to or otherwise considered by EPA in the development of this proposed

rulemaking. The principal purposes of the docket are: (1) To allow interested parties to identify and locate documents so that they can effectively participate in the rulemaking process and (2) to serve as the record in case of judicial review (except for interagency review materials) [section 307(d)(7)(A)].

C. Office of Management and Budget Review

Executive Order 12291 Review. Under Executive Order 12291, EPA must judge whether a regulation is "major" and, therefore, subject to the requirement of a regulatory impact analysis. The proposal of these test methods is not major because it will not have an annual effect on the economy of \$100 million or more; it will not result in a major increase in costs or prices; and there will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of U.S.-based enterprises to compete with foreign-based enterprises in domestic or export markets. Any burden resulting from the use of these methods is considered in the burden estimate for the regulation requiring the use of these methods.

D. Regulatory Flexibility Act Compliance

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that this attached rule, if promulgated, will not have an economic impact on small entities because no additional costs will be incurred from this action.

This proposal does not contain any information collection requirements subject to OMB review under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

List of Subjects in 40 CFR Part 60

Air pollution control, Municipal waste combustors, MWCs, Polychlorinated dibenzo-p-dioxins, Polychlorinated dibenzofurans, Hydrogen chloride.

Dated: November 30, 1989.

William K. Reilly,

Administrator.

The EPA proposes to amend title 40, part 60 of the Code of Federal Regulations as follows:

1. The authority citation for part 60 continues to read as follows:

Authority: 42 U.S.C. 7401, 7411, 7414, 7416, 7601.

2. Appendix A is amended by adding Methods 23 and 26 to read as follows:

Appendix A—Reference Methods

• • • • •

Method 23—Determination of Polychlorinated Dibenzo-p-Dioxins Polychlorinated Dibenzofurans From Stationary Sources

1. Applicability and Principle

1.1 Applicability. This method is applicable to the determination of polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) from stationary sources.

1.2 Principle. A sample is withdrawn from the gas stream isokinetically and collected in the sample probe, on a glass fiber filter, and on a packed column of adsorbent material. The PCDDs and PCDFs are extracted from the sample, separated by high resolution gas chromatography, and measured by high resolution mass spectrometry.

2. Apparatus

2.1 Sampling. A schematic of the sampling train used in this method is shown in Figure 23-1. The train is identical to that described in Section 2.1 of Method 5 of this appendix with the following additions:

2.1.1 Nozzle. The nozzle shall be made of nickel, nickel plated stainless steel, quartz, or borosilicate glass.

BILLING CODE 6899-50-45

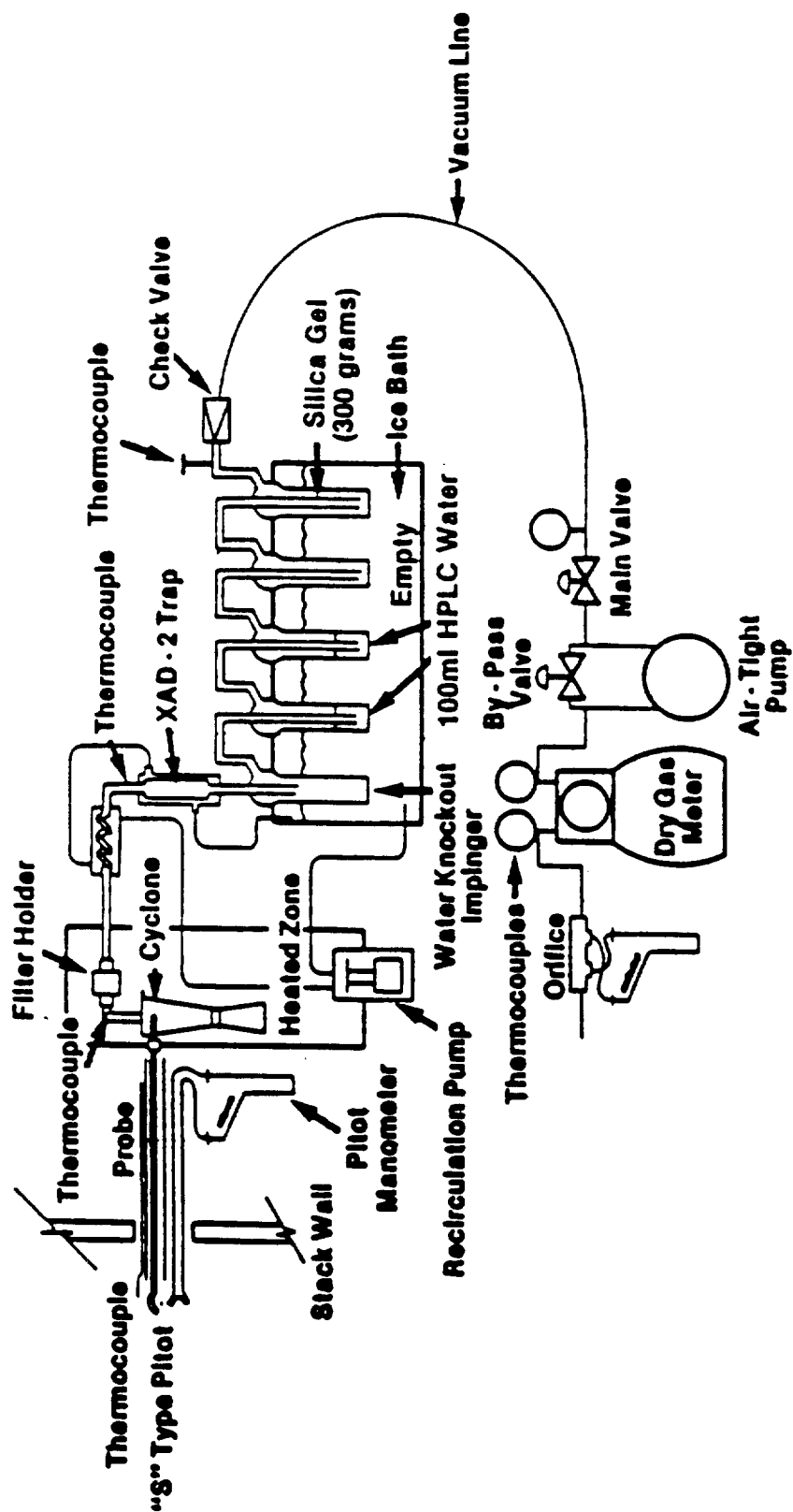


Figure 1. CDD/CDF Sampling Train Configuration

2.1.2 Sample Transfer Lines. The sample transfer lines, if needed, shall be heat traced, heavy walled TFE (1/4 in. OD with 1/8 in wall) with connecting fittings that are capable of forming leak-free, vacuum-tight connections without using sealing greases. The line shall be as short as possible and must be maintained at 120 °C.

2.1.1 Filter Support. Teflon or Teflon coated wire.

2.1.2 Adsorbent Module. Glass container to hold the solid adsorbent. A schematic diagram is shown in Figure 23-2. Other physical configurations of the resin trap/condenser assembly are acceptable. The

connecting fittings shall form leak-free, vacuum tight seals. No sealant greases shall be used in the sampling train. A coarse glass frit is included to retain the adsorbent.

2.1.3 Condenser. Glass, coil type with compatible fittings. A schematic diagram is shown in Figure 23-2.

2.1.4 Water Bath. Thermostatically controlled to maintain the gas temperature exiting the condenser at <20 °C (68 °F).

2.2 Sample Recovery.

2.2.1 Fitting Caps. Ground glass, Teflon or aluminum foil to cap off the sample exposed sections of the train.

2.2.2 Wash Bottle. Teflon, 500-ml.

2.2.3 Probe Liner and Probe-Nozzle Brushes. Inert bristle brushes with precleaned stainless steel or Teflon handles. The probe brush shall have extensions of stainless steel or Teflon, at least as long as the probe. The brushes shall be properly sized and shaped to brush out the probe liner and nozzle.

2.2.4 Filter Storage Container. Sealed filter holder, wide-mouth amber glass jar with Teflon-lined cap, or aluminum foil.

BILLING CODE 6560-50-M

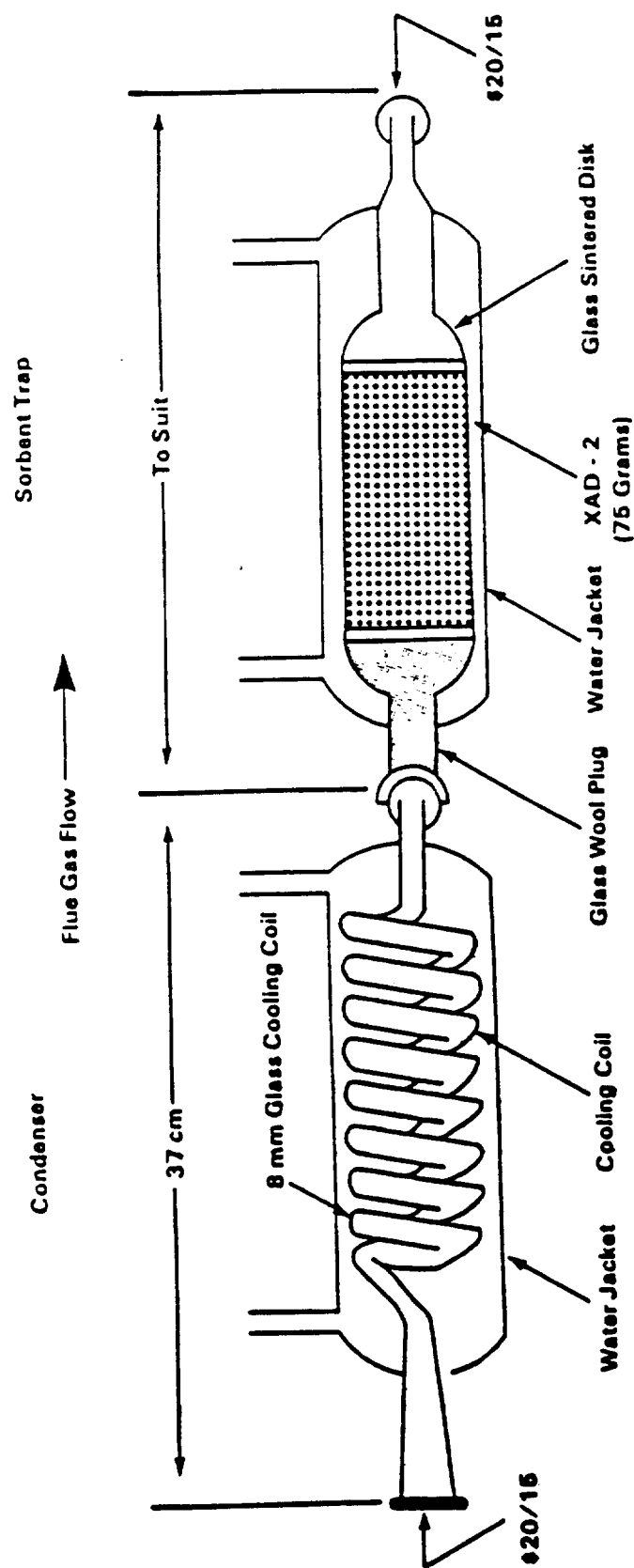


FIGURE 2. CONDENSER AND SORBENT TRAP FOR COLLECTION OF GASEOUS PCDDs AND PCDFs

ILLUMIN CODE 6499-89-C

2.2.5 Balance. Triple beam.
2.2.6 Aluminum Foil. Heavy duty, hexane-rinsed.

2.2.7 Metal Storage Container. Air tight container to store silica gel.

2.2.8 Graduated Cylinder. Glass, 250-ml with 2-ml graduation.

2.2.9 Glass Sample Storage Container. Amber glass bottle for sample glassware washes, 500- or 1000-ml, with leak free Teflon-lined caps.

2.3 Analysis.

2.3.1 Sample Container. 125- and 250-ml flint glass bottles with Teflon-lined caps.

2.3.2 Test Tube. Glass.

2.3.3 Soxhlet Extraction Apparatus. Capable of holding 43 x 123 mm extraction thimbles.

2.3.4 Pasteur Pipettes. For preparing liquid chromatographic columns.

2.3.5 Reacti-vials. Amber glass, 2-ml, silanized prior to use.

2.3.6 Rotary Evaporator. Buchi/Brinkman RF-121 or equivalent.

2.3.7 Nitrogen Evaporative Concentrator. N-Evap Analytical Evaporator Model III or equivalent.

2.3.8 Separatory Funnels. Glass, 2-liter.

2.3.9 Gas Chromatograph. Consisting of the following components:

2.3.9.1 Oven. Capable of maintaining the separation column at the proper operating temperature $\pm 1^\circ\text{C}$ and performing programmed increases in temperature at rates of at least $3^\circ\text{C}/\text{min}$.

2.3.9.2 Temperature Gauge. To monitor column oven, detector, and exhaust temperatures $\pm 1^\circ\text{C}$.

2.3.9.3 Flow System. Gas metering system to measure sample, fuel, combustion gas, and carrier gas flows.

2.3.9.4 Capillary Columns. A fused silica column, 80 m x 25 mm inside diameter (ID), coated with DB-5 and a fused silica column, 30 m x 25 mm ID coated with SP-2331.

2.3.10 Mass Spectrometer. Capable of routine operation at a resolution of 1:10000 with a stability of ± 5 ppm.

2.3.11 Data System. Compatible with the mass spectrometer and capable of monitoring at least five groups of 25 ions.

2.3.12 Analytical Balance. To measure within 0.1 mg.

3. Reagents

3.1 Sampling.

3.1.1 Filters. Glass fiber filters, without organic binder, exhibiting at least 99.95 percent efficiency (< 0.05 percent penetration) on 0.3-micron dioctyl phthalate smoke particles. The filter efficiency test shall be conducted in accordance with ASTM Standard Method D2988-71 (Reapproved 1978) (incorporated by reference—see § 80.17).

3.1.1.1 Precleaning. All filters shall be cleaned before their initial use. Place a glass extraction thimble and 1 g of silica gel and a plug of glass wool into a Soxhlet apparatus, charge the apparatus with toluene, and reflux for a minimum of three hours. Remove the toluene and discard it, but retain the silica gel. Place no more than 50 filters in the thimble onto the bed of silica gel and top with the cleaned glass wool. Charge the Soxhlet with toluene and reflux for 16 hours.

After extraction, allow the Soxhlet to cool, remove the toluene extract, and retain it for analysis. Remove the filters and dry them under a clean N_2 stream. Store the filters tightly wrapped in cleaned aluminum foil.

3.1.1.2 Quality Control Check. Analyze the toluene extract from Section 3.1.1.1 as described in Sections 5.2 and 5.3. If any TCDD or TCDF is present at a concentration above the minimum detectable level, repeat the cleaning procedure and reanalyze the extract until no TCDD or TCDF is detectable.

3.1.2 Adsorbent Resin. Amberlite XAD-2 resin. Thoroughly cleaned before initial use.

3.1.2.1 Cleaning Procedure. This procedure may be carried out in a giant Soxhlet extractor. An all-glass filter thimble containing an extra-coarse frit is used for extraction of XAD-2. The frit is recessed 10-15 mm above a crenellated ring at the bottom of the thimble to facilitate drainage. The resin must be carefully retained in the extractor cup with a glass wool plug and a stainless steel ring because it floats on methylene chloride. This process involves sequential extraction in the following order.

Solvent	Procedure
Water	Initial rinse: Place resin in a beaker, rinse once with water, and discard. Fill with water a second time, let stand overnight, and discard.
Water	Extract with water for 8 hours.
Methanol	Extract for 22 hours.
Methylene chloride	Extract for 22 hours.
Methylene chloride (fresh).	Extract for 22 hours.

3.1.2.2 Drying.

3.1.2.2.1 Drying Column. Pyrex pipe, 10.2 cm ID by 0.6 m long, with suitable retainers as shown in Figure 23-3.

3.1.2.2.2 Procedure. The adsorbent must be dried with clean inert gas. Liquid nitrogen from a standard commercial liquid nitrogen cylinder has proven to be a reliable source of large volumes of gas free from organic contaminants. Connect the liquid nitrogen cylinder to the column by a length of cleaned copper tubing, 0.96 cm ID, coiled to pass through a heat source. A convenient heat source is a water bath heated from a steam line. The final nitrogen temperature should only be warm to the touch and not over 40°C . Continue flowing nitrogen through the adsorbent until all the residual solvent is removed. The rate of flow should be high enough to gently agitate the particles but not high enough to cause the particles to fracture.

3.1.2.3 Quality Control Check. The adsorbent must be checked for residual methylene chloride as well as TCDDs and TCDFs.

3.1.2.3.1 Methylene Chloride Residue.

3.1.2.3.1.1 Extraction. Weigh a 1.0 g sample of dried resin into a small vial, add 3 ml of toluene, cap the vial, and shake it well.

3.1.2.3.1.2 Analysis. Inject a 5 μl sample of the extract into a gas chromatograph operated under the following conditions:

Column: 6 ft x $\frac{1}{8}$ in stainless steel containing 10% OV-101 on 100/120 Supelcoport.

Carrier Gas: Helium at a rate of 30 ml/min.

Detector: Flame ionization detector operated at a sensitivity of 4×10^{-11} A/mV.

Injection Port Temperature: 250°C .

Detector Temperature: 305°C .

Oven Temperature: 30°C for 4 min; programmed to rise at 40°C until it reaches 250°C ; return to 30°C after 1000 seconds.

Compare the results of the analysis to the results from the reference solution. Prepare the reference solution by injecting 2.5 μl of methylene chloride into 100 ml of toluene. This corresponds to 100 μg of methylene chloride per g of adsorbent. The maximum acceptable concentration is 1000 $\mu\text{g}/\text{g}$ of adsorbent. If the adsorbent exceeds this level, drying must be continued until the excess methylene chloride is removed.

3.1.2.3.2 TCDDs and TCDFs. Extract the sample as described in Section 5.1.1. Analyze the extract as described in §§ 5.2 and 5.3. If any of the TCDDs or TCDFs are present at concentrations above the MDL, the adsorbent must be recleaned by repeating the last step of the cleaning procedure. The MDL can be calculated as $\frac{1}{2}$ of the theoretical minimum quantifiable level (TMQL). The TMQL is calculated in § 8.6.

3.1.2.4 Storage. The adsorbent must be used within four weeks of cleaning. After cleaning, it may be stored in a wide mouth amber glass container with a Teflon-lined cap or placed in one of the glass adsorbent modules tightly sealed with Teflon film and elastic bands.

3.1.3 Glass Wool. Cleaned by sequential immersion in three aliquots of hexane, dried in a 110°C oven, and stored in a hexane-washed glass jar with a Teflon-lined screw cap.

3.1.4 Water. Deionized distilled and stored in a hexane-rinsed glass container with a Teflon-lined screw cap.

3.1.5 Chromic Acid Cleaning Solution. Dissolve 20 g of sodium dichromate in 15 ml of water, and then carefully add 400 ml of concentrated sulfuric acid.

3.2 Sample Recovery.

3.2.2 Acetone. Pesticide quality.

3.2.3 Methylene Chloride. Pesticide quality.

3.2.3 Toluene. Pesticide quality.

3.3 Analysis.

3.3.1 Potassium Hydroxide. Reagent grade.

3.3.2 Sodium Sulfate. Granulated, reagent grade. Purify prior to use by rinsing with methylene chloride and oven drying. Store the cleaned material in a glass container with a Teflon-lined screw cap.

3.3.3 Sulfuric Acid. Reagent grade.

3.3.4 Sodium Hydroxide. 1.0 N. Weigh 40 g of sodium hydroxide into a 1-liter volumetric flask. Dilute to 1 liter with water.

3.3.5 Hexane. Pesticide grade.

3.3.6 Methylene Chloride. Pesticide Grade.

3.3.7 Benzene. Pesticide Grade.

3.3.8 Ethyl Acetate.

3.3.9 Methanol. Pesticide Grade.

3.3.10 Toluene. Pesticide Grade.

3.3.11 Isooctane. Pesticide Grade.

3.3.12 Cyclohexane. Pesticide Grade.

3.3.13 Basic Alumina. Activity grade 1, 100-200 mesh. Prior to use, activate the alumina by heating for 16 hours at 130 °C before use. Store in a desiccator.

3.3.14 Silica Gel. Bio-Sil A, 100-200 mesh. Prior to use, activate the silica gel by heating for at least 30 minutes at 180 °C. After cooling, rinse the silica gel sequentially with methanol and methylene chloride. Heat the rinsed silica gel at 50 °C for 10 minutes, then increase the temperature gradually to 180 °C over 25 minutes and maintain it at this temperature for 90 minutes. Cool at room temperature and store in a glass container with a Teflon-lined screw cap.

3.3.15 Silica Gel Impregnated with Sulfuric Acid. Combine 100 g of silica gel with 44 g of concentrated sulfuric acid in a screw capped glass bottle and agitate thoroughly. Disperse the solids with a stirring rod until a uniform mixture is obtained. Store the mixture in a glass container with a Teflon-lined screw cap.

3.3.16 Silica Gel Impregnated with Sodium Hydroxide. Combine 39 g of 1 N sodium hydroxide with 100 g of silica gel in a screw capped glass bottle and agitate thoroughly. Disperse solids with a stirring rod until a uniform mixture is obtained. Store the mixture in glass container with a Teflon-lined screw cap.

3.3.17 Carbon/Celite. Combine 10.7 g of AX-21 carbon with 124 g of Celite 545 in a 250-ml glass bottle with a Teflon-lined screw cap. Agitate the mixture thoroughly until a uniform mixture is obtained. Store in the glass container.

3.3.18 Nitrogen. Ultra high purity.

3.3.19 Hydrogen. Ultra high purity.

3.3.20 Internal Standard Solution. Prepare a stock standard solution containing the isotopically labelled PCDDs and PCDFs at the concentrations shown in Table 1 under the heading "Internal Standards" in 10 ml of isooctane.

3.3.21 Surrogate Standard Solution. Prepare a stock standard solution containing the isotopically labelled PCDDs and PCDFs at the concentrations shown in Table 1 under the heading "Surrogate Standards" in 10 ml of isooctane.

3.3.22 Recovery Standard Solution. Prepare a stock standard solution containing the isotopically labelled PCDDs and PCDFs at the concentrations shown in Table 1 under the heading "Recovery Standards" in 10 ml of isooctane.

4. Procedure

4.1 Sampling. The complexity of this method is such that, in order to obtain reliable results, testers should be trained and experienced with the test procedures.

4.1.1 Pretest Preparation.

4.1.1.1 Cleaning Glassware. All glass components of the train upstream of and including the adsorbent module shall be cleaned as described in section 3A of the Manual of Analytical Methods for the Analysis of Pesticides in Human and Environmental Samples. Special care shall be devoted to the removal of residual silicone grease sealants on ground glass connections of used glassware. Any residue shall be removed by soaking the glassware for several

hours in a chromic acid cleaning solution prior to cleaning as described above.

4.1.1.2 Adsorbent Trap. The traps must be loaded in a clean area to avoid contamination. They should not be loaded in the field. Fill a trap with 20 to 30 g of XAD-2. Follow the XAD-2 with glass wool and tightly cap both ends of the trap.

4.1.1.3 Sample Train. It is suggested that all components be maintained according to the procedure described in APTD-0578.

4.1.1.4 Silica Gel. Weigh several 200 to 300 g portions of silica gel in an air tight container to the nearest 0.5 g. Record the total weight of the silica gel plus container, on each container. As an alternative, the silica gel may be weighed directly in its impinger or sampling holder just prior to sampling.

4.1.1.5 Filter. Check each filter against light for irregularities and flaws or pinhole leaks. Pack the filters flat in a clean glass container or wrapped in aluminum foil.

4.1.2 Preliminary Determinations. Same as section 4.1.2 of Method 5.

4.1.3 Preparation of Collection Train.

4.1.3.1 During preparation and assembly of the sampling train, keep all train openings where contamination can enter sealed until just prior to assembly or until sampling is about to begin.

Note: Do not use sealant grease in assembling the train.

4.1.3.2 Place approximately 100 ml of water in each of the first two impingers, leave the third impinger empty, and transfer approximately 200 to 300 g of preweighed silica gel from its container to the fourth impinger.

4.1.3.3 Place the container in a clean place for later use in the sample recovery. Alternatively, the weight of the silica gel plus impinger may be determined to the nearest 0.5 g and recorded.

4.1.3.4 Assemble the train as shown in Figure 23-1.

4.1.3.5 Turn on the adsorbent module and condenser coil recirculating pump and begin monitoring the adsorbent module gas entry temperature. Ensure proper sorbent temperature gas entry temperature before proceeding and before sampling is initiated. It is extremely important that the XAD-2 adsorbent resin temperature never exceed 50 °C because thermal decomposition will occur. During testing, the XAD-2 temperature must not exceed 20 °C for efficient capture of the TCDDs and TCDFs.

4.1.4 Leak-Check Procedure. Same as Method 5, § 4.1.4.

4.1.5 Sample Train Operation. Same as Method 5, § 4.1.5.

4.2 Sample Recovery. Proper cleanup procedure begins as soon as the probe is removed from the stack at the end of the sampling period. Seal the nozzle end of the sampling probe with Teflon tape or aluminum foil.

When the probe can be safely handled, wipe off all external particulate matter near the tip of the probe. Remove the probe from the train and close off both ends with aluminum foil. Seal off the inlet to the train with Teflon tape, a ground glass cap, or aluminum foil.

Transfer the probe and impinger assembly to the cleanup area. This area shall be clean and enclosed so that the chances of losing or contaminating the sample are minimized. Smoking which could contaminate the sample shall not be allowed in the cleanup area.

Inspect the train prior to and during disassembly and note any abnormal conditions, e.g., broken filters, colored impinger liquid, etc. Treat the samples as follows:

4.2.1 Container No. 1. Either seal the filter holder or carefully remove the filter from the filter holder and place it in its identified container. Use a pair of cleaned tweezers to handle the filter. If it is necessary to fold the filter, do so such that the particulate cake is inside the fold. Carefully transfer to the container any particulate matter and/or filter fibers which adhere to the filter holder gasket, by using a dry inert bristle brush and/or a sharp-edged blade. Seal the container.

4.2.2 Absorbent Module. Remove the module from the train, tightly cap both ends, label it, cover with aluminum foil, and store it on ice for transport to the laboratory.

4.2.3 Cyclone Catch. If the optional cyclone is used, quantitatively recover the particulate into a glass container and cap.

4.2.4 Container No. 2. Quantitatively recover material deposited in the nozzle, probe transfer lines, the front half of the filter holder, and the cyclone, if used, first by brushing while rinsing three times each with acetone and then by rinsing the probe three times with methylene chloride. Collect all the rinses in Container No. 2.

Rinse the back half of the filter holder, the connecting line between the filter and the condenser, and the condenser, if using a separate condenser and adsorbent trap, sequentially, three times each, with acetone and methylene chloride. Collect all the rinses in Container No. 2 and mark the level of the liquid on the container.

4.2.5 Container No. 3. Repeat the rinsing described in section 4.2.4 using toluene as the rinse solvent. Collect the rinses in Container No. 3 and mark the level of the liquid on the container.

4.2.6 Impinger Water. Measure the liquid in the first three impingers to within ± 1 ml by using a graduated cylinder or by weighing it to within ± 0.5 by using a balance. Record the volume or weight of liquid present. This information is required to calculate the moisture content of the effluent gas.

Discard the liquid after measuring and recording the volume or weight. 4.2.7 Silica Gel. Note the color of the indicating silica gel to determine if it has been completely spent and make a mention of its condition. Transfer the silica gel from the fourth impinger to its original container and seal. A funnel may make it easier to pour the silica gel without spilling. A rubber policeman may be used as an aid in removing the silica gel from the impinger.

5. Analysis

5.1 Sample Extraction.

5.1.1 Container No. 1. Place a glass extraction thimble and 1 g of silica gel and a plug of glass wool into the Soxhlet apparatus.

charge the apparatus with toluene, and reflux for a minimum of 3 hours. Remove the toluene and discard it, but retain the silica gel. Suspend the adsorbent module directly over the extraction thimble described in section 5.1.1. The glass frit of the module should be in the up position. The thimble is contained in a clean beaker, which will serve to catch the solvent rinses. Using a Teflon squeeze bottle, flush the XAD-2 into the thimble onto the bed of cleaned silica gel. Thoroughly rinse the glass module with toluene into the beaker containing the thimble. Add the XAD-2 glass wool plug to the thimble, add the contents of container No. 1, and add the concentrate from Section 5.1.2. For low level samples, add 20 μ l of the internal standard solution (section 3.3.20), for high level samples, add 100 μ l of the solution. Low level samples are those samples that contain less than 200 pg of any TCDD or TCDF. Cover the XAD-2 in the thimble with the cleaned glass wool plug to prevent the resin from floating into the solvent reservoir of the extractor. If the resin is wet, effective extraction can be accomplished by loosely packing the resin in the thimble. The thimble is placed in the extractor, and the toluene contained in the beaker is added to the solvent reservoir. Additional toluene is added to make the reservoir approximately two-thirds full. Add Teflon boiling chips and assemble the apparatus. Adjust the heat source to cause the extractor to cycle 5-6 times per hour. Extract the resin for 16 hours. After extraction, allow the Soxhlet to cool. Transfer the toluene extract and three 10-ml rinses to the rotary evaporator. Concentrate the extract to approximately 5 ml. Use nitrogen evaporation to further reduce the sample to about 1 ml. Split the sample in half. Store one half and analyze the other according to the procedures in sections 5.2 and 5.3.

5.1.2 Container No. 1. Transfer the contents directly to the glass thimble of the extractor and extract them simultaneously with the XAD-2 resin.

5.1.3 Container No. 2. Concentrate the sample to a volume of about 1-5 ml using the rotary evaporator apparatus, at a temperature of less than 37 °C. Rinse the sample container three times with small portions of methylene chloride and add these to the concentrated solution and concentrate further to near dryness. This residue contains particulate matter removed in the rinse of the train probe and nozzle. Add the concentrate to the filter and the XAD-2 resin in the Soxhlet apparatus as described in section 5.1.1.

5.1.4 Container No. 3. Concentrate the sample to a volume of about 1-5 ml using the rotary evaporator apparatus, at a temperature of less than 37 °C. Rinse the sample container three times with small portions of toluene and add these to the concentrated solution and concentrate further to near dryness. Analyze the extract according to the procedures in sections 5.2 and 5.3.

5.2 Sample Cleanup and Fractionation.

5.2.1 Silica Gel Column. Pack one end of a glass column, 20 mm x 230 mm, with glass wool. Add in sequence, 1 g silica gel, 2 g of sodium hydroxide impregnated silica gel, 1 g

silica gel, 4 g of acid-modified silica gel, and 1 g of silica gel. Wash the column with 30 ml of hexane and discard it. Add the sample extract, dissolved in 5 ml of hexane to the column with two additional 5-ml rinses. Elute the column with an additional 90 ml of hexane and retain the entire eluate. Concentrate this solution to a volume of about 1 ml using the nitrogen evaporative concentrator (section 2.3.7).

5.2.2 Basic Alumina Column. Shorten a 25-ml disposable Pasteur pipette to about 16 ml. Pack the lower section with glass wool and 12 g of basic alumina. Transfer the concentrated extract from the silica gel column to the top of the basic alumina column and elute the column sequentially with 120 ml of 0.5 percent methylene chloride in hexane followed by 120 ml of 35 percent methylene chloride in hexane. Discard the first 120 ml of eluate. Collect the second 120 ml of eluate and concentrate it to about 0.5 ml using the nitrogen evaporative concentrator.

5.2.3 AX-21 Carbon/Celite 545 Column. Remove the bottom 0.5 inch from the tip of a 9-ml disposable Pasteur pipette. Insert a filter paper disk in the top of the pipette 2.5 cm from the constriction. Add sufficient carbon/celite mixture to form a 2 cm column. Top with a glass wool plug. Rinse the column in sequence with 2 ml of 50 percent benzene in ethyl acetate, 1 ml of 50 percent methylene chloride in cyclohexane and 2 ml of hexane. Discard these eluates. Transfer the concentrate in 1 ml of hexane from the basic alumina column to the carbon/celite column along with 1 ml of hexane rinse. Elute the column sequentially with 2 ml of 50 percent methylene chloride in hexane and 2 ml of 50 percent benzene in ethyl acetate and discard these eluates. Invert the column and elute in the reverse direction with 4 ml of toluene. Collect this eluate. Concentrate the eluate in a rotary evaporator at 50 °C to about 1 ml. Transfer the concentrate to a Reacti-vial using a toluene rinse and concentrate to a volume of 200 μ l using a stream of N₂. Store extracts in a freezer, shielded from light, prior to analysis.

5.3 Analysis. Analyze the sample using a gas chromatograph coupled to a mass spectrometer (GC/MS) using the instrumental parameters in sections 5.3.1 and 5.3.2. A 1 to 5 μ l aliquot of the extract is injected into the GC. Sample extracts are first analyzed using the DB-5 capillary column to determine the concentration of each isomer of PCDDs and PCDFs (tetra-through octa-). If tetra-chlorinated dibenzofurans are detected in this analysis, then another aliquot of the sample is analyzed in a separate run, using the SP 2331 column to measure the 2,3,7,8 tetra-chlorodibenzofuran isomer.

5.3.1 Gas Chromatograph Operating Conditions.

5.3.1.1 Injector. Configured for capillary column, splitless, 230 °C.

5.3.1.2 Carrier Gas. Helium, 1-2 ml/min.

5.3.1.3 Oven. Initially at 150 °C. Raise ballistically to 190 °C and then at 3 °C/min up to 300 °C.

5.3.2 High Resolution Mass Spectrometer.

5.3.2.1 Resolution. 8000-10000 m/e.

5.3.2.2 Ionization Mode. Electron impact, 70 eV.

5.3.2.3 Source Temperature 250 °C.

5.3.2.4 Monitoring Mode. Selected ion monitoring. A list of the various ions to be monitored is summarized in Table 4.

5.3.2.5 Identification Criteria. The following identification criteria shall be used for the characterization of polychlorinated dibenzodioxins and dibenzofurans.

1. The integrated ion-abundance ratio ($M+ / M+2$ or $M+2 / M+4$) shall be within 13 percent of the theoretical value. The acceptable ion-abundance ratio ranges for the identification of chlorine-containing compounds are given in Table 5.

2. The retention time for the analytes must be within 3 seconds of the corresponding ¹³C-labeled internal standard, surrogate or alternate standard.

3. The monitored ions shown in Table 4 for a given analyte shall reach their maximum within 2 seconds of each other.

4. The identification of specific isomers that do not have corresponding ¹³C-labeled standards is done by comparison of the relative retention time (RRT) of the analyte to the nearest internal standard retention time with reference (i.e., within 0.005 RRT units) to the comparable RRTs found in the continuing calibration.

5. The signal to noise for all monitored ions must be greater than 2.5.

6. The confirmation of 2,3,7,8-TCDD and 2,3,7,8-TCDF shall satisfy all of the above identification criteria.

7. For the identification of PCDFs, no signal may be found in the corresponding PCDF channels.

5.3.2.6 Quantification. The peak areas for the two ions monitored for each analyte are summed to yield the total response for each analyte. Each internal standard is used to quantify the indigenous PCDDs or PCDFs in its homologous series. For example the ¹³C₁₂-1,2,3,4-tetra chlorinated dibenzodioxin is used to calculate the concentrations of all other tetra chlorinated isomers. Recoveries of the tetra- and penta- internal standards are calculated using the ¹³C₁₂-1,2,3,4-TCDD. Recoveries of the hexa- through octa- internal standards are calculated using ¹³C₁₂-1,2,3,7,8,9-HxCDD. Recoveries of the surrogate standards are calculated using the corresponding homolog from the internal standard.

6. Calibration

Same as Method 5 with the following additions.

6.1 GC/MS System.

6.1.1 Initial Calibration. Calibrate the GC/MS system using the set of five standards shown in Table 2 for low level samples or Table 3 for high level samples. The relative standard deviation for the mean response factor from each of the unlabeled analytes (Table 2) and of the internal, surrogate, and alternate standards shall be less than or equal to the values in Table 6. The signal to noise ratio for the GC signal present in every selected ion current profile shall be greater than or equal to 2.5. The ion abundance ratios shall be within the control limits in Table 5.

6.1.2 Daily Performance Check.

6.1.2.1 Calibration Check. Inject one μ l of solution number 4 from Table 2 or solution number 3 from Table 3. Calculate the relative

response factors (RRF's) for each compound and compare each of them to the corresponding mean RRF obtained during the initial calibration. The analyzer performance is acceptable if the measured RRF's for the labeled and unlabeled compounds for the daily run are within the limits of the mean values shown in Table 6. In addition the ion-abundance ratios shall be within the allowable control limits shown in Table 6.

6.1.2.2 Column Separation Check. Inject a solution of a mixture of PCDDs and PCDFs that documents resolution between 2,3,7,8-TCDD and other TCDD isomers. Resolution is defined as a valley between peaks that is less than 25% of the lower of the two peaks.

7. Quality Control

7.1 Sampling Train Collection Efficiency Check. Add 100 µl of the surrogate standards in Table 1 to the adsorbent cartridge of each train before each test.

7.2 Internal Standard Percent Recoveries. Recoveries of the internal standards must be between 40 to 130% for the tetra through hexachlorinated compounds while the range is 25 to 130% for the higher hepta- and octachlorinated homologues. If the internal standards do not meet the recovery requirements, the data will still be acceptable provided that the signal is equal to or greater than ten times the noise level.

7.3 Surrogate Recoveries. The surrogate recoveries are measured relative to the internal standards and are a measure of collection efficiency. All recoveries shall be between 70 and 130%. Poor recoveries for all the surrogates may be an indication of breakthrough in the sampling train. If the recovery of all standards is below 70%, the sampling runs must be repeated. As an alternative the sampling runs do not have to be repeated if the final results are divided by the fraction of surrogate recovery. Poor recoveries of isolated surrogate compounds should not be grounds for rejecting an entire set of samples.

7.4 Toluene Quality Assurance Rinse. Report the results of the toluene quality assurance rinse separately from the total sample catch. Do not add it to the total sample.

8. Quality Assurance

8.1 Applicability. When the method is used to analyze samples to demonstrate compliance with a source emission regulation, an audit sample must be analyzed.

8.2 Audit Procedure. The audit sample contains tetra through octa isomers of PCDD and PCDF. Concurrently, analyze the audit sample and a set of compliance samples in the same manner to evaluate the technique of the analyst and the standards preparation. The same analyst, analytical reagents, and analytical system shall be used both for the compliance samples and the EPA audit sample. If this condition is met, auditing of subsequent compliance analyses for any enforcement agency within seven days is not required.

8.3 Audit Sample Availability. The audit sample may be obtained by writing: Source Test Audit Coordinator (MD-77B), Quality Assurance Division, Atmospheric Research and Exposure Assessment Laboratory, U.S. Environmental Protection

Agency, Research Triangle Park, NC 27711 or by calling the Source Test Audit Coordinator (STAC) at (919) 541-7834. The request for the audit sample must be made at least 30 days prior to the scheduled compliance sample analysis.

8.4 Audit Results. Calculate the audit sample concentration according to the calculation procedure described in the audit instructions included with the audit sample. Fill in the audit sample concentration and the analyst's name on the audit response form included with the audit instructions. Send one copy to the EPA regional office or the appropriate enforcement agency. The STAC will return the EPA response to the laboratory being audited. Include this EPA response with the results of the compliance samples in appropriate reports to the EPA regional office or the appropriate enforcement agency. Include this information with subsequent analyses for any enforcement agency during the seven-day period.

9. Calculations

Same as Method 5, section 6 with the following additions.

9.1 Nomenclature.

A_i = Integrated ion current of the two ions characteristic of compound i in the calibration standard.

A_i^* = Integrated ion current of the two ions characteristic of the internal standard i in the calibration standard.

A_i^{**} = Integrated ion current of the two ions characteristic of surrogate compound i in the calibration standard.

A_i = Integrated ion current of the two ions characteristic of compound i in the sample.

A_i^* = Integrated ion current of the two ions characteristic of internal standard i in the sample.

A_i^{**} = Integrated ion current of the two ions characteristic of the recovery standard.

A_i = Integrated ion current of the two ions characteristic of surrogate compound i in the sample.

C_i = Concentration of the compound of interest in the most dilute calibration solution, pg/µl.

m_i = Mass of compound i in the calibration standard injected into the analyzer, pg.

m_i^* = Mass of labeled compound i in the calibration standard injected into the analyzer, pg.

m_i^* = Mass of internal standard i added to the sample, pg.

m_i^{**} = Mass of recovery standard in the calibration standard injected into the analyzer, pg.

m_i = Mass of surrogate compound i in the calibration standard.

RRF _{i} = Relative response factor.

RRF _{i} ^{*} = Recovery standard response factor.

V = Final extract volume, µl.

9.2 Relative Response Factor.

$$RRF = 1/n \sum A_i m_i^* / (A_i^* m_i) \quad \text{Eq. 23-1}$$

9.3 Concentration of the PCDDs and PCDFs.

$$C_i = m_i^* A_i / (A_i^* RRF_i V_{\text{extract}}) \quad \text{Eq. 23-2}$$

9.4 Recovery Standard Response Factor.

$$RRF_i^{**} = A_i^* m_i / (A_i m_i^*) \quad \text{Eq. 23-3}$$

9.5 Recovery of Internal Standards (R^{*}).

$$R^* = (A_i^* m_i / A_i RRF_i m_i^*) \times 100\% \quad \text{Eq. 23-4}$$

9.6 Surrogate Compound Response Factor.

$$RRF_i^{**} = A_i^* m_i / (A_i m_i^*) \quad \text{Eq. 23-5}$$

9.7 Recovery of Surrogate Compounds (R _{i}).

$$R_i = (A_i m_i^* / A_i^* RRF_i m_i) \times 100\% \quad \text{Eq. 23-6}$$

9.8 Theoretical Minimum Quantifiable Level (TMQL).

$$TMQL = C_i V / R^* \quad \text{Eq. 23-7}$$

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TABLE 1.—COMPOSITION OF THE SAMPLE FORTIFICATION AND RECOVERY STANDARDS SOLUTIONS

Analyte	Concentration (pg/µl)
Internal standards:	
¹² C ₁₂ -2,3,7,8-TCDD	100
¹² C ₁₂ -1,2,3,7,8-PeCDD	100
¹² C ₁₂ -1,2,3,6,7,8-HxCDD	100
¹² C ₁₂ -1,2,3,4,6,7,8-HpCDD	100
¹² C ₁₂ -2,3,7,8-TCDF	100
¹² C ₁₂ -1,2,3,7,8-PeCDF	100
¹² C ₁₂ -1,2,3,6,7,8-HxCDF	100
¹² C ₁₂ -2,3,1,6,7,8-HpCDF	100
Surrogate Standards:	
¹³ C ₁₂ -2,3,7,8-TCDD	100
¹³ C ₁₂ -1,2,3,4,7,8-HxCDD	100
¹³ C ₁₂ -2,3,1,7,8-PeCDF	100
¹³ C ₁₂ -1,2,3,4,7,8-HxCDF	100
¹³ C ₁₂ -1,2,3,4,7,8,9-HpCDF	100
Recovery standards:	
¹³ C ₁₂ -1,2,3,4-TCDD	800
¹³ C ₁₂ -1,2,3,7,8,9-HxCDD	500

TABLE 2.—COMPOSITION OF THE INITIAL CALIBRATION SOLUTIONS (LOW)

Compound	Concentrations (pg/μL)—Solution No.—				
	1	2	3	4	5
Unlabeled analytes:					
2,3,7,8-TCDD	0.5	1	5	50	100
2,3,7,8-TCDF	0.5	1	5	50	100
1,2,3,7,8-PeCDD	2.5	5	25	250	500
1,2,3,7,8-PeCDF	2.5	5	25	250	500
2,3,4,7,8-PeCDF	2.5	5	25	250	500
1,2,3,4,7,8-HxCDD	2.5	5	25	250	500
1,2,3,6,7,8-HxCDD	2.5	5	25	250	500
1,2,3,7,8,9-HxCDD	2.5	5	25	250	500
1,2,3,4,7,8-HxCDF	2.5	5	25	250	500
1,2,3,6,7,8-HxCDF	2.5	5	25	250	500
1,2,3,7,8,9-HxCDF	2.5	5	25	250	500
2,3,4,6,7,8-HxCDF	2.5	5	25	250	500
1,2,3,4,6,7,8-HpCDD	2.5	5	25	250	500
1,2,3,4,6,7,8-HpCDF	2.5	5	25	250	500
1,2,3,4,7,8,9-HpCDF	2.5	5	25	250	500
OCDD	2.5	5	25	250	500
OCDF	5	10	50	500	1000
Internal standards:					
¹² C ₁₂ -2,3,7,8-TCDD	100	100	100	100	100
¹² C ₁₂ -1,2,3,7,8-PeCDD	100	100	100	100	100
¹² C ₁₂ -1,2,3,6,7,8-HxCDD	100	100	100	100	100
¹² C ₁₂ -1,2,3,4,6,7,8-HpCDD	100	100	100	100	100
¹² C ₁₂ -OCDD	100	100	100	100	100
¹² C ₁₂ -2,3,7,8-TCDF	200	200	200	200	200
¹² C ₁₂ -1,2,3,7,8-PeCDF	100	100	100	100	100
¹² C ₁₂ -1,2,3,6,7,8-HxCDF	100	100	100	100	100
¹² C ₁₂ -1,2,3,4,6,7,8-HpCDF	100	100	100	100	100
Surrogate standards:					
¹³ C ₁₂ -2,3,7,8-TCDD	0.5	1	5	50	100
¹³ C ₁₂ -2,3,4,7,8-PeCDF	2.5	5	25	250	500
¹³ C ₁₂ -1,2,3,4,7,8-HxCDD	2.5	5	25	250	500
¹³ C ₁₂ -1,2,3,4,7,8-HxCDF	2.5	5	25	250	500
¹³ C ₁₂ -1,2,3,4,7,8,9-HpCDF	2.5	5	25	250	500
Alternate standard:					
¹³ C ₁₂ -1,2,3,7,8,9-HxCDF	2.5	5	25	250	500
Recovery standards:					
¹³ C ₁₂ -1,2,3,4-TCDD	100	100	100	100	100
¹³ C ₁₂ -1,2,3,7,8,9-HxCDD	100	100	100	100	100

TABLE 3.—COMPOSITION OF THE INITIAL CALIBRATION SOLUTIONS (HIGH)

Compound	Concentrations (pg/μL)—Solution No.—				
	1	2	3	4	5
Unlabeled analytes:					
2,3,7,8-TCDD	5	50	100	500	1000
2,3,7,8-TCDF	5	50	100	500	1000
1,2,3,7,8-PeCDD	25	250	500	2500	5000
1,2,3,7,8-PeCDF	25	250	500	2500	5000
2,3,4,7,8-PeCDF	25	250	500	2500	5000
1,2,3,4,7,8-HxCDD	25	250	500	2500	5000
1,2,3,6,7,8-HxCDD	25	250	500	2500	5000
1,2,3,7,8,9-HxCDD	25	250	500	2500	5000
1,2,3,4,7,8-HxCDF	25	250	500	2500	5000
1,2,3,6,7,8-HxCDF	25	250	500	2500	5000
1,2,3,7,8,9-HxCDF	25	250	500	2500	5000
2,3,4,6,7,8-HxCDF	25	250	500	2500	5000
1,2,3,4,6,7,8-HpCDD	25	250	500	2500	5000
1,2,3,4,6,7,8-HpCDF	25	250	500	2500	5000
1,2,3,4,7,8,9-HpCDF	25	250	500	2500	5000
OCDD	25	250	500	2500	5000
	50	500	1000	5000	10000

TABLE 3.—COMPOSITION OF THE INITIAL CALIBRATION SOLUTIONS (High)—Continued

Compound	Concentrations (pg/μL)—Solution No.—				
	1	2	3	4	5
OCDF	50	500	1000	5000	10000
Internal standards:					
¹³ C ₁₂ -2,3,7,8-TCDD	100	100	100	100	100
¹³ C ₁₂ -1,2,3,7,8-PeCDD	100	100	100	100	100
¹³ C ₁₂ -1,2,3,6,7,8-HxCDD	100	100	100	100	100
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDD	100	100	100	100	100
¹³ C ₁₂ -OCDD	200	200	200	200	200
¹³ C ₁₂ -2,3,7,8-TCDF	100	100	100	100	100
¹³ C ₁₂ -1,2,3,7,8-PeCDF	100	100	100	100	100
¹³ C ₁₂ -1,2,3,6,7,8-HxCDF	100	100	100	100	100
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDF	100	100	100	100	100
Surrogate standards:					
¹³ C ₁₂ -2,3,7,8-TCDD	5	50	100	500	1000
¹³ C ₁₂ -2,3,4,7,8-PeCDF	25	250	500	2500	5000
¹³ C ₁₂ -1,2,3,4,7,8-HxCDF	25	250	500	2500	5000
¹³ C ₁₂ -1,2,3,4,7,8-HxCDF	25	250	500	2500	5000
¹³ C ₁₂ -1,2,3,4,7,8,9-HpCDF	25	250	500	2500	5000
Alternate standard:					
¹³ C ₁₂ -1,2,3,7,8,9-HxCDF	5	50	100	500	1000
Recovery standards:					
¹³ C ₁₂ -1,2,3,4-TCDD	100	100	100	100	100
¹³ C ₁₂ -1,2,3,7,8,9-HxCDD	100	100	100	100	100

TABLE 4.—ELEMENTAL COMPOSITIONS AND EXACT MASSES OF THE IONS MONITORED BY HIGH RESOLUTION MASS SPECTROMETRY FOR PCDDs AND PCDFs

Descriptor No.	Accurate mass	Ion type	Elemental composition	Analyte
1	303.9016	M	C ₁₂ H ₈ ³⁴ Cl ₂ O	TCDF
	305.8967	M+2	C ₁₂ H ₈ ³⁶ Cl ₂ O	TCDF
	315.9419	M	¹³ C ₁₂ H ₈ ³⁴ Cl ₂ O	TCDF (S)
	317.9369	M+2	¹³ C ₁₂ H ₈ ³⁶ Cl ₂ O	TCDF (S)
	319.8965	M	C ₁₂ H ₈ ³⁴ ClO ₂	TCDD
	321.8936	M+2	C ₁₂ H ₈ ³⁶ Cl ₂ O	TCDD
	327.8847	M	C ₁₂ H ₈ ³⁷ Cl ₂ O ₂	TCDD (S)
	331.9368	M	¹³ C ₁₂ H ₈ ³⁴ Cl ₂ O ₂	TCDD (S)
	333.9339	M+2	¹³ C ₁₂ H ₈ ³⁶ Cl ₂ O ₂	TCDD (S)
	375.8384	M+2	C ₁₂ H ₈ ³⁴ Cl ₂ ³⁷ ClO	HxCDFE
	354.9792	LOCK	C ₆ F ₁₆	PFK
2	339.8567	M+2	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ ClO	PeCDF
	341.8567	M+4	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ Cl ₂ O	PeCDF
	351.9000	M+2	¹³ C ₁₂ H ₈ ³⁴ Cl ₂ ³⁷ ClO	PeCDF (S)
	353.8970	M+4	¹³ C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ Cl ₂ O	PeCDF (S)
	355.8546	M+2	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ ClO ₂	PeCDD
	357.8516	M+4	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ Cl ₂ O ₂	PeCDD
	367.8949	M+2	¹³ C ₁₂ H ₈ ³⁴ Cl ₂ ³⁷ ClO ₂	PeCDD (S)
	369.8919	M+4	¹³ C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ ClO ₂	PeCDD (S)
	409.7974	M+2	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ ClO	HpCDFE
	354.9792	LOCK	C ₆ F ₁₆	PFK
3	373.8208	M+2	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ ClO	HxCDF
	375.8178	M+4	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ Cl ₂ O	HxCDF
	383.8639	M	¹³ C ₁₂ H ₈ ³⁶ Cl ₂ O	HxCDF (S)
	385.8610	M+2	¹³ C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ ClO	HxCDF (S)
	389.8157	M+2	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ ClO ₂	HxCDD
	391.8127	M+4	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ Cl ₂ O ₂	HxCDD
	401.8559	M+2	¹³ C ₁₂ H ₈ ³⁴ Cl ₂ ³⁷ ClO ₂	HxCDD (S)
	403.8529	M+4	¹³ C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ ClO ₂	HxCDD (S)
	445.7565	M+4	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ Cl ₂ O	OCDFE
	430.8729	LOCK	C ₆ F ₁₆	PFK
4	407.7818	M+2	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ ClO	HpCDF
	409.7799	M+4	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ Cl ₂ O	HpCDF
	417.8253	M	¹³ C ₁₂ H ₈ ³⁶ Cl ₂ O	HpCDF (S)
	419.8220	M+2	¹³ C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ ClO	HpCDF (S)
	423.7768	M+2	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ ClO ₂	HpCDD
	425.7737	M+4	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ Cl ₂ O ₂	HpCDD
	435.8169	M+2	¹³ C ₁₂ H ₈ ³⁴ Cl ₂ ³⁷ ClO ₂	HpCDD (S)
	437.8140	M+4	¹³ C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ ClO ₂	HpCDD (S)
	479.7165	M+4	C ₁₂ H ₈ ³⁶ Cl ₂ ³⁷ Cl ₂ O	NCDFE
	430.8729	LOCK	C ₆ F ₁₆	PFK
5	441.7428	M+2	C ₁₂ ³⁴ Cl ₂ ³⁷ ClO	OCDF
	443.7399	M+4	C ₁₂ ³⁴ Cl ₂ ³⁷ Cl ₂ O	OCDF
	457.7377	M+2	C ₁₂ ³⁶ Cl ₂ ³⁷ ClO ₂	OCDD
	459.7348	M+4	C ₁₂ ³⁶ Cl ₂ ³⁷ Cl ₂ O ₂	OCDD
	469.7779	M+2	¹³ C ₁₂ ³⁴ Cl ₂ ³⁷ ClO ₂	OCDD (S)
	471.7750	M+4	¹³ C ₁₂ ³⁶ Cl ₂ ³⁷ Cl ₂ O ₂	OCDD (S)

TABLE 4.—ELEMENTAL COMPOSITIONS AND EXACT MASSES OF THE IONS MONITORED BY HIGH RESOLUTION MASS SPECTROMETRY FOR PCDDs AND PCDFs—Continued

Descriptor No.	Accurate mass	Ion type	Elemental composition	Analyte
	513.6775 442.9728	M+4 LOCK	C ₁₂ ³⁴ Cl ₆ ³⁷ Cl ₂ O ₂ C ₁₀ F ₁₇	DCDPE PFK

(a) The following nuclear masses were used: H = 1.007825 C = 12.000000 ¹³C = 13.003355 F = 18.9984 O = 15.994915 ³⁵Cl = 34.968853 ³⁷Cl = 36.965903 S = Labeled Standard

TABLE 5.—ACCEPTABLE RANGES FOR ION-ABUNDANCE RATIOS OF PCDDs AND PCDFs

Number of chlorine atoms	Ion type	Theoretical ratio	Control limits	
			Lower	Upper
4	M/M+2	0.77	0.65	0.89
5	M+2/M+4	1.55	1.32	1.78
6	M+2/M+4	1.24	1.05	1.43
6 ¹	M/M+2	0.51	0.43	0.59
7 ²	M/M+2	0.44	0.37	0.51
7	M+2/M+4	1.04	0.88	1.20
8	M+2/M+4	0.89	0.76	1.02

¹ Used only for ¹⁸C-HxCDF.² Used only for ¹⁸C-HpCDF.

TABLE 6.—MINIMUM REQUIREMENTS FOR INITIAL AND DAILY CALIBRATION RESPONSE FACTORS

Compound	Relative Response Factors	
	Initial calibration RSD	Daily calibration percent-age difference
Unlabeled Analytes:		
2,3,7,8-TCDD	25	25
2,3,7,8-TCDF	25	25
1,2,3,7,8-PeCDD	25	25
1,2,3,7,8-PeCDF	25	25
2,3,4,7,8-PeCDF	25	25
1,2,4,5,7,8-HxCDD	25	25
1,2,3,6,7,8-HxCDD	25	25
1,2,3,7,8,9-HxCDD	25	25
1,2,3,4,7,8-HxCDF	25	25
1,2,3,6,7,8-HxCDF	25	25
1,2,3,7,8,9-HxCDF	25	25
2,3,4,6,7,8-HxCDF	25	25
1,2,3,4,6,7,8-HpCDD	25	25
1,2,3,4,6,7,8-HpCDF	25	25
OCDD	25	25
OCDF	30	30
Internal standards:		
¹⁸ C ₁₂ -2,3,7,8-TCDD	25	25
¹⁸ C ₁₂ -1,2,3,7,8-PeCDD	25	25
¹⁸ C ₁₂ -1,2,3,6,7,8-HxCDD	25	25
¹⁸ C ₁₂ -1,2,3,4,6,7,8-HpCDD	30	30
¹⁸ C ₁₂ -OCDD	30	30
¹⁸ C ₁₂ -2,3,7,8-TCDF	30	30
¹⁸ C ₁₂ -1,2,3,7,8-PeCDF	30	30
¹⁸ C ₁₂ -1,2,3,6,7,8-HxCDF	30	30
¹⁸ C ₁₂ -1,2,3,4,6,7,8-HpCDF	30	30
Surrogate standards:		
³⁷ Cl ₂ -2,3,7,8-TCDD	25	25
³⁷ Cl ₂ -2,3,4,7,8-PeCDF	25	25
³⁷ Cl ₂ -1,2,3,4,7,8-HxCDD	25	25
³⁷ Cl ₂ -1,2,3,4,7,8-HxCDF	25	25

TABLE 8.—MINIMUM REQUIREMENTS FOR INITIAL AND DAILY CALIBRATION RESPONSE FACTORS—Continued

Compound	Relative Response Factors	
	Initial calibration RSD	Daily calibration percent-age difference
¹⁸ C ₁₂ -1,2,3,4,7,8,9-HpCDF	25	25
Alternate Standard:		
¹⁸ C ₁₂ -1,2,3,7,8,9-HxCDF	25	25

Method 26—Determination of Hydrogen Chloride Emissions From Stationary Sources**1. Applicability, Principle, Interferences, Precision, Bias, and Stability**

1.1 Applicability. This method is applicable for determining hydrogen chloride (HCl) emissions from stationary sources.

1.2 Principle. An integrated sample is extracted from the stack and passed through dilute sulfuric acid. In the dilute acid, the HCl gas is dissolved and forms chloride (Cl⁻) ions. The Cl⁻ is analyzed by ion chromatography (IC).

1.3 Interferences. Volatile materials which produce chloride ions upon dissolution during sampling are obvious interferences. Another likely interferent is diatomic chlorine (Cl₂) gas which reacts to form HCl and hypochlorous acid (HOCl) upon dissolving in water. However, Cl₂ gas exhibits a low solubility in water and the use of acidic,

rather than neutral or basic collection solutions, greatly reduces the chance of dissolving any chlorine present. This method does not experience a significant bias when sampling a 400 ppm HCl gas stream containing 50 ppm Cl₂. Sampling a 220 ppm HCl gas stream containing 180 ppm Cl₂ results in a positive bias of 3.4 percent in the HCl measurement.

1.4 Precision and Bias. The within-laboratory relative standard deviations are 6.2 and 3.2 percent at HCl concentrations of 3.9 and 15.3 ppm, respectively. The method does not exhibit a bias to Cl₂ when sampling at concentrations less than 50 ppm.

1.5 Stability. The collected samples can be stored for up to 4 weeks before analysis.

1.6 Detection Limit. The analytical detection limit of the method is 0.1 µg/ml.

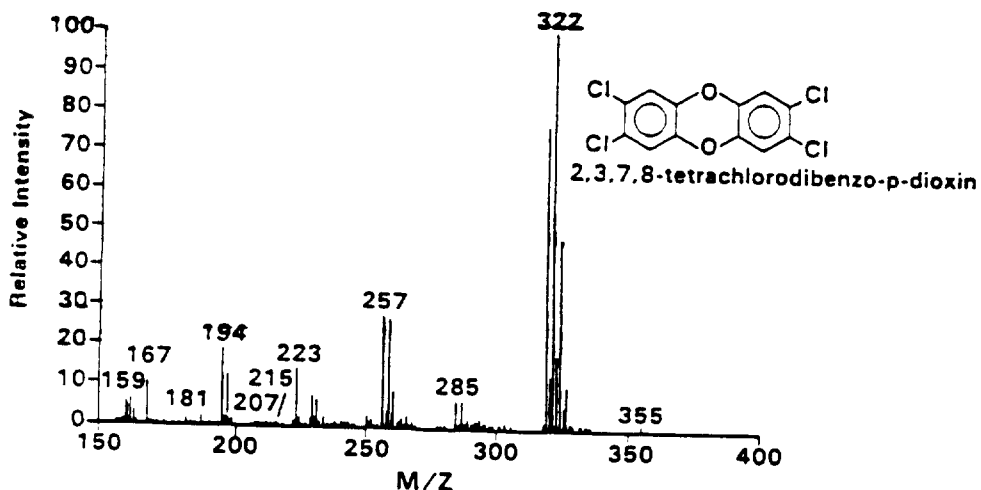
2. Apparatus

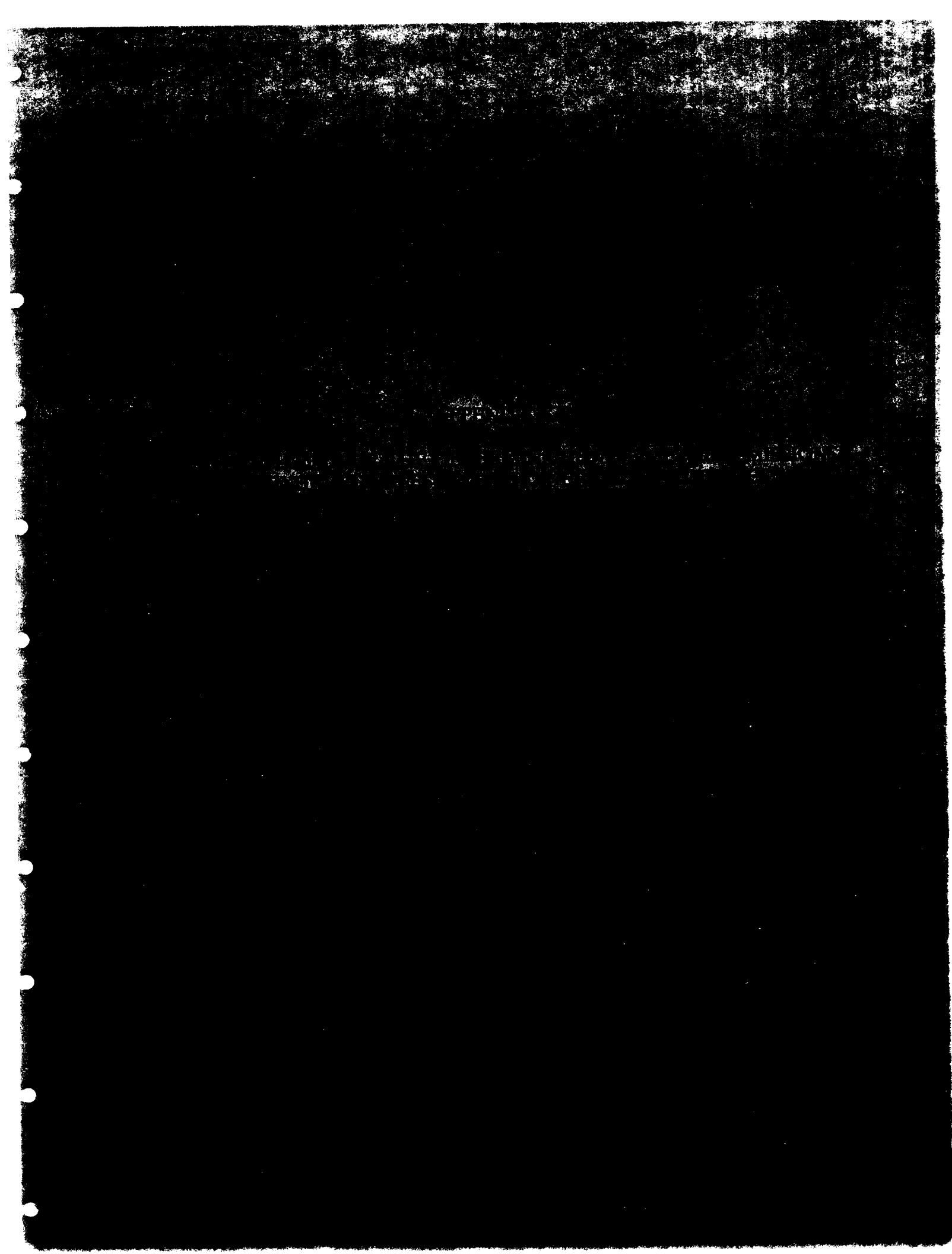
2.1 Sampling. The sampling train is shown in Figure 26-1, and component parts are discussed below.

2.1.1 Probe. Borosilicate glass, approximately 3/8-in. (9-mm) I.D. with a heating system to prevent moisture condensation. A 3/8-in. I.D. Teflon elbow should be attached to the inlet of the probe and a 1-in. (25-mm) length of 3/8-in. I.D. Teflon tubing should be attached to the open end of the elbow to permit the opening of the probe to be turned away from the gas stream. This reduces the amount of particulate entering the train. This probe configuration should be used when the concentration of particulate matter in the emissions is high. When high concentrations are not present, the Teflon elbow is not necessary, and the probe inlet may be perpendicular to the gas stream. A glass wool plug should not be used to remove particulate matter since a negative bias in the data could result. Instead, a Teflon filter (see § 2.1.5) should be installed at the inlet (for

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Data Package Assembly Description
&
Examples of Calculations





METHODOLOGY FOR THE DETERMINATION OF METALS EMISSIONS
IN EXHAUST GASES FROM INCINERATION PROCESSES

1. Applicability and Principle

1.1 Applicability. This method is applicable for the determination of arsenic (As), beryllium (Be), cadmium (Cd), total chromium (Cr), lead (Pb), mercury (Hg), nickel (Ni), and zinc (Zn) emissions from municipal waste incinerators and similar combustion processes. These elements are referred to hereafter as the primary metals. This method may also be used for the determination of antimony (Sb), barium (Ba), copper (Cu), manganese (Mn), phosphorus (P), selenium (Se), silver (Ag), and thallium (Tl) emissions from these sources. These elements are referred to hereafter as the secondary metals.

In addition, the method may be used to determine particulate emissions by following the additional procedures described. Modifications to the sample recovery and analysis procedures described in this protocol for the purpose of determining particulate emissions may potentially impact the front half mercury determination.*

1.2 Principle. The stack sample is withdrawn isokinetically from the source, with particulate emissions collected in the probe and on a heated filter and gaseous emissions collected in a series of chilled impingers containing a solution of dilute nitric acid in hydrogen peroxide in two impingers, and acidic potassium permanganate solution in two (or one) impingers. Sampling train components are recovered and digested in separate front and back half fractions. Materials collected in the sampling train are digested with acid solutions to dissolve inorganics and to remove organic constituents that may create analytical interferences. Acid digestion is performed using conventional Parr[®] Bomb or microwave digestion techniques. The

*Field tests to date have shown that of the total amount of mercury measured by the method, only 0 to <2% was measured in the front half. Therefore, it is tentatively concluded, based on the above data, that particulate emissions may be measured by this train, without significantly altering the mercury results.

nitric acid and hydrogen peroxide impinger solution, the acidic potassium permanganate impinger solution, and the probe rinse and digested filter solutions are analyzed for mercury by cold vapor atomic absorption spectroscopy (CVAAS). Except for the permanganate solution, the remainder of the sampling train fractions are analyzed for As, Be, Cd, Cr, Pb, Ni, and Zn (and Sb, Ba, Cu, Mn, P, Se, Ag, and Tl, if desired) by inductively coupled argon plasma emission spectroscopy (ICAP) or atomic absorption spectroscopy (AAS). Graphite furnace atomic absorption spectroscopy (GFAAS) is used for analysis of As, Cd, and Pb (and Sb, Se, and Tl, when measured) if these elements require greater analytical sensitivity than can be obtained by ICAP. Additionally, if desired, the tester may use AAS for analyses of all target metals if the resulting in-stack method detection limits (combined sampling and analytical detection limits) meet the data quality objectives of the testing program. For convenience, aliquots of each digested sample fraction can be combined proportionally for a single analytical determination. The efficiency of the analytical procedure is quantified by the analysis of spiked quality control samples containing each of the target metals including actual sample matrix effects checks.

2. Range, Sensitivity, Precision, and Interferences

2.1 Range. For the analyses described in this methodology and for similar analyses, the ICAP response is linear over several orders of magnitude. Samples containing metal concentrations in the nanograms per milliliter (ng/ml) to micrograms per milliliter (ug/ml) range in the analytical finish solution can be analyzed using this technique. Samples containing greater than approximately 50 ug/ml of arsenic, chromium, or lead should be diluted to that level or lower for final analysis. Samples containing greater than approximately 20 ug/ml of cadmium should be diluted to that level before analysis.

2.2 Analytical Sensitivity. ICAP analytical detection limits for the primary [and secondary] metals in the sample solutions (based on SW-846, Method 6010) are approximately as follows: As (53 ng/ml), Be (0.3 ng/ml), Cd (4 ng/ml), Cr (7 ng/ml), Pb (42 ng/ml), Ni (15 ng/ml), Zn (2 ng/ml) [Sb (32 ng/ml), Ba (2 ng/ml), Cu (6 ng/ml), P (75 ng/ml), Mn (2 ng/ml), Se (75 ng/ml), Ag (7 ng/ml), Ti (40 ng/ml)]. The actual method detection limits are sample dependent and may vary as the sample matrix may affect the limits. The

analytical detection limits for the primary [and secondary] metals in sample solutions analyzed by direct aspiration AAS (based on SW-846, Method 7000) are approximately as follows: As (2 ng/ml), Be (5 ng/ml), Cd (5 ng/ml), Cr (50 ng/ml), Pb (100 ng/ml), Ni (40 ng/ml), Zn (5 ng/ml) [Sb (200 ng/ml), Ba (100 ng/ml), Cu (20 ng/ml), Mn (10 ng/ml), Se (2 ng/ml), Ag (10 ng/ml), Tl (100 ng/ml)]. The detection limit for mercury by CVAAS is approximately 0.2 ng/ml. The use of GFAAS can give added sensitivity compared to the use of direct aspiration AAS for the following primary and secondary metals: As (1 ng/ml), Be (0.2 ng/ml), Cd (0.1 ng/ml), Cr (1 ng/ml), Pb (1 ng/ml), Sb (3 ng/ml), Se (2 ng/ml), and Tl (1 ng/ml).

Using (1) the procedures described in this method, (2) the analytical detection limits described in the previous paragraph, (3) a volume of 300 ml for the front half and 150 ml for the back half samples, and (4) a stack gas sample volume of 1.25 m³, the corresponding in-stack method detection limits are presented in Table A-1 and calculated as shown:

$$\frac{A \times B}{C} = D$$

where: A = analytical detection limit, ug/ml.
 B = volume of sample prior to aliquot for analysis, ml.
 C = stack sample volume, dscm (dscm³).
 D = in-stack detection limit, ug/m³.

Values in Table A-1 are calculated for the front and back half and/or the total train.

To ensure optimum sensitivity in obtaining the measurements, the concentrations of target metals in the solutions are suggested to be at least ten times the analytical detection limits. Under certain conditions, and with greater care in the analytical procedure, this concentration can be as low as approximately three times the analytical detection limit. In all cases, repetitive analyses, method of standard additions (MSA), serial dilution, or matrix spike addition should be used to establish the quality of the data.

Actual in-stack method detection limits will be determined based on actual source sampling parameters and analytical results as described above. If required, the method in-stack detection limits can be made more sensitive than those shown in Table A-1 for a specific test by using one or more of the following options:

TABLE A-1. IN-STACK METHOD DETECTION LIMITS ($\mu\text{g}/\text{m}^3$)
FOR TRAIN FRACTIONS USING ICAP AND AAS

Metal	Front Half Fraction 1 Probe and Filter	Back Half ₁ Fraction 2 Impingers 1-3	Back Half ₂ Fraction 3 Impingers 4-5	Total Train
Primary Metals				
Arsenic	12.7 (0.3)*	6.4 (0.1)*		19.1 (0.4)*
Beryllium	0.07 (0.05)*	0.04 (0.03)*		0.11 (0.08)*
Cadmium	1.0 (0.02)*	0.5 (0.01)*		1.5 (0.03)*
Chromium	1.7 (0.2)*	0.8 (0.1)*		2.5 (0.3)*
Lead	10.1 (0.2)*	5.0 (0.1)*		15.1 (0.3)*
Mercury	0.05**	0.03**	0.03**	0.11**
Nickel	3.6	1.8		5.4
Zinc	0.5	0.3		0.8
Secondary Metals				
Antimony	7.7 (0.7)*	3.8 (0.4)*		11.5 (1.1)*
Barium	0.5	0.3		0.8
Copper	1.4	0.7		2.1
Manganese	0.5 (0.2)*	0.2 (0.1)*		0.7 (0.3)*
Phosphorus	18	9		27
Selenium	18 (0.5)*	9 (0.3)*		27 (0.8)*
Silver	1.7	0.9		2.6
Thallium	9.6 (0.2)*	4.8 (0.1)*		14.4 (0.3)*

() * Detection limit when analyzed by GFAAS.

** Detection limit when analyzed by CVAAS.

Actual method in-stack detection limits will be determined based on actual source sampling parameters and analytical results as described earlier in this section.

- o A normal 1-hour sampling run collects a stack gas sampling volume of about 1.25 m^3 . If the sampling time is increased and 5 m^3 are collected, the in-stack method detection limits would be one fourth of the values shown in Table A-1 (this means that with this change, the method is four times more sensitive than normal).
- o The in-stack detection limits assume that all of the sample is digested (with exception of the aliquot for mercury) and the final liquid volumes for analysis are 300 ml for the front half and 150 ml for the back half sample. If the front half volume is reduced from 300 ml to 30 ml, the front half in-stack detection limits would be one tenth of the values shown above (ten times more sensitive). If the back half volume is reduced from 150 ml to 25 ml, the in-stack detection limits

would be one sixth of the above values. Matrix effects checks are necessary on analyses of samples and typically are of greater significance for samples that have been concentrated to less than the normal sample volume. A volume less than 25 ml may not allow resolubilization of the residue and may increase interference by other compounds.

- o When both of the above two improvements are used on one sample at the same time, the resultant improvements are multiplicative. For example, where stack gas volume is increased by a factor of five and the total liquid sample digested volume of both the front and back halves is reduced by factor of six, the in-stack method detection limit is reduced by a factor of thirty (the method is thirty times more sensitive).
- o Conversely, reducing stack gas sample volume and increasing sample liquid volume will increase limits. The front half and back half₁ samples (Fractions 1 and 2) can be combined prior to analysis. The resultant liquid volume (excluding Fraction 3, which must be analyzed separately) is recorded. Combining the sample as described does not allow determination (whether front or back half) of where in the train the sample was captured. The in-stack method detection limit then becomes a single value for all target metals except mercury, for which the contribution of Fraction 3 must be considered.
- o The above discussion assumes no blank correction. Blank corrections are discussed later in this method.

2.3 Precision. The precisions (relative standard deviations) for each of the primary and secondary metals detected in a method development test at a sewage sludge incinerator, are as follows: As (13.5%), Cd (11.5%), Cr (11.2%), Pb (11.6%), Zn (11.8%), Sb (12.7%), Ba (20.6%), Cu (11.5%), P (14.6%), Se (15.3%), and Tl (12.3%). The precision for nickel was 7.7% for another test conducted at a source simulator. Beryllium, manganese and silver were not detected in the tests; however, based on the analytical sensitivity of the ICAP for these metals, it is assumed that their precisions should be similar to those for the other metals, when detected at similar levels.

2.4 Interferences. Iron can be a spectral interference during the analysis of arsenic, chromium, and cadmium by ICAP. Aluminum can be a spectral interference during the analysis of arsenic and lead by ICAP. Generally, these interferences can be reduced by diluting the sample, but this increases the

in-stack method detection limit. Refer to EPA Method 6010 (SW-846) for details on potential interferences for this method. For all GFAAS analyses, matrix modifiers should be used to limit interferences, and standards should be matrix matched.

3. Apparatus

3.1 Sampling Train. A schematic of the sampling train is shown in Figure A-1. It is similar to the Method 5 train. The sampling train consists of the following components.

3.1.1 Probe Nozzle (Probe Tip) and Borosilicate or Quartz Glass Probe Liner. Same as Method 5, Sections 2.1.1 and 2.1.2. Glass nozzles are required unless an alternate probe tip prevents the possibility of contamination or interference of the sample with its materials of construction. If a probe tip other than glass is used, no correction of the stack sample test results can be made because of the effect on the results by the probe tip.

3.1.2 Pitot Tube and Differential Pressure Gauge. Same as Method 2, Sections 2.1 and 2.2, respectively.

3.1.3 Filter Holder. Glass, same as Method 5, Section 2.1.5, except that a Teflon filter support must be used to replace the glass frit.

3.1.4 Filter Heating System. Same as Method 5, Section 2.1.6.

3.1.5 Condenser. The following system shall be used for the condensation and collection of gaseous metals and for determining the moisture content of the stack gas. The condensing system should consist of four to six impingers connected in series with leak-free ground glass fittings or other leak-free, non-contaminating fittings. The first impinger is optional and is recommended as a water knockout trap for use during test conditions which require such a trap. The impingers to be used in the metals train are now described. When the first impinger is used as a water knockout, it shall be appropriately-sized for an expected large moisture catch and constructed generally as described for the first impinger in Method 5, Paragraph 2.1.7. The second impinger (or the first $\text{HNO}_3/\text{H}_2\text{O}_2$ impinger) shall also be as described for the first impinger in Method 5. The third impinger (or the impinger used as the second $\text{HNO}_3/\text{H}_2\text{O}_2$ impinger) shall be the same as the Greenburg Smith impinger with the standard tip described as the second impinger in Method 5, Paragraph 2.1.7. All other impingers used in the metals train are the same as the second impinger (the first $\text{HNO}_3/\text{H}_2\text{O}_2$ impinger) previously described in this paragraph. In summary,

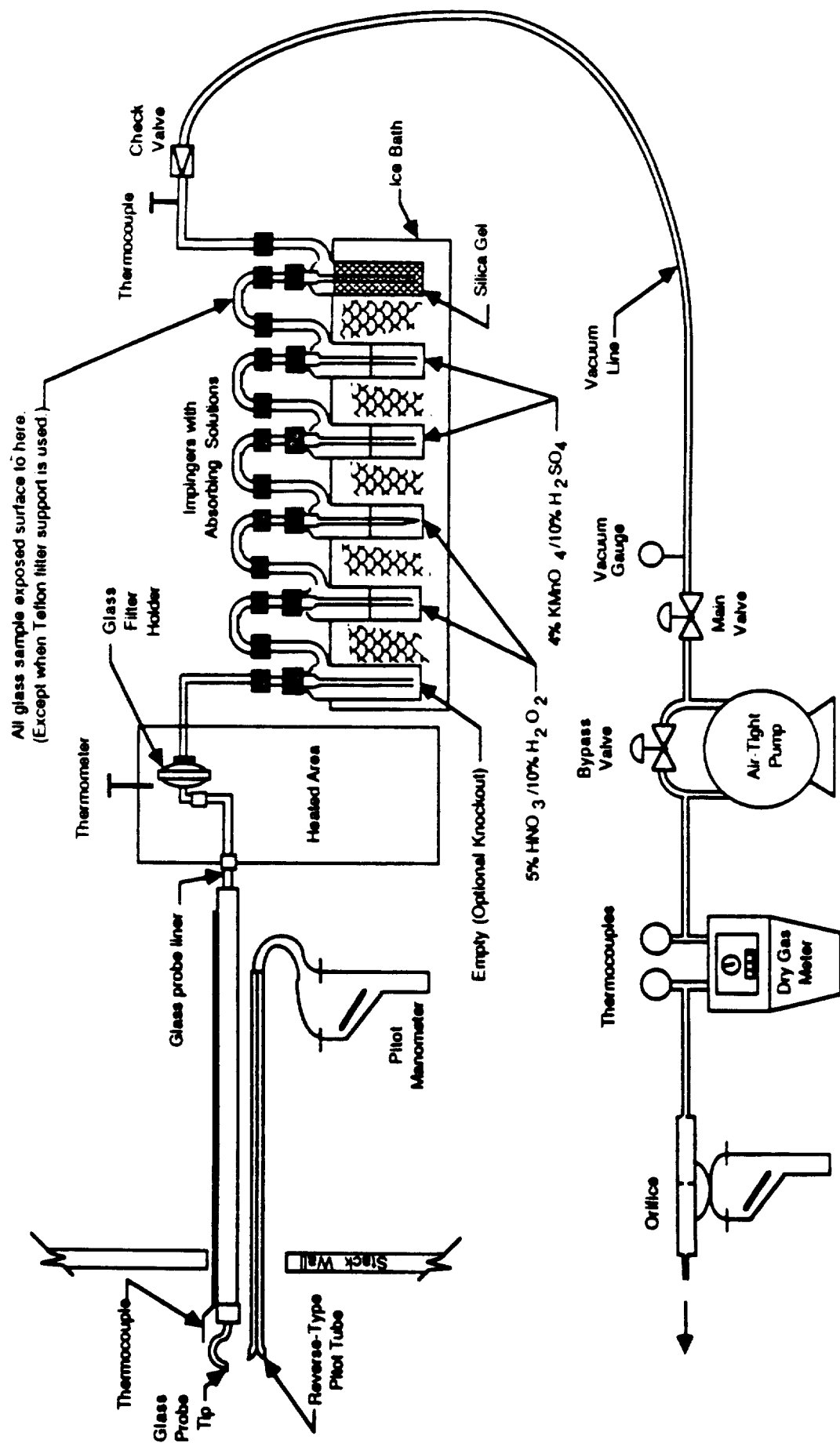


Figure A-1. Schematic of multiple metals sampling train.

the first impinger should be empty, the second and third shall contain known quantities of a nitric acid/hydrogen peroxide solution (Section 4.2.1), the fourth (and fifth, if required) shall contain a known quantity of acidic potassium permanganate solution (Section 4.2.2) and the last impinger shall contain a known quantity of silica gel or equivalent desiccant. A thermometer capable of measuring to within 1°C (2°F) shall be placed at the outlet of the last impinger. When the water knockout impinger is not needed, it is removed from the train and the other impingers remain the same. If mercury analysis is not needed, the potassium permanganate impingers are removed.

3.1.6 Metering System, Barometer, and Gas Density Determination Equipment. Same as Method 5, Sections 2.1.8 through 2.1.10, respectively.

3.1.7 Teflon Tape. For capping openings and sealing connections on the sampling train.

3.2 Sample Recovery. Same as Method 5, Sections 2.2.1 through 2.2.8 (Nonmetallic Probe-Liner and Probe-Nozzle Brushes, Wash Bottles, Sample Storage Containers, Petri Dishes, Glass Graduated Cylinder, Plastic Storage Containers, Funnel and Rubber Policeman, and Glass Funnel), respectively, with the following exceptions and additions:

3.2.1 Nonmetallic Probe-Liner and Probe-Nozzle Brushes. For quantitative recovery of materials collected in the front half of the sampling train. Description of acceptable all-Teflon component brushes to be included in EPA's Emission Measurement Technical Information Center (EMTIC) files.

3.2.2 Sample Storage Containers. Glass bottles with Teflon-lined caps, 1000- and 500-ml, shall be used for KMnO_4 -containing samples and blanks. Polyethylene bottles may be used for other sample types.

3.2.3 Graduated Cylinder. Glass or equivalent.

3.2.4 Funnel. Glass or equivalent.

3.2.5 Labels. For identification of samples.

3.2.6 Polypropylene Tweezers and/or Plastic Gloves. For recovery of the filter from the sampling train filter holder.

3.3 Sample Preparation and Analysis. For the analysis, the following equipment is needed:

3.3.1 Volumetric Flasks, 100 ml, 250 ml, and 1000 ml. For preparation of standards and sample dilution.

3.3.2 Graduated Cylinders. For preparation of reagents.

3.3.3 Parr[®] Bombs or Microwave Pressure Relief Vessels with Capping

Station (CEM Corporation model or equivalent).

3.3.4 Beakers and Watchglasses. 250-ml beakers for sample digestion with watchglasses to cover the tops.

3.3.5 Ring Stands and Clamps. For securing equipment such as filtration apparatus.

3.3.6 Filter Funnels. For holding filter paper.

3.3.7 Whatman 541 Filter Paper (or equivalent). For filtration of digested samples.

3.3.8 Disposable Pasteur Pipets and Bulbs.

3.3.9 Volumetric Pipets.

3.3.10 Analytical Balance. Accurate to within 0.1 mg.

3.3.11 Microwave or Conventional Oven. For heating samples at fixed power levels or temperatures.

3.3.12 Hot Plates.

3.3.13 Atomic Absorption Spectrometer (AAS). Equipped with a background corrector.

3.3.13.1 Graphite Furnace Attachment. With As, Cd, and Pb (and Sb, Se, and Tl, if measured) hollow cathode lamps (HCLs) or electrodeless discharge lamps (EDLs). Same as EPA Methods 7060 (As), 7131 (Cd), 7421 (Pb), 7041 (Sb), 7740 (Se), and 7841 (Tl).

3.3.13.2 Cold Vapor Mercury Attachment. With a mercury HCL or EDL. The equipment needed for the cold vapor mercury attachment includes an air recirculation pump, a quartz cell, an aerator apparatus, and a heat lamp or desiccator tube. The heat lamp should be capable of raising the ambient temperature at the quartz cell by 10°C such that no condensation forms on the wall of the quartz cell. Same as EPA Method 7470.

3.3.14 Inductively Coupled Argon Plasma Spectrometer. With either a direct or sequential reader and an alumina torch. Same as EPA Method 6010.

4. Reagents

Unless otherwise indicated, it is intended that all reagents conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available; otherwise, use the best available grade.

4.1 Sampling. The reagents used in sampling are as follows:

4.1.1 Filters. The filters shall contain less than 1.3 ug/in.² of each of

the metals to be measured. Analytical results provided by filter manufacturers are acceptable. However, if no such results are available, filter blanks must be analyzed for each target metal prior to emission testing. Quartz fiber or glass fiber filters without organic binders shall be used. The filters should exhibit at least 99.95 percent efficiency (<0.05 percent penetration) on 0.3 micron dioctyl phthalate smoke particles. The filter efficiency test shall be conducted in accordance with ASTM Standard Method D2986-71 (incorporated by reference). For particulate determination in sources containing SO₂ or SO₃, the filter material must be of a type that is unreactive to SO₂ or SO₃, as described in EPA Method 5. Quartz fiber filters meeting these requirements are recommended.

4.1.2 Water. To conform to ASTM Specification D1193.77, Type II (incorporated by reference). Analyze the water for all target metals prior to field use. All target metals should be less than 1 ng/ml.

4.1.3 Nitric Acid. Concentrated. Baker Instra-analyzed or equivalent.

4.1.4 Hydrochloric Acid. Concentrated. Baker Instra-analyzed or equivalent.

4.1.5 Hydrogen Peroxide, 30 Percent (V/V).

4.1.6 Potassium Permanganate.

4.1.7 Sulfuric Acid. Concentrated.

4.1.8 Silica Gel and Crushed Ice. Same as Method 5, Sections 3.1.2 and 3.1.4, respectively.

4.2 Pretest Preparation for Sampling Reagents.

4.2.1 Nitric Acid (HNO₃)/Hydrogen Peroxide (H₂O₂) Absorbing Solution, 5 Percent HNO₃/10 Percent H₂O₂. Add 50 ml of concentrated HNO₃ and 333 ml of 30 percent H₂O₂ to a 1000-ml volumetric flask or graduated cylinder containing approximately 500 ml of water. Dilute to volume with water. The reagent shall contain less than 2 ng/ml of each target metal.

4.2.2 Acidic Potassium Permanganate (KMnO₄) Absorbing Solution, 4 Percent KMnO₄ (W/V). Prepare fresh daily. Dissolve 40 g of KMnO₄ in sufficient 10 percent H₂SO₄ to make 1 liter. Prepare and store in glass bottles to prevent degradation. The reagent shall contain less than 2 ng/ml of Hg.

Precaution: To prevent autocatalytic decomposition of the permanganate solution, filter the solution through Whatman 541 filter paper. Also, due to reaction of the potassium permanganate with the acid, there may be pressure buildup in the sample storage bottle; these bottles should not be fully filled

and should be vented both to relieve excess pressure and prevent explosion due to pressure buildup. Venting is highly recommended, but should not allow contamination of the sample; a No. 70-72 hole drilled in the container cap and Teflon liner has been used.

4.2.3 Nitric Acid, 0.1 N. Add 6.3 ml of concentrated HNO_3 (70 percent) to a graduated cylinder containing approximately 900 ml of water. Dilute to 1000 ml with water. Mix well. The reagent shall contain less than 2 ng/ml of each target metal.

4.2.4 Hydrochloric Acid (HCl), 8 N. Add 690 ml of concentrated HCl to a graduated cylinder containing 250 ml of water. Dilute to 1000 ml with water. Mix well. The reagent shall contain less than 2 ng/ml of Hg.

4.3 Glassware Cleaning Reagents.

4.3.1 Nitric Acid, Concentrated. Fisher ACS grade or equivalent.

4.3.2 Water. To conform to ASTM Specifications D1193-77, Type II.

4.3.3 Nitric Acid, 10 Percent (V/V). Add 500 ml of concentrated HNO_3 to a graduated cylinder containing approximately 4000 ml of water. Dilute to 5000 ml with water.

4.4 Sample Digestion and Analysis Reagents.

4.4.1 Hydrochloric Acid, Concentrated.

4.4.2 Hydrofluoric Acid, Concentrated.

4.4.3 Nitric Acid, Concentrated. Baker Instra-analyzed or equivalent.

4.4.4 Nitric Acid, 10 Percent (V/V). Add 100 ml of concentrated HNO_3 to 800 ml of water. Dilute to 1000 ml with water. Mix well. Reagent shall contain less than 2 ng/ml of each target metal.

4.4.5 Nitric Acid, 5 Percent (V/V). Add 50 ml of concentrated HNO_3 to 800 ml of water. Dilute to 1000 ml with water. Reagent shall contain less than 2 ng/ml of each target metal.

4.4.6 Water. To conform to ASTM Specifications D1193-77, Type II.

4.4.7 Hydroxylamine Hydrochloride and Sodium Chloride Solution. See EPA Method 7470 for preparation.

4.4.8 Stannous Chloride.

4.4.9 Potassium Permanganate, 5 Percent (W/V).

4.4.10 Sulfuric Acid, Concentrated.

4.4.11 Nitric Acid, 50 Percent (V/V).

4.4.12 Potassium Persulfate, 5 Percent (W/V).

4.4.13 Nickel Nitrate, $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$.

- 4.4.14 Lanthanum Oxide, La_2O_3 .
- 4.4.15 AAS Grade As Standard, 1000 ug/ml.
- 4.4.16 AAS Grade Be Standard, 1000 ug/ml.
- 4.4.17 AAS Grade Cd Standard, 1000 ug/ml.
- 4.4.18 AAS Grade Cr Standard, 1000 ug/ml.
- 4.4.19 AAS Grade Pb Standard, 1000 ug/ml.
- 4.4.20 AAS Grade Hg Standard, 1000 ug/ml.
- 4.4.21 AAS Grade Ni Standard, 1000 ug/ml.
- 4.4.22 AAS Grade Zn Standard, 1000 ug/ml.
- 4.4.23 AAS Grade Al Standard, 1000 ug/ml.
- 4.4.24 AAS Grade Fe Standard, 1000 ug/ml.
- 4.4.25 AAS Grade Sb Standard, 1000 ug/ml. Optional.
- 4.4.26 AAS Grade Ba Standard, 1000 ug/ml. Optional.
- 4.4.27 AAS Grade Cu Standard, 1000 ug/ml. Optional.
- 4.4.28 AAS Grade Mn Standard, 1000 ug/ml. Optional.
- 4.4.29 AAS Grade P Standard, 1000 ug/ml. Optional.
- 4.4.30 AAS Grade Se Standard, 1000 ug/ml. Optional.
- 4.4.31 AAS Grade Ag Standard, 1000 ug/ml. Optional.
- 4.4.32 AAS Grade Tl Standard, 1000 ug/ml. Optional.

4.4.33 The metals standards may also be made from solid chemicals as described in EPA Method 200.7. EPA Method 7470 or Standard Methods for the Analysis of Water and Wastewater. 15th Edition, Method 303F should be referred to for additional information on mercury standards.

4.4.34 Mercury Standards and Quality Control Samples. Prepare fresh weekly a 10 ug/ml intermediate mercury standard by adding 5 ml of 1000 ug/ml mercury stock solution to a 500-ml volumetric flask; dilute to 500 ml by first adding 20 ml of 15 percent HNO_3 and then adding water. Prepare a working mercury standard solution fresh daily: add 5 ml of the 10 ug/ml intermediate standard to a 250 ml volumetric flask and dilute to 250 ml with 5 ml of 4 percent KMnO_4 , 5 ml of 15 percent HNO_3 , and then water. At least six separate aliquots of the working mercury standard solution should be used to prepare the standard curve. These aliquots should contain 0.0, 1.0, 2.0, 3.0, 4.0, and 5.0 ml of the working standard solution. Quality control samples should be prepared by making a separate 10 ug/ml standard and diluting until in the range of the calibration.

4.4.35 ICAP Standards and Quality Control Samples. Calibration standards

for ICAP analysis can be combined into four different mixed standard solutions as shown below.

MIXED STANDARD SOLUTIONS FOR ICAP ANALYSIS

Solution	Elements (secondary metals in parantheses)
I	As, Be, Cd, Pb, Zn (Mn, Se)
II	Fe (Ba, Cu)
III	Al, Cr, Ni
IV	(Sb, P, Ag, Tl)

Prepare these standards by combining and diluting the appropriate volumes of the 1000 ug/ml solutions with 5 percent nitric acid. A minimum of one standard and a blank can be used to form each calibration curve. However, a separate quality control sample spiked with known amounts of the target metals in quantities in the midrange of the calibration curve should be prepared. Suggested standard levels are 50 ug/ml for Al, 25 ug/ml for Cr and Pb, 15 ug/ml for Fe, and 10 ug/ml for the remaining elements. Standards containing less than 1 ug/ml of metal should be prepared daily. Standards containing greater than 1 ug/ml of metal should be stable for a minimum of 1 to 2 weeks.

4.4.36 Graphite Furnace AAS Standards for Arsenic, Cadmium, and Lead (and Antimony, Selenium, and Thallium). Prepare a 10 ug/ml standard by adding 1 ml of 1000 ug/ml standard to a 100-ml volumetric flask. Dilute to 100 ml with 10 percent nitric acid. For graphite furnace AAS, the standards must be matrix matched; e.g., if the samples contain 6 percent nitric acid and 4 percent hydrofluoric acid, the standards should also be made up with 6 percent nitric acid and 4 percent hydrofluoric acid. Prepare a 100 ng/ml standard by adding 1 ml of the 10 ug/ml standard to a 100-ml volumetric flask and dilute to 100 ml with the appropriate matrix solution. Other standards should be prepared by dilution of the 100 ng/ml standards. At least five standards should be used to make up the standard curve. Suggested levels are 0, 10, 50, 75, and 100 ng/ml. Quality control samples should be prepared by making a separate 10 ug/ml standard and diluting until it is in the range of the samples. Standards containing less than 1 ug/ml of metal should be prepared daily. Standards containing greater than 1 ug/ml of metal should be stable for a minimum of 1 to 2 weeks.

4.4.37 Matrix Modifiers.

4.4.37.1 Nickel Nitrate, 1 Percent (V/V). Dissolve 4.956 g of $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ in approximately 50 ml of water in a 100-ml volumetric flask.

Dilute to 100 ml with water.

4.4.37.2 Nickel Nitrate, One-tenth Percent (V/V). Dilute 10 ml of 1 percent nickel nitrate solution to 100 ml with water. Inject an equal amount of sample and this modifier into the graphite furnace during AAS analysis for As.

4.4.37.3 Lanthanum. Dissolve 0.5864 g of La_2O_3 in 10 ml of concentrated HNO_3 and dilute to 100 ml with water. Inject an equal amount of sample and this modifier into the graphite furnace during AAS analysis for Pb.

5. Procedure

5.1 Sampling. The complexity of this method is such that, to obtain reliable results, testers should be trained and experienced with the test procedures.

5.1.1 Pretest Preparation. Follow the same general procedure given in Method 5, Section 4.1.1, except that, unless particulate emissions are to be determined, the filter need not be desiccated or weighed. All sampling train glassware should first be rinsed with hot tap water and then washed in hot soapy water. Next, glassware should be rinsed three times with tap water, followed by three additional rinses with water. All glassware should then be soaked in a 10 percent (V/V) nitric acid solution for a minimum of 4 hours, rinsed three times with water, rinsed a final time with acetone, and allowed to air dry. All glassware openings where contamination can occur should be covered until the sampling train is assembled, prior to sampling.

5.1.2 Preliminary Determinations. Same as Method 5, Section 4.1.2.

5.1.3 Preparation of Sampling Train. Follow the same general procedures given in Method 5, Section 4.1.3, except place 100 ml of the nitric acid/hydrogen peroxide solution (Section 4.2.1) in the two $\text{HNO}_3/\text{H}_2\text{O}_2$ impingers (normally the second and third impingers), place 100 ml of the acidic potassium permanganate solution (Section 4.2.2) in the fourth and fifth impinger, and transfer approximately 200 to 300 g of preweighed silica gel from its container to the last impinger. Alternatively, the silica gel may be weighed directly in the impinger just prior to train assembly.

Several options are available to the tester based on the sampling conditions. The use of an empty first impinger can be eliminated if the moisture to be collected in the impingers is calculated or determined to be less than 150 ml. The tester shall include two impingers containing the acidic potassium permanganate solution for the first test run, unless past testing experience at the same or similar sources has shown that only one is

necessary. The last permanganate impinger may be discarded if both permanganate impingers have retained their original deep purple permanganate color. A maximum of 200 ml in each permanganate impinger (and a maximum of three permanganate impingers) may be used, if necessary, to maintain the desired color in the last permanganate impinger.

Retain for reagent blanks, 100 ml of the nitric acid/hydrogen peroxide solution and 100 ml of the acidic potassium permanganate solution. These solutions should be labeled and treated as described in Section 7. Set up the sampling train as shown in Figure A-1. If necessary to ensure leak-free sampling train connections, Teflon tape should be used instead of silicone grease to prevent contamination.

Precaution: Extreme care should be taken to prevent contamination within the train. Prevent the mercury collection reagent (acidic potassium permanganate) from contacting any glassware of the train which is washed and analyzed for Mn. Prevent hydrogen peroxide from mixing with the acidic potassium permanganate.

5.1.4 Leak-Check Procedures. Follow the leak-check procedures given in Method 5, Section 4.1.4.1 (Pretest Leak-Check), Section 4.1.4.2 (Leak-Checks During the Sample Run), and Section 4.1.4.3 (Post-Test Leak-Checks).

5.1.5 Sampling Train Operation. Follow the procedures given in Method 5, Section 4.1.5. For each run, record the data required on a data sheet such as the one shown in Figure 5-2 of Method 5.

5.1.6 Calculation of Percent Isokinetic. Same as Method 5, Section 4.1.6.

5.2 Sample Recovery. Begin cleanup procedures as soon as the probe is removed from the stack at the end of a sampling period.

The probe should be allowed to cool prior to sample recovery. When it can be safely handled, wipe off all external particulate matter near the tip of the probe nozzle and place a rinsed, non-contaminating cap over the probe nozzle to prevent losing or gaining particulate matter. Do not cap the probe tip tightly while the sampling train is cooling. This normally causes a vacuum to form in the filter holder, thus causing the undesired result of drawing liquid from the impingers into the filter.

Before moving the sampling train to the cleanup site, remove the probe from the sampling train and cap the open outlet. Be careful not to lose any condensate that might be present. Cap the filter inlet where the probe was fastened. Remove the umbilical cord from the last impinger and cap the

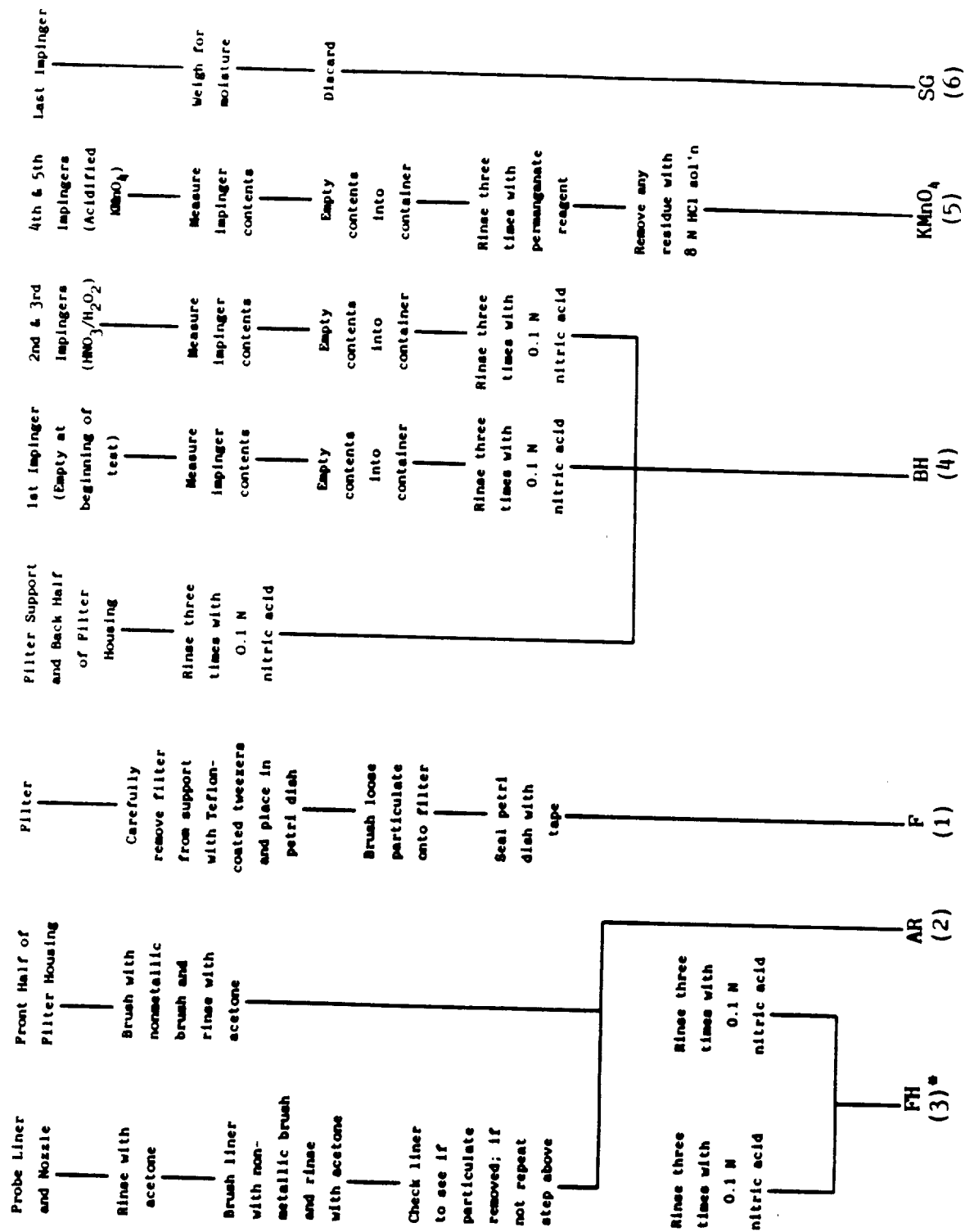
impinger. Cap off the filter holder outlet and impinger inlet. Use non-contaminating caps, whether ground-glass stoppers, plastic caps, serum caps, or Teflon tape to close these openings.

Alternatively, the train can be disassembled before the probe and filter holder/oven are completely cooled, if this procedure is followed: Initially disconnect the filter holder outlet/impinger inlet and loosely cap the open ends. Then disconnect the probe from the filter holder or cyclone inlet and loosely cap the open ends. Cap the probe tip and remove the umbilical cord as previously described.

Transfer the probe and filter-impinger assembly to a cleanup area that is clean and protected from the wind and other potential causes of contamination or loss of sample. Inspect the train before and during disassembly and note any abnormal conditions. The sample is recovered and treated as follows (see schematic in Figure A-2). Assure that all items necessary for recovery of the sample do not contaminate it.

5.2.1 Container No. 1 (Filter). Carefully remove the filter from the filter holder and place it in its identified petri dish container. Acid-washed polypropylene or Teflon coated tweezers or clean, disposable surgical gloves rinsed with water should be used to handle the filters. If it is necessary to fold the filter, make certain the particulate cake is inside the fold. Carefully transfer the filter and any particulate matter or filter fibers that adhere to the filter holder gasket to the petri dish by using a dry (acid-cleaned) nylon bristle brush. Do not use any metal-containing materials when recovering this train. Seal the labeled petri dish.

5.2.2 Container No. 2 (Acetone Rinse). Taking care to see that dust on the outside of the probe or other exterior surfaces does not get into the sample, quantitatively recover particulate matter and any condensate from the probe nozzle, probe fitting, probe liner, and front half of the filter holder by washing these components with 100 ml of acetone and placing the wash in a glass container. Note: The use of exactly 100 ml is necessary for the subsequent blank correction procedures. Distilled water may be used instead of acetone when approved by the Administrator and shall be used when specified by the Administrator; in these cases, save a water blank and follow the Administrator's directions on analysis. Perform the acetone rinses as follows: Carefully remove the probe nozzle and clean the inside surface by rinsing with acetone from a wash bottle and brushing with a nonmetallic brush. Brush until



* Number in parantheses indicates container number.

Figure A-2. Sample recovery scheme.

the acetone rinse shows no visible particles, after which make a final rinse of the inside surface with acetone.

Brush and rinse the inside parts of the Swagelok fitting with acetone in a similar way until no visible particles remain.

Rinse the probe liner with acetone by tilting and rotating the probe while squirting acetone into its upper end so that all inside surfaces will be wetted with acetone. Allow the acetone to drain from the lower end into the sample container. A funnel may be used to aid in transferring liquid washings to the container. Follow the acetone rinse with a nonmetallic probe brush. Hold the probe in an inclined position, squirt acetone into the upper end as the probe brush is being pushed with a twisting action through the probe; hold a sample container underneath the lower end of the probe, and catch any acetone and particulate matter which is brushed through the probe three times or more until no visible particulate matter is carried out with the acetone or until none remains in the probe liner on visual inspection. Rinse the brush with acetone, and quantitatively collect these washings in the sample container. After the brushing, make a final acetone rinse of the probe as described above.

It is recommended that two people clean the probe to minimize sample losses. Between sampling runs, keep brushes clean and protected from contamination.

Clean the inside of the front half of the filter holder by rubbing surfaces with a nonmetallic nylon bristle brush and rinsing with acetone. Rinse each surface three times or more if needed to remove visible particulate. Make a final rinse of the brush and filter holder. After all acetone washings and particulate matter have been collected in the sample container, tighten the lid on the sample container so that acetone will not leak out when it is shipped to the laboratory. Mark the height of the fluid level to determine whether or not leakage occurred during transport. Label the container clearly to identify its contents.

5.2.3 Container No. 3 (Probe Rinse). Rinse the probe liner, probe nozzle, and front half of the filter holder thoroughly with 100 ml of 0.1 N nitric acid and place the wash into a sample storage container. Note: The use of exactly 100 ml is necessary for the subsequent blank correction procedures. Perform the rinses as described in Method 12, Section 5.2.2. Record the volume of the combined rinse. Mark the height of the fluid level on the outside of the storage container and use this mark to determine if leakage occurs during

transport. Seal the container and clearly label the contents. Finally, rinse the nozzle, probe liner, and front half of the filter holder with water followed by acetone and discard these rinses.

5.2.4 Container No. 4 (Impingers 1 through 3, Contents and Rinses). Due to the large quantity of liquid involved, the tester may place the impinger solutions in more than one container. Measure the liquid in the first three impingers volumetrically to within 0.5 ml using a graduated cylinder. Record the volume of liquid present. This information is required to calculate the moisture content of the sampled flue gas. Clean each of the first three impingers, the filter support, the back half of the filter housing, and connecting glassware by thoroughly rinsing with 100 ml of 0.1 N nitric acid as described in Method 12, Section 5.2.4. Note: The use of exactly 100 ml of 0.1 N nitric acid rinse is necessary for the subsequent blank correction procedures. Combine the rinses and impinger solutions, measure and record the volume. Calculate the 0.1 N nitric acid rinse volume by difference. Mark the height of the fluid level on the outside of the container to determine if leakage occurs during transport. Seal the container and clearly label the contents.

5.2.5 Container No. 5 (Acidified Potassium Permanganate Solution and Rinses, Impingers No. 4 & 5). Pour all the liquid from the permanganate impingers (fourth and fifth, if two permanganate impingers are used) into a graduated cylinder and measure the volume to within 0.5 ml. This information is required to calculate the moisture content of the sampled flue gas. Using 100 ml total of the acidified potassium permanganate solution, rinse the permanganate impinger(s) and connecting glass pieces a minimum of three times. Combine the rinses with the permanganate impinger solution. Finally, rinse the permanganate impinger(s) and connecting glassware with 50 ml of 8 N HCl to remove any residue. Note: The use of exactly 100 ml and 50 ml for the two rinses is necessary for the subsequent blank correction procedures. Place the combined rinses and impinger contents in a labeled glass storage bottle. Mark the height of the fluid level on the outside of the bottle to determine if leakage occurs during transport. See the following note and the Precaution in Paragraph 4.2.2 and properly seal the bottle and clearly label the contents.

Note: Due to the potential reaction of the potassium permanganate with the acid, there may be pressure buildup in the sample storage bottles. These bottles should not be filled full and should be vented to relieve excess

pressure. Venting is highly recommended. A No. 70-72 hole drilled in the container cap and Teflon liner has been found to allow adequate venting without loss of sample.

5.2.6 Container No. 6 (Silica Gel). Note the color of the indicating silica gel to determine whether it has been completely spent and make a notation of its condition. Transfer the silica gel from its impinger to its original container and seal. The tester may use a funnel to pour the silica gel and a rubber policeman to remove the silica gel from the impinger. The small amount of particles that may adhere to the impinger wall need not be removed. Do not use water or other liquids to transfer the silica gel since weight gained in the silica gel impinger is used for moisture calculations. Alternatively, if a balance is available in the field, record the weight of the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g.

5.2.7 Container No. 7 (Acetone Blank). Once during each field test, place 100 ml of the acetone used in the sample recovery process into a labeled container for use in the front half field reagent blank. Seal the container.

5.2.8 Container No. 8 (0.1 N Nitric Acid Blank). Once during each field test, place 200 ml of the 0.1 N nitric acid solution used in the sample recovery process into a labeled container for use in the front half and back half field reagent blanks. Seal the container.

5.2.9 Container No. 9 (5% Nitric Acid/10% Hydrogen Peroxide Blank). Once during each field test, place 200 ml of the 5% nitric acid/10% hydrogen peroxide solution used as the nitric acid impinger reagent into a labeled container for use in the back half field reagent blank. Seal the container.

5.2.10 Container No. 10 (Acidified Potassium Permanganate Blank). Once during each field test, place 300 ml of the acidified potassium permanganate solution used as the impinger solution and in the sample recovery process into a labeled container for use in the back half field reagent blank for mercury analysis. Seal the container.

Note: This container should be vented, as described in Section 5.2.4, to relieve excess pressure.

5.2.11 Container No. 11 (8 N HCl Blank). Once during each field test, place 50 ml of the 8 N hydrochloric acid used to rinse the acidified potassium permanganate impingers into a labeled container for use in the back half reagent blank for mercury.

5.2.12 Container No. 12 (Filter Blank). Once during each field test,

place an unused filter from the same lot as the sampling filters in a labeled petri dish. Seal the petri dish. This will be used in the front half field reagent blank.

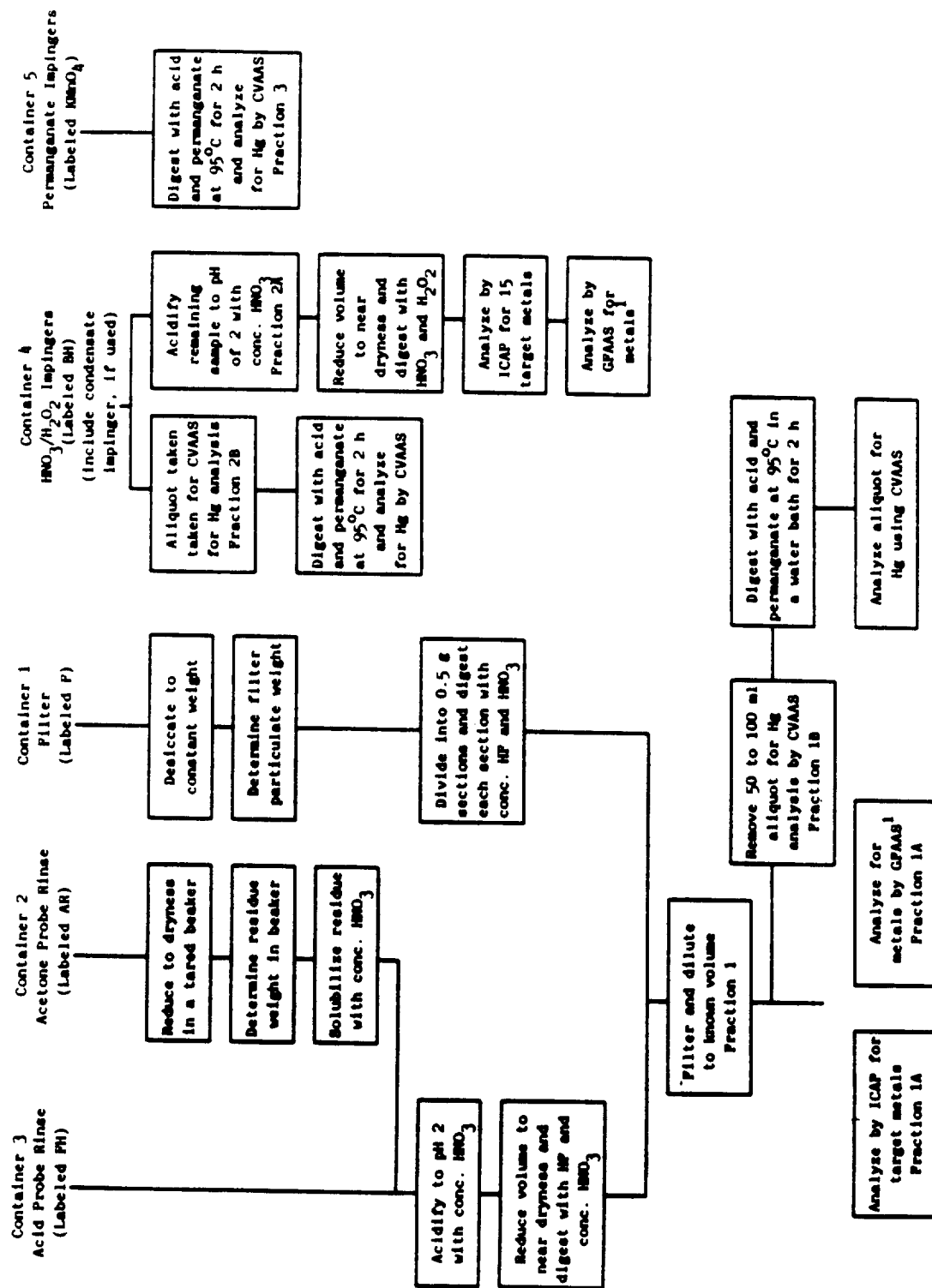
5.3 Sample Preparation. Note the level of the liquid in each of the containers and determine if any sample was lost during shipment. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. A diagram illustrating sample preparation and analysis procedures for each of the sample train components is shown in Figure A-3.

5.3.1 Container No. 1 (Filter). If particulate emissions are being determined, then desiccate the filter and filter catch without heat and weigh to a constant weight as described in Section 4.3 of Method 5. For analysis of metals, divide the filter with its filter catch into portions containing approximately 0.5 g each and place into the analyst's choice of either individual microwave pressure relief vessels or Parr[®] Bombs. Add 6 ml of concentrated nitric acid and 4 ml of concentrated hydrofluoric acid to each vessel. For microwave heating, microwave the sample vessels for approximately 12-15 minutes in intervals of 1 to 2 minutes at 600 Watts. For conventional heating, heat the Parr Bombs at 140°C (285°F) for 6 hours. Then cool the samples to room temperature and combine with the acid digested probe rinse as required in Section 5.3.3, below.

Notes: 1. Suggested microwave heating times are approximate and are dependent upon the number of samples being digested. Twelve to 15 minute heating times have been found to be acceptable for simultaneous digestion of up to 12 individual samples. Sufficient heating is evidenced by sorbent reflux within the vessel.

2. If the sampling train uses an optional cyclone, the cyclone catch should be prepared and digested using the same procedures described for the filters and combined with the digested filter samples.

5.3.2 Container No. 2 (Acetone Rinse). Note the level of liquid in the container and confirm on the analysis sheet whether or not leakage occurred during transport. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. Measure the liquid in this container either volumetrically to ± 1 ml or gravimetrically to ± 0.5 g. Transfer the contents to an acid-cleaned tared 250-ml beaker and evaporate to dryness at ambient Figure



¹Analysis by AAS for metals found at less than 2 ug/ml in digestate solution, if desired. Or analyze for each metal by AAS, if desired.

Figure A-3. Sample preparation and analysis scheme.

temperature and pressure. (If particulate emissions are being determined, desiccate for 24 hours without heat, weigh to a constant weight according to the procedures described in Section 4.3 of Method 5, and report the results to the nearest 0.1 mg.) Resolubilize the residue with concentrated nitric acid and combine the resultant sample including all liquid and any particulate matter with Container No. 3 prior to beginning the following Section 5.3.3.

5.3.3 Container No. 3 (Probe Rinse). The pH of this sample shall be 2 or lower. If the pH is higher, the sample should be acidified with concentrated nitric acid to pH 2. The sample should be rinsed into a beaker with water and the beaker should be covered with a ribbed watchglass. The sample volume should be reduced to approximately 50 ml by heating on a hot plate at a temperature just below boiling. Inspect the sample for visible particulate matter, and depending on the results of the inspection, perform one of the following. If no particulate matter is observed, combine the sample directly with the acid digested portions of the filter prepared previously in Section 5.3.1. If particulate matter is observed, digest the sample in microwave vessels or Parr[®] Bombs following the procedures described in Section 5.3.1; then combine the resultant sample directly with the acid digested portions of the filter prepared previously in Section 5.3.1. The resultant combined sample is referred to as Fraction 1. Filter the combined solution of the acid digested filter and probe rinse samples using Whatman 541 filter paper. Dilute to 300 ml (or the appropriate volume for the expected metals concentration) with water. Measure and record the combined volume of the Fraction 1 solution to within 0.1 ml. Quantitatively remove a 50-ml aliquot and label as Fraction 1B. Label the remaining 250-ml portion as Fraction 1A. Fraction 1A is used for ICAP or AAS analysis. Fraction 1B is used for the determination of front half mercury.

5.3.4 Container No. 4 (Impingers 1-3). Measure and record the total volume of this sample (Fraction 2) to within 0.5 ml. Remove a 50-ml aliquot for mercury analysis and label as Fraction 2B. Label the remaining portion of Container No. 4 as Fraction 2A. The Fraction 2B aliquot should be prepared and analyzed as described in Section 5.4.3. Fraction 2A shall be pH 2 or lower. If necessary, use concentrated nitric acid to lower Fraction 2A to pH 2. The sample should be rinsed into a beaker with water and the beaker should be covered with a ribbed watchglass. The sample volume should be reduced to approximately 20 ml by heating on a hot plate at a temperature just below boiling. Then follow either of the digestion procedures described in Sections

5.3.4.1 and 5.3.4.2, below.

5.3.4.1 Conventional Digestion Procedure. Add 30 ml of 50 percent nitric acid and heat for 30 minutes on a hot plate to just below boiling. Add 10 ml of 3 percent hydrogen peroxide and heat for 10 more minutes. Add 50 ml of hot water and heat the sample for an additional 20 minutes. Cool, filter the sample, and dilute to 150 ml (or the appropriate volume for the expected metals concentrations) with water.

5.3.4.2 Microwave Digestion Procedure. Add 10 ml of 50 percent nitric acid and heat for 6 minutes in intervals of 1 to 2 minutes at 600 Watts. Allow the sample to cool. Add 10 ml of 3 percent hydrogen peroxide and heat for 2 more minutes. Add 50 ml of hot water and heat for an additional 5 minutes. Cool, filter the sample, and dilute to 150 ml (or the appropriate volume for the expected metals concentrations) with water.

Note: All microwave heating times given are approximate and are dependent upon the number of samples being digested at a time. Heating times as given above have been found acceptable for simultaneous digestion of up to 12 individual samples. Sufficient heating is evidenced by solvent reflux within the vessel.

5.3.5 Container No. 5 (Impingers 4 & 5). Measure and record the total volume of this sample to within 0.5 ml. This sample is referred to as Fraction 3. Follow the analysis procedures described in Section 5.4.3.

5.3.6 Container No. 6 (Silica Gel). Weigh the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g using a balance. (This step may be conducted in the field.)

5.4 Sample Analysis. For each sampling train, five individual samples are generated for analysis. A schematic identifying each sample and the prescribed sample preparation and analysis scheme is shown in Figure A-3. The first two samples, labeled Fractions 1A and 1B, consist of the digested samples from the front half of the train. Fraction 1A is for ICAP or AAS analysis as described in Sections 5.4.1 and/or 5.4.2. Fraction 1B is for determination of front half mercury as described in Section 5.4.3.

The back half of the train was used to prepare the third through fifth samples. The third and fourth samples, labeled Fractions 2A and 2B, contain the digested samples from the H_2O and HNO_3/H_2O_2 Impingers 1 through 3. Fraction 2A is for ICAP or AAS analysis. Fraction 2B will be analyzed for mercury.

The fifth sample, labeled Fraction 3, consists of the impinger contents and

rinses from the permanganate Impingers 4 and 5. This sample is analyzed for mercury as described in Section 5.4.3. The total back half mercury catch is determined from the sum of Fraction 2B and Fraction 3.

5.4.1 ICAP Analysis. Fraction 1A and Fraction 2A are analyzed by ICAP using EPA Method 200.7 (40 CFR 136, Appendix C). Calibrate the ICAP, and set up an analysis program as described in Method 200.7. The quality control procedures described in Section 7.3.1 of this method shall be followed. Recommended wavelengths for use in the analysis of the primary, secondary, and interfering metals are listed below.

Element	Wavelength (nm)
Arsenic	193.696
Beryllium	313.042
Cadmium	226.502
Chromium	267.716
Lead	220.353
Nickel	231.604
Zinc	213.856
Antimony	206.833
Barium	455.403
Copper	324.754
Manganese	257.610
Selenium	196.026
Silver	328.068
Thallium	190.864
Aluminum	308.215
Iron	259.940

The wavelengths listed are recommended because of their sensitivity and overall acceptance. Other wavelengths may be substituted if they can provide the needed sensitivity and are treated with the same corrective techniques for spectral interference.

Initially, analyze all samples for the target metals plus iron and aluminum. If iron and aluminum are present in the sample, the sample may have to be diluted so that each of these elements is at a concentration of less than 50 ppm to reduce their spectral interferences on arsenic and lead.

Note: When analyzing samples in a hydrofluoric acid matrix, an alumina torch should be used; since all front half samples will contain hydrofluoric acid, use an alumina torch.

5.4.2 AAS by Direct Aspiration and/or Graphite Furnace. If analysis of metals in Fraction 1A and Fraction 2A using graphite furnace or direct aspiration AAS is desired, Table A-2 should be used to determine which techniques and methods should be applied for each target metal. Table A-2 should also be consulted to determine possible interferences and techniques to be followed for their minimization. Calibrate the instrument according to Section 6.3 and follow the quality control procedures specified in Section 7.3.2.

5.4.3 Cold Vapor AAS Mercury Analysis. Fraction 1B, Fraction 2B, and Fraction 3 should be analyzed for mercury using cold vapor atomic absorption spectroscopy following the method outlined in EPA Method 7470 or in Standard Methods for Water and Wastewater Analysis, 15th Edition, Method 303F. Set up the calibration curve as described in Section 7.3 of Method 303F. Add approximately 5 ml of each sample to BOD bottles. Record the amount of sample added. The amount used is dependent upon the expected levels of mercury. Dilute to approximately 120 ml with mercury-free water. Add approximately 15 ml of 5 percent potassium permanganate solution to the Fraction 2B and Fraction 3 samples. Add 5 percent potassium permanganate solution to the Fraction 1B sample as needed to produce a purple solution lasting at least 15 minutes. A minimum of 25 ml is suggested. Add 5 ml of 50 percent nitric acid, 5 ml of concentrated sulfuric acid, and 9 ml of 5 percent potassium persulfate to each sample and each standard. Digest the solution in the capped BOD bottle at 95°C (205°F) in a convection oven or water bath for 2 hours. Cool. Add 5 ml of hydroxylamine hydrochloride solution and mix the sample. Then add 7 ml of stannous chloride to each sample and analyze immediately.

6. Calibration

Maintain a laboratory log of all calibrations.

6.1 Sampling Train Calibration. Calibrate the sampling train components according to the indicated sections of Method 5: Probe Nozzle (Section 5.1); Pitot Tube (Section 5.2); Metering System (Section 5.3); Probe Heater (Section 5.4); Temperature Gauges (Section 5.5); Leak-Check of the Metering System (Section 5.6); and Barometer (Section 5.7).

6.2 Inductively Coupled Argon Plasma Spectrometer Calibration. Prepare standards as outlined in Section 4.4. Profile and calibrate the instrument according to the instrument manufacturer's recommended procedures using the

TABLE A-2. APPLICABLE TECHNIQUES, METHODS, AND MINIMIZATION OF INTERFERENCE FOR AAS ANALYSIS

Metal	Technique	Method No.	Wavelength (nm)	Cause	Interference	Minimization
Sb	Aspiration	7040	217.6	1000 mg/ml Pb Ni, Cu, or acid		Use secondary wavelength of 231.1 nm. Match sample & standards acid concentration or use nitrous oxide/acetylene flame
Sb	Furnace	7041	217.6	High Pb		Secondary wavelength or Zeeman correction
As	Furnace	7060	193.7	Arsenic volatilization Aluminum		Spiked samples & add nickel nitrate solution to digestates prior to analyses Use Zeeman background correction
Ba	Aspiration	7080	553.6	Calcium Barium ionization		High hollow cathode current & narrow band set 2 mL of KCl per 100 mL of sample
Be	Aspiration	7090	234.9	500 ppm Al High Mg & Si		Add 0.1% fluoride Use method of standard additions
Be	Furnace	7091	234.9	Be in optical path		Optimize parameters to minimize effects
Cd	Aspiration	7130	228.8	Absorption & light scattering		Background correction is required
Cd	Furnace	7131	228.8	As above Excess chloride Pipet tips		As above Ammonium phosphate used as a matrix modifier Use cadmium-free tips
Cr	Aspiration	7190	357.9	Alkali metal Absorption & scattering		KCl ionization suppressant in sample & stand Consult manufacturer's literature
Cr	Furnace	7191	357.9	200 mg/L calcium & phosphate		All calcium nitrate for a known constant effect and to eliminate effect of phosphate

(continued)

TABLE A-2 (CONTINUED)

Metal	Technique	Method No.	Wavelength (nm)	Cause	Interference	Minimization
Cu	Aspiration	7210	324.7	Absorpt & scatter		Consult manufacturer's manual
Fe	Aspiration	7380	248.3	Contamination		Great care taken to avoid contamination
Pb	Aspiration	7420	283.3	217.0 nm alternat		Background correction required
Pb	Furnace	7421	283.3	Poor recoveries		Matrix modifier, add 10 ul. of phosphorus acid to 1-mL of prepared sample in sampler cup
Mn	Aspiration	7460	279.5	403.1 nm alternat		Background correction required
Ni	Aspiration	7520	232.0	352.4 nm alternat Fe, Co, & Cr		Background correction required
Se	Furnace	7740	196.0	Nonlinear respons Volatility		Matrix matching or a nitrous-oxide/acety flame Sample dilution or use 352.4 nm line Spike samples & reference materials & add nickel nitrate to minimize volatilization
				Adsorpt & scatter		Background correction is required & Zeeman background correction can be useful
Ag	Aspiration	7760	328.1	Absorpt & scatter AgCl insoluble		Background correction is required Avoid hydrochloric acid unless silver is in solution as a chloride complex
				Viscosity		Sample & standards monitored for aspiration rate
Tl	Aspiration	7840	276.8			Background correction is required Hydrochloric acid should not be used
Tl	Furnace	7841	276.8	Hydrochloric acid or chloride		Background correction is required Verify that losses are not occurring for volatilization by spiked samples or standard addt Palladium is a suitable matrix modifier
Zn	Aspiration	7950	213.9	High Si, Cu & P Contamination		Strontium removes Cu and phosphate Care should be taken to avoid contamination

above standards. The instrument calibration should be checked once per hour. If the instrument does not reproduce the concentrations of the standard within 10 percent, the complete calibration procedures should be performed.

6.3 Atomic Absorption Spectrometer - Direct Aspiration, Graphite Furnace and Cold Vapor Mercury Analyses. Prepare the standards as outlined in Section 4.4. Calibrate the spectrometer using these prepared standards. Calibration procedures are also outlined in the EPA methods referred to in Table A-2 and in Standard Methods for Water and Wastewater, 15th Edition, Method 303F (for mercury). Each standard curve should be run in duplicate and the mean values used to calculate the calibration line. The instrument should be recalibrated approximately once every 10 to 12 samples.

7. Quality Control

7.1 Sampling. Field Reagent Blanks. The blank samples in Container Numbers 7 through 12 produced previously in Sections 5.2.7 through 5.2.11, respectively, shall be processed, digested, and analyzed as follows. Digest and process Container No. 12 contents per Section 5.3.1, Container No. 7 per Section 5.3.2, and half of Container No. 8 per Section 5.3.3. This produces Fraction Blank 1A and Fraction Blank 1B from Fraction Blank 1. Combine the remaining half of Container No. 8 with the contents of Container No. 9 and digest and process the resultant volume per Section 5.3.4. This produces Fraction Blank 2A and Fraction Blank 2B from Fraction Blank 2. Container No. 10 and Container No. 11 contents are Fraction Blank 3. Analyze Fraction Blank 1A and Fraction Blank 2A per Section 5.4.1 and/or 5.4.2. Analyze Fraction Blank 1B, Fraction Blank 2B, and Fraction Blank 3 per Section 5.4.3. The analysis of Fraction Blank 1A produces the front half reagent blank correction values for the metals except mercury; the analysis of Fraction Blank 1B produces the front half reagent blank correct value for mercury. The analysis of Fraction Blank 2A produces the back half reagent blank correction values for the metals except mercury, while separate analysis of Fraction Blanks 2B and 3 produce the back half reagent blank correction value for mercury.

7.2 An attempt may be made to determine if the laboratory reagents used in Section 5.3 caused contamination. They should be analyzed by the procedures in Section 5.4. The Administrator will determine whether or not the laboratory blank reagent values can be used in the calculation of the stationary source test results.

7.3 Quality Control Samples. The following quality control samples should be analyzed.

7.3.1 ICAP Analysis. Follow the quality control shown in Section 8 of Method 6010. For the purposes of a three run test series, these requirements have been modified to include the following: two instrument check standard runs, two calibration blank runs, one interference check sample at the beginning of the analysis (must be within 25% or analyze by standard addition), one quality control sample to check the accuracy of the calibration standards (must be within 25% of calibration), and one duplicate analysis (must be within 5% of average or repeat all analysis).

7.3.2 Direct Aspiration and/or Graphite Furnace AAS Analysis for Arsenic, Beryllium, Cadmium, Chromium, Lead, Mercury, Nickel, and Zinc (and Antimony, Barium, Copper, Manganese, Phosphorus, Selenium, Silver, and Thallium, if measured). All samples should be analyzed in duplicate. Perform a matrix spike on one front half sample and one back half sample or one combined sample. If recoveries of less than 75 percent or greater than 125 percent are obtained for the matrix spike, analyze each sample by the method of additions. A quality control sample should be analyzed to check the accuracy of the calibration standards. The results must be within 10% or the calibration repeated.

7.3.3 Cold Vapor AAS Analysis for Mercury. All samples should be analyzed in duplicate. A quality control sample should be analyzed to check the accuracy of the calibration standards (within 10% or repeat calibration). Perform a matrix spike on one sample from the nitric impinger portion (must be within 25% or samples must be analyzed by the method of standard additions). Additional information on quality control can be obtained from EPA Method 7470 or in Standard Methods for Water and Wastewater, 15th Edition, Method 303F.

8. Calculations

8.1 Dry Gas Volume. Using the data from this test, calculate $V_{s(std)}$, the dry gas sample volume at standard conditions as outlined in Section 6.3 of Method 5.

8.2 Volume of Water Vapor and Moisture Content. Using the data obtained from this test, calculate the volume of water vapor $V_{w(std)}$ and the moisture content B_w of the stack gas. Use Equations 5-2 and 5-3 of Method 5.

8.3 Stack Gas Velocity. Using the data from this test and Equation 2-9 of Method 2, calculate the average stack gas velocity.

8.4 Metals (Except Mercury) in Source Sample.

8.4.1 Fraction 1A, Front Half, Metals (except Hg). Calculate the amount of each metal collected in Fraction 1 of the sampling train using the following equation:

$$M_{fh} = C_a F_d V_{soln,1} \quad \text{Eq. 1*}$$

where:

M_{fh} = total mass of each metal (except Hg) collected in the front half of the sampling train (Fraction 1), ug.

C_a = concentration of metal in sample Fraction 1A as read from the standard curve (ug/ml).

F_d = dilution factor (F_d = the inverse of the fractional portion of the concentrated sample in the solution actually used in the instrument to produce the reading C_a . For example, when the dilution of Fraction 1A is from 2 to 10 ml, F_d = 5).

$V_{soln,1}$ = total volume of digested sample solution (Fraction 1), ml.

8.4.2 Fraction 2A, Back Half, Metals (except Hg). Calculate the amount of each metal collected in Fraction 2 of the sampling train using the following equation.

$$M_{bh} = C_a F_a V_a \quad \text{Eq. 2*}$$

where:

M_{bh} = total mass of each metal (except Hg) collected in the back half of the sampling train (Fraction 2), ug.

C_a = concentration of metal in sample Fraction 2A, as read from the standard curve (ug/ml).

F_a = aliquot factor, volume of Fraction 2 divided by volume of aliquot Fraction 2A.

V_a = volume of digested sample analyzed (concentrated Fraction 2A), ml.

8.4.3 Total Train, Metals (except Hg). Calculate the total amount of each of the quantified metals collected in the sampling train as follows:

$$M_t = (M_{fh} - M_{fhh}) + (M_{bh} - M_{bhb}) \quad \text{Eq. 3*}$$

*If Fractions 1A and 2A are combined, proportional aliquots must be used. Appropriate changes must be made in Equations 1-3 to reflect this approach.

where:

- M_t = total mass of each metal (separately stated for each metal) collected in the sampling train, ug.
 $M_{r_{hb}}$ = blank correction value for mass of metal detected in front half field reagent blank, ug.
 $M_{b_{hb}}$ = blank correction value for mass of metal detected in back half field reagent blank, ug.

Note: If the measured blank value for the front half ($m_{r_{hb}}$) is in the range 0.0 to A ug [where A ug equals the value determined by multiplying 1.4 ug per square inch (1.4 ug/in.²) times the actual area in square inches (in.²) of the filter used in the emission sample], $m_{r_{hb}}$ may be used to correct the emission sample value (m_{r_h}); if $m_{r_{hb}}$ exceeds A ug, the greater of the two following values (either I. or II.) may be used:

I. A ug, or

II. the lesser of (a) $m_{r_{hb}}$, or (b) 5 percent of m_{r_h} .

If the measured blank value for the back half ($m_{b_{hb}}$) is in the range 0.0 to 1 ug, $m_{b_{hb}}$ may be used to correct the emission sample value (m_{b_h}); if $m_{b_{hb}}$ exceeds 1 ug, the greater of the two following values may be used: 1 ug or 5 percent of m_{b_h} .

8.5 Mercury in Source Sample.

8.5.1 Fraction 1B, Front Half, Hg. Calculate the amount of mercury collected in the front half, Fraction 1, of the sampling train using the following equation:

$$Hg_{r_h} = \frac{Q_{r_h}}{V_{f1B}} \times V_{soln.1} \quad \text{Eq. 4}$$

where:

- Hg_{r_h} = total mass of mercury collected in the front half of the sampling train (Fraction 1), ug.
 Q_{r_h} = quantity of mercury in analyzed sample, ug.
 $V_{soln.1}$ = total volume of digested sample solution (Fraction 1), ml.
 V_{f1B} = volume of Fraction 1B analyzed, ml. See the following Note.

Note: V_{f1B} is the actual amount of Fraction 1B analyzed. For example, if 1 ml of Fraction 1B were diluted to 100 ml to bring it into the proper analytical range, and 1 ml of the 100-ml dilution was analyzed, V_{f1B} would be 0.01.

8.5.2 Fraction 2B and Fraction 3, Back Half, Hg. Calculate the amount of mercury collected in Fractions 2 and 3 using Equations 5 and 6, respectively.

Calculate the total amount of mercury collected in the back half of the sampling train using Equation 7.

$$Hg_{bh2} = \frac{Q_{bh2}}{V_{f1B}} \times V_{soln.2} \quad \text{Eq. 5}$$

where:

Hg_{bh2} = total mass of mercury collected in Fraction 2, ug.
 Q_{bh2} = quantity of mercury in analyzed sample, ug.
 V_{f2B} = volume of Fraction 2B analyzed, ml (see Note in Section 8.5.1).
 $V_{soln.2}$ = total volume of Fraction 2, ml.

$$Hg_{bh3} = \frac{Q_{bh3}}{V_{f2B}} \times V_{soln.3} \quad \text{Eq. 6}$$

where:

Hg_{bh3} = total mass of mercury collected in Fraction 3, ug.
 Q_{bh3} = quantity of mercury in analyzed sample, ug.
 V_{f3} = volume of Fraction 3 analyzed, ml (see Note in Section 8.5.1).
 $V_{soln.3}$ = total volume of Fraction 3, ml.

$$Hg_{bh} = Hg_{bh2} + Hg_{bh3} \quad \text{Eq. 7}$$

where:

Hg_{bh} = total mass of mercury collected in the back half of the sampling train, ug.

8.5.3 Total Train Mercury Catch. Calculate the total amount of mercury collected in the sampling train using Equation 8.

$$M_t = (Hg_{fh} - Hg_{fhb}) + (Hg_{bh} - Hg_{bhb}) \quad \text{Eq. 8}$$

where:

M_t = total mass of mercury collected in the sampling train, ug.
 Hg_{fhb} = blank correction value for mass of mercury detected in front half field reagent blank, ug.

Hg_{bhb} = blank correction value for mass of mercury detected in back half field reagent blank, ug.

Note: If the total of the measured blank values ($Hg_{fhb} + Hg_{bhb}$) is in the range of 0 to 3 ug, then the total may be used to correct the emission sample value ($Hg_{fhn} + Hg_{bhn}$); if it exceeds 3 ug, the greater of the following two values may be used: 3 ug or 5 percent of the emission sample value ($Hg_{fhn} + Hg_{bhn}$).

8.6 Metal Concentration of Stack Gas. Calculate the concentrations of arsenic, beryllium, cadmium, total chromium, lead, mercury, nickel, and zinc (and antimony, barium, copper, manganese, phosphorus, selenium, silver, and thallium, if measured) in the stack gas (dry basis, adjusted to standard conditions) as follows:

$$C_s = K_h (M_t / V_{n(std)}) \quad \text{Eq.9}$$

where:

C_s = concentration of each metal in the stack gas, mg/dscm.
 K_h = 10^{-3} mg/ug.
 M_t = total mass of each metal collected in the sampling train, ug.
 $V_{n(std)}$ = volume of gas sample as measured by the dry gas meter, corrected to dry standard conditions, dscm.

8.7 Isokinetic Variation and Acceptable Results. Same as Method 5, Sections 6.11 and 6.12, respectively.

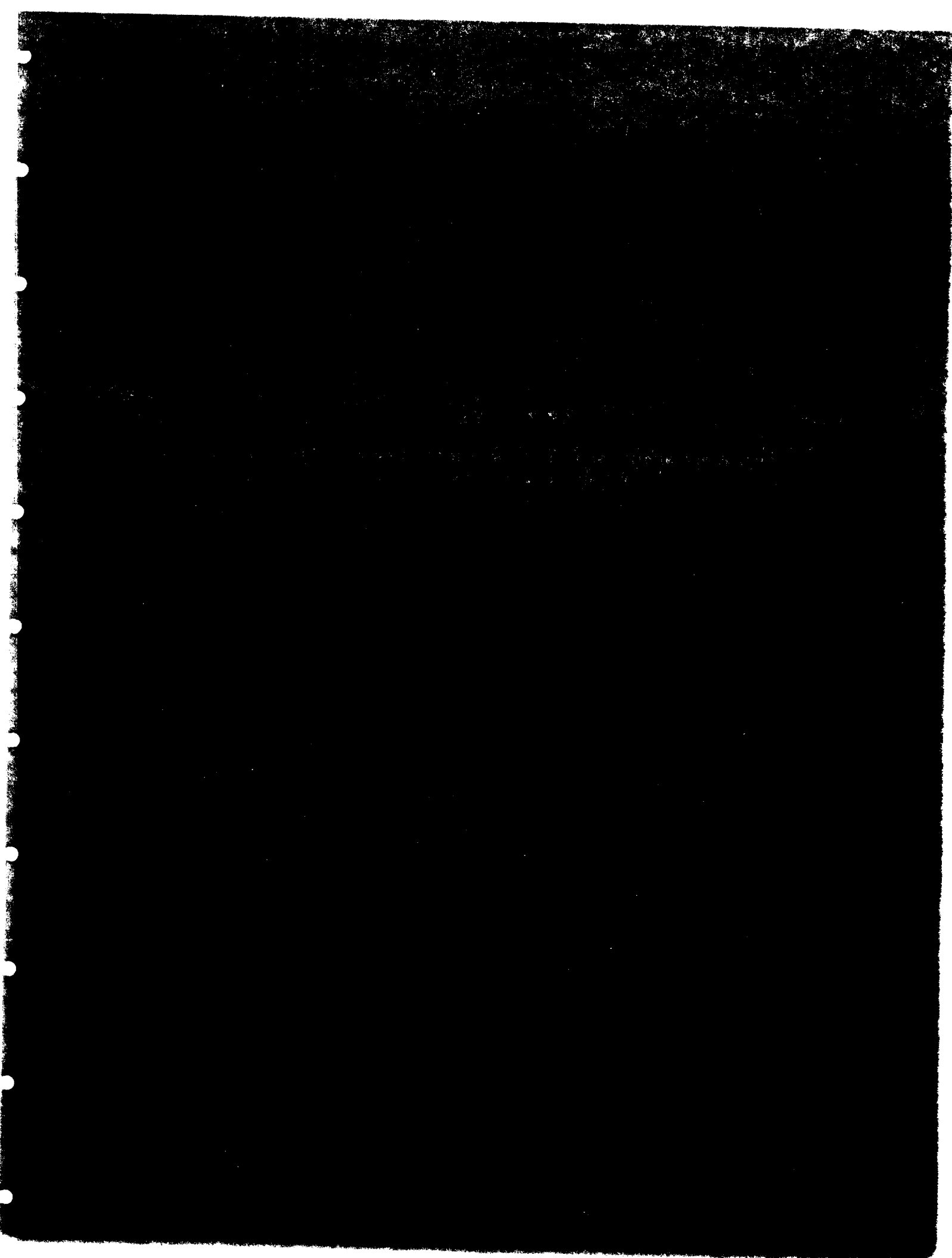
9. Bibliography

9.1 Method 303F in Standard Methods for the Examination of Water Wastewater, 15th Edition, 1980. Available from the American Public Health Association, 1015 18th Street N.W., Washington, D.C. 20036.

9.2 EPA Methods 6010, 7000, 7041, 7060, 7131, 7421, 7470, 7740, and 7841, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. SW-846, Third Edition. September 1988. Office of Solid Waste and Emergency Response, U. S. Environmental Protection Agency, Washington, D.C. 20460.

9.3 EPA Method 200.7, Code of Federal Regulations, Title 40, Part 136, Appendix C. July 1, 1987.

9.4 EPA Methods 1 through 5, Code of Federal Regulations, Title 40, Part 60, Appendix A, July 1, 1987.



MICROBIAL SURVIVABILITY TEST FOR MEDICAL WASTE INCINERATOR EMISSIONS

1. Applicability and Principle

1.1 Applicability. This test method measures the survivability of a specific indicator organism through the normal medical waste incinerator operation cycle. Microbial spores are the most resistant type of organism to thermal inactivation and are therefore utilized as the surrogate organism to ensure that all microorganisms will be rendered non-viable. This procedure is designed to recover, identify, and quantify the indicator organism and is not intended to recover other microorganisms collected by the sampling train.

1.2 Principle. With the incinerator operating under recommended conditions, it is charged with wastes spiked with known amounts of Bacillus stearothermophilus spores. Emission samples are collected isokinetically in a buffered solution in impingers. The recovered samples are aliquoted. One sample of each aliquot will not be heat-treated. The samples are cultured. Colonies of B. stearothermophilus are identified and quantified.

2. Apparatus

Note: Mention of trade names or specific product in this method does not constitute endorsement by the Environmental Protection Agency.

2.1 Sterilization. Autoclave capable of steam sterilization at conditions of 121°C for 15 minutes at 15 psi. Specific apparatus and reagents that contact the recovered sample shall be sterilized under these conditions by autoclaving or other equivalent method.

2.2 Sampling. The sampling train is shown in Figure 1 and is composed of the following component parts.

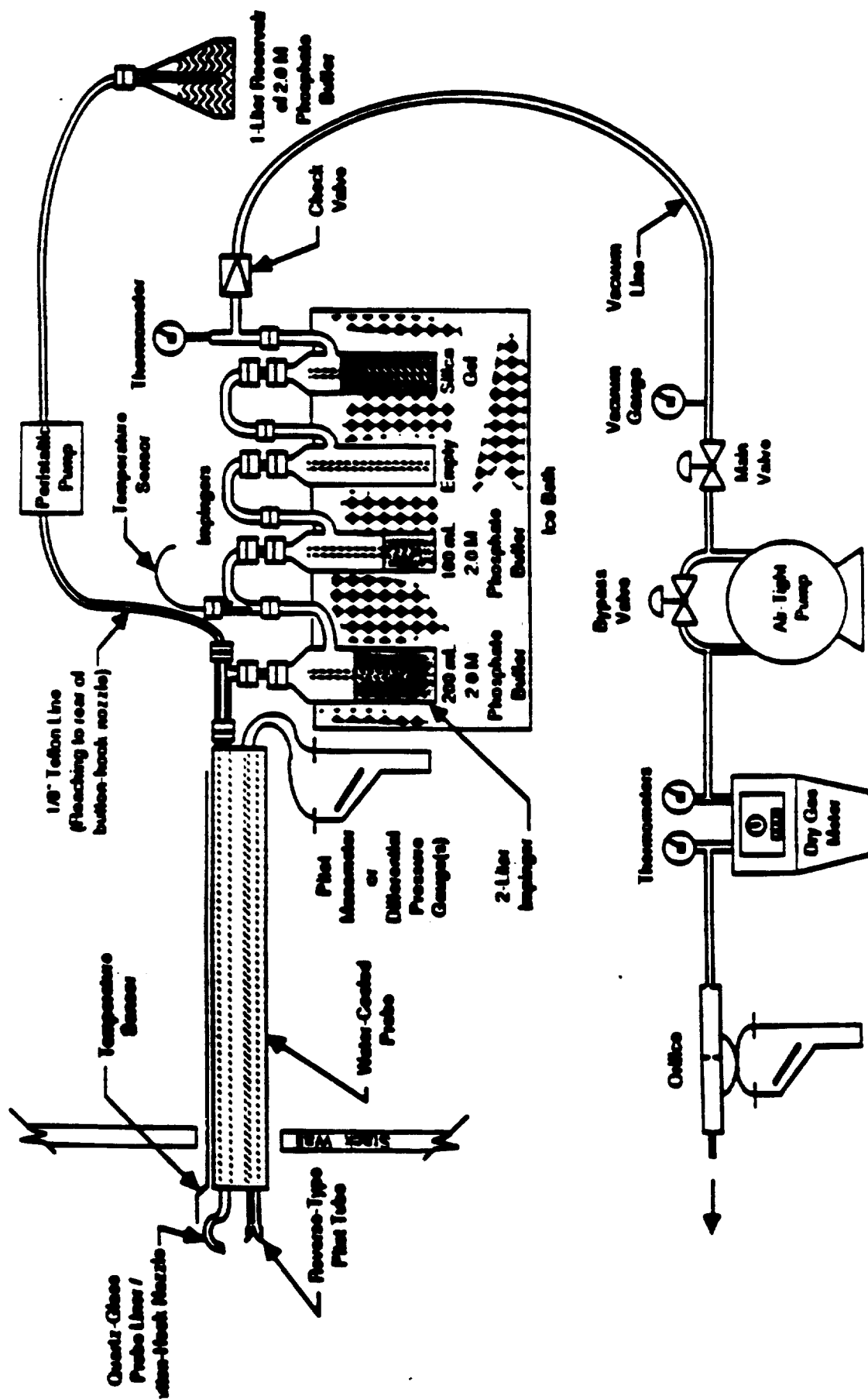


Figure 1. Sampling Train for Microbial Emissions

2.2.1 Probe Nozzle/Liner. One piece, quartz glass with button-hook design nozzle having a sharp, tapered leading edge. The angle of taper shall be $\leq 30^\circ$ and the taper shall be on the outside to preserve a constant internal diameter. The nozzle shall be sized based on the range of velocity heads in the duct (EPA Method 2) so that nozzle size need not be changed to maintain isokinetic sampling rates (see Section 4.1.3.1). The nozzle shall be calibrated according to the procedures outlined in Section 5. Select a suitable liner length (and water-cooled probe) such that all traverse points can be sampled.

2.2.2 Water-cooled Probe. Metal sheath incorporating a circulating water system capable of delivering at least 5.7 liters/min (1.5 gal/min) of tap or ice water to cool the length of the quartz probe liner. It should also have provisions for supporting the S-type pitot tube and thermocouple probe.

2.2.3 Pitot Tube. Same as in Method 5, Section 2.1.3, except refer to Figure 1 in this method.

2.2.4 Differential Pressure Gauges. Same as in Method 5, Section 2.1.4.

2.2.5 Impingers. Four impingers of the Greenburg-Smith design connected in series with leak-free ground glass fittings or any similar leak-free non-contaminating fittings. The first impinger shall have sufficient capacity to contain the total volume of buffer originally charged to this impinger, the moisture catch, and the buffer introduced into the probe. The stem tips of the first, third, and fourth impingers shall be modified by replacing the standard tips with 1.3-cm (0.5-in.) ID glass tubing extended to about 1.3 cm from the bottom of the flask. A temperature sensor shall be inserted into the first impinger and a thermometer or temperature sensor shall be placed at the outlet of the fourth impinger for monitoring the gas stream temperatures at

these locations; both shall be capable of measuring temperature to within 1°C (2°F). Alternatively, functionally equivalent systems are acceptable.

2.2.6 Probe Gas Buffering System. Sterile tubing, pumping system, and sterile buffer reservoir to introduce sterile 2.0 M phosphate buffer, pH ~7, into the quartz-glass probe liner in a spray pattern adjacent to the rear of the button-hook nozzle during sampling. Teflon tubing 32-mm (1/8-in.) OD crimped at the end and punched with needle-sized holes has been shown to be suitable. The pumping system should be capable of delivering buffer to the probe at a rate of approximately 15 to 20 ml/min. An acceptable configuration is illustrated in Figure 1.

2.2.7 Metering System. Same as in Method 5, Section 2.1.8.

2.2.8 Barometer. Same as in Method 5, Section 2.1.9.

2.2.9 Gas Density Determination Equipment. Same as in Section 2.1.10 of Method 5.

2.3 Sample Recovery.

2.3.1 Probe Brush. Nylon bristle brush with stainless steel, plastic, or Teflon handle. The probe brush shall have extensions (at least as long as the probe) of similar material. The brush shall be properly sized and shaped to brush out the probe liner and nozzle with the probe gas buffering system installed.

2.3.2 Wash Bottles (sterile). Two glass, polyethylene, or Teflon wash bottles are recommended.

2.3.3 Sample Storage Containers (sterile). Glass containers with leak-free caps, 2-liter.

2.4 Analysis.

2.4.1 Incubator. Air convection type, capable of aerobic incubation at 55 to 65°C.

2.4.2 Incubation Tubes (sterile). Heat-proof tubes or bottles.

2.4.3 Water Bath. Capable of maintaining a temperature of 80°C.

2.4.4 Petri Dishes (sterile).

2.4.5 Filter Units (sterile). Nalgene^R 0.2-µm cellulose nitrate membrane analytical filter units or equivalent.

3. Reagents

3.1 Sampling.

3.1.1 Water. All water used shall be sterile deionized water.

3.1.2 Collection and Probe Gas Buffering Reagent (sterile). Buffered phosphate solution (2.0 M), approximate Ph 7. Prepare by dissolving 174.2 g dibasic potassium phosphate (K_2HPO_4) and 136.1 g monobasic potassium phosphate (KH_2PO_4) in water and diluting to 1 liter. Approximately 2 liters are required for each test run.

3.1.3 Crushed Ice.

3.1.4 Silica Gel. Same as in Method 5, Section 3.1.2.

3.1.5 Stopcock Grease. Heat-stable silicone grease. This is not necessary if screw-on connectors with Teflon sleeves or similar, inert, fittings are used.

3.1.6 Indicator Microorganisms. Bacillus stearothermophilus spores. The theoretical spore charge to the incinerator when mixed with wastes should be at least 10^{12} spores total per sampling run. With advance notice, liquid cultures at this level can be produced by the Fermentation Facility, Department of Biochemistry, University of Alabama at Birmingham, UAB Station, Birmingham, Alabama, 35294 (Telephone No. 205-934-5561). For spiking purposes, cultures will be inoculated into or onto materials normally found in the medical waste stream.

3.2 Analysis. The analytical reagents recommended have been demonstrated to be suitable for culturing and enumerating the indicator spores. Other reagents may also be used if demonstrated to be suitable.

3.2.1 Water. All water used shall be sterile deionized water.

3.2.2 Trypticase Soy Agar Growth Medium. Prepare by mixing 15.0 g pancreatic digest of casein, 5.0 g papaic digest of soy meal, 5.0 g NaCl, and 15.0 g agar with 1 liter of water. Boil to dissolve the agar. Sterilize at 121°C for 15 minutes. This recipe will prepare 100 petri dishes.

3.2.3 1 N Sodium Hydroxide (NaOH). Add 40 g of NaOH to a 1-liter volumetric flask containing water and dilute to volume with water while mixing.

3.2.4 Balance. To measure within 0.5 g.

4. Procedure

4.1 Sampling.

4.1.1 Pretest Preparation. It is suggested that sampling equipment be calibrated and maintained according to the procedures described in Section 3.4 of EPA's Quality Assurance Handbook, Volume III (Citation 4). Clean and hydrogen peroxide/alcohol-disinfect the nozzle/probe liner, first three impingers, all connections, and the nozzle/probe liner brush as follows: Soak in 1.0 N HNO₃ for at least one hour, wash with a laboratory detergent, rinse three times with tap water and three times with deionized water, and finally, rinse with 90 percent ethanol. During storage between cleaning and assembly, plug all component inlets and outlets with similarly-prepared cork or rubber stoppers, or cover with Parafilm^R. Store the probe brush in a clean plastic bag.

4.1.2 Preparation of Collection Train. Assemble the train as in Figure 1, using applicable sections of Citation 4 as a guide. Aseptically add

200 ml and 100 ml of collecting reagent to the first and second impingers, respectively. Transfer approximately 200 to 300 g of silica gel to the fourth impinger. If the stack gas moisture is to be determined using this train, weigh all four impingers to the nearest 0.5 g. Mark the probe with heat-resistant tape or by other means to denote the proper distance into the stack or duct for each sampling point. Place crushed ice around the impingers.

4.1.3 Preliminary Determinations. Same as in Method 5, Section 4.1.2, with the addition that the total sampling time shall be such that the pH of the first impinger will remain above five.

4.1.4 Leakcheck Procedures.

4.1.4.1 Pretest Leakcheck. This pretest leakcheck is recommended, but not required. Plug the inlet to the first impinger using a sterile plug, and pull a 380-mm Hg (15-in. Hg) vacuum. (A lower vacuum may be used, provided that it is not exceeded during the test.) Then connect the probe to the train and leak check at about 25-mm Hg (1-in. Hg) vacuum. Alternatively, the probe may be leak checked with the rest of the sampling train, in one step, at 380mm Hg (15-in. Hg) vacuum. Leakage rates in excess of 4 percent of the average sampling rate or $0.00057 \text{ m}^3/\text{min}$ (0.02 cfm), whichever is less, are unacceptable. The leakcheck procedures described in Citation 4 may also be helpful.

4.1.4.2 Leakchecks During Sample Run. If during the sampling run, a component (e.g., impinger) change becomes necessary, a leakcheck as described shall be conducted immediately before the change is made. Leakchecks after component changes are optional.

4.1.4.3 Post-test Leakcheck. A leakcheck is mandatory at the conclusion of each sampling run. The leakcheck shall be done in accordance with the procedures outlined in Section 4.1.4.1, except that it shall be conducted at a

vacuum equal to or greater than the maximum value reached during the sampling run. If the leakage rate is acceptable, no correction need be applied to the total volume of dry gas metered. If, however, an unacceptable leakage rate is obtained, the tester shall either record the leakage rate and correct the sample volume as shown in Section 6.3 of Method 5, or void the sampling run.

4.1.5 Sampling Train Operation.

4.1.5.1 During the sampling run, maintain an isokinetic sampling rate (within 10 percent of true isokinetic unless otherwise specified by the Administrator). Nomographs and programmable calculators are available, which aid in the rapid adjustment of the isokinetic sampling rate without excessive computations. For each run, record the data on a data sheet such as the one shown in Figure 5-2 of Method 5. If this train is to be used to determine the moisture content of the sample gas, determine and record the starting volume of the buffer in the probe gas buffering system reservoir. If used, level and zero the manometer. Because the manometer level and zero may drift due to vibrations and temperature changes, make periodic checks during the traverse. Clean the ports prior to the test run to minimize the chance of sampling deposited material. When the stack is under significant negative pressure, take care to close the coarse adjust valve before inserting the probe into the stack to prevent collection solution from backing into the probe. If necessary, the pump may be turned on with the coarse adjust valve closed.

4.1.5.2 Ensure that the temperatures of the primary (and secondary, if applicable) combustion chamber, as well as the stack have reached the requirements specified in the applicable regulations. Begin sampling just before the spiked wastes are added to the incinerator.

4.1.5.3 Before inserting the probe into the duct and beginning sampling, remove the nozzle cap, verify that the pitot tube and probe are properly positioned (the probe at a slight angle to allow buffer and condensed moisture to drain into the first impinger), and start the circulating water and probe gas buffering systems. Insert the probe into the duct and position the nozzle at the first traverse point with the tip pointing directly into the gas stream. Block off the openings around the probe and port to prevent unrepresentative dilution of the gas stream. Begin sampling by immediately starting the pump and adjusting the flow to isokinetic conditions. Traverse the duct cross-section, as required by Method 1, being careful not to contact the duct walls with the probe nozzle when sampling near the walls or when removing or inserting the probe through the port; this minimizes the chance of extracting deposited material. During the test run, add more ice around the impingers and, if necessary, salt to maintain temperatures of less than 50°C (120°F) in the first impinger and 20°C (68°F) at the silica gel impinger outlet. Also, if a manometer is used, periodically check its level and zero.

4.1.5.4 At the end of the sample run, turn off the coarse adjust valve, remove the probe and nozzle from the stack, and turn off the pump and probe gas buffering system. If this train is to be used to determine the moisture content of the sample gas, determine and record the final volume of the buffer in the probe gas buffering system reservoir. Record the final dry gas meter reading and conduct a post-test leakcheck as outlined in Section 4.1.4.3. Also, leak check the pitot lines as described in Method 2, Section 3.1; the lines must pass this leakcheck in order to validate the velocity head data.

4.1.6 Calculation of Percent Isokinetic. Same as in Section 4.1.6 of Method 5.

4.2 Sample Recovery. Sample recovery procedures are summarized in Figure 2. Allow the probe to cool, ensuring that no foreign contamination enters the nozzle during the process. When the probe has cooled, turn off the water circulating system and wipe off any external matter near the tip of the probe nozzle. Disconnect the probe from the impinger assembly leaving the buffer delivery system inside the probe liner. Using a wash bottle containing sterile buffer solution and the probe brush, wash the interior of the probe liner, and collect the washings in the sample bottle. Remove the umbilical cord from the last impinger. If using this train to determine the moisture content of the sample gas, weigh each of the four impingers to the nearest 0.5 g. Aseptically transfer the contents of the first three impingers to the sample recovery bottle with sterile buffer rinsings. Check the pH of the sample solution using pH paper, and if necessary, adjust to pH 6.0 to 7.5 with 1 N NaOH. Mark the level of liquid in the sample recovery bottle to check for leakage later. For shipment to the laboratory, pack the bottle in ice and maintain at or below 4°C. Ensure that the sample bottle is sufficiently sealed to prevent contamination from melted ice.

4.3 Sample Preparation and Analysis. The procedures for sample preparation and analysis are summarized in Figure 3.

4.3.1 Sample Solution Aliquots. Note the level of liquid in the sample container and confirm on the analysis sheet whether leakage occurred during transport. Mix the sample solution well and divide into the following aliquots using sterile pipets and/or glassware: three 10-ml aliquots, three 100-ml aliquots, and three equal volume aliquots of the remaining solution. Using sterile water, rinse pipets or other glassware used to transfer the sample solutions into the containers.

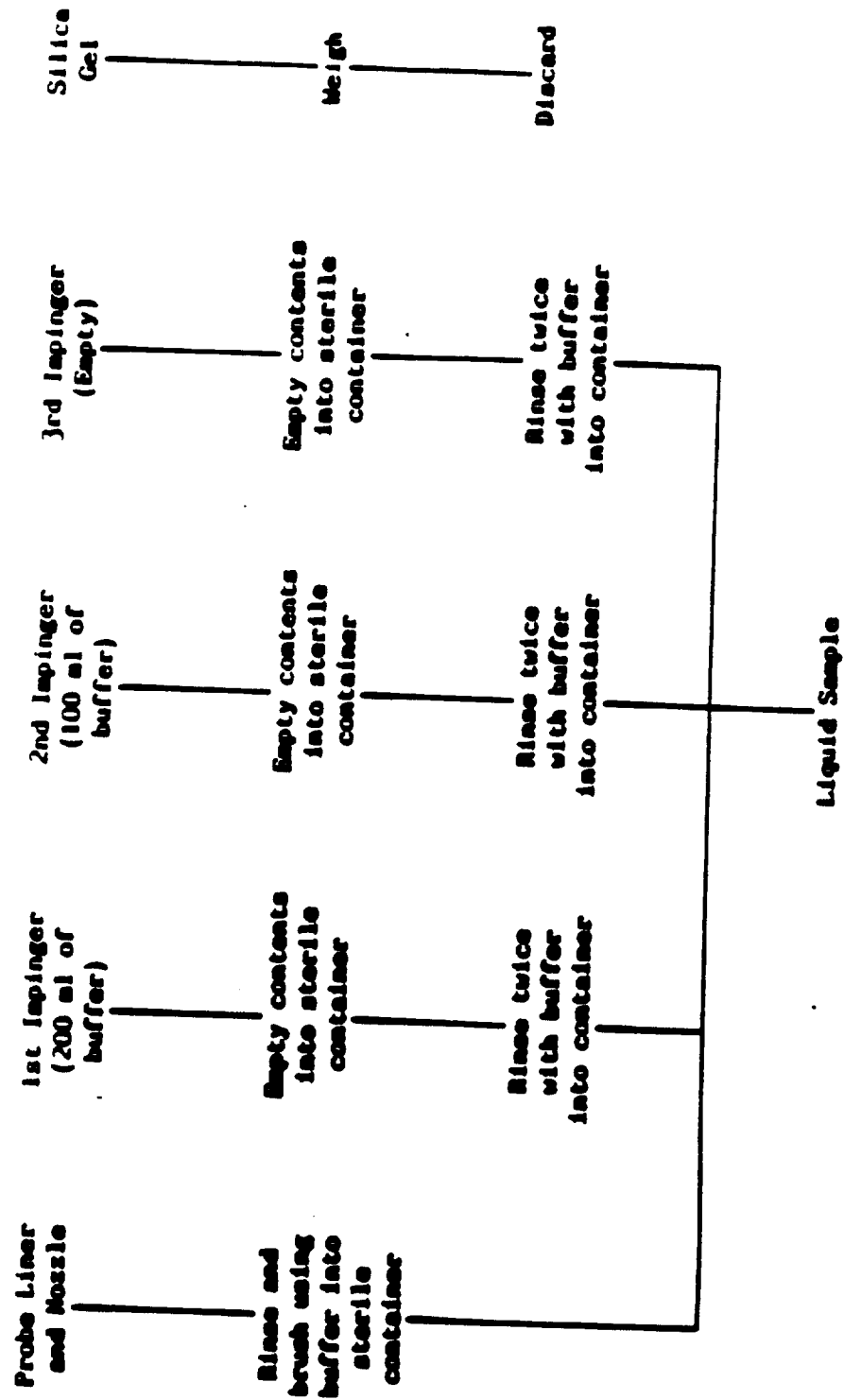
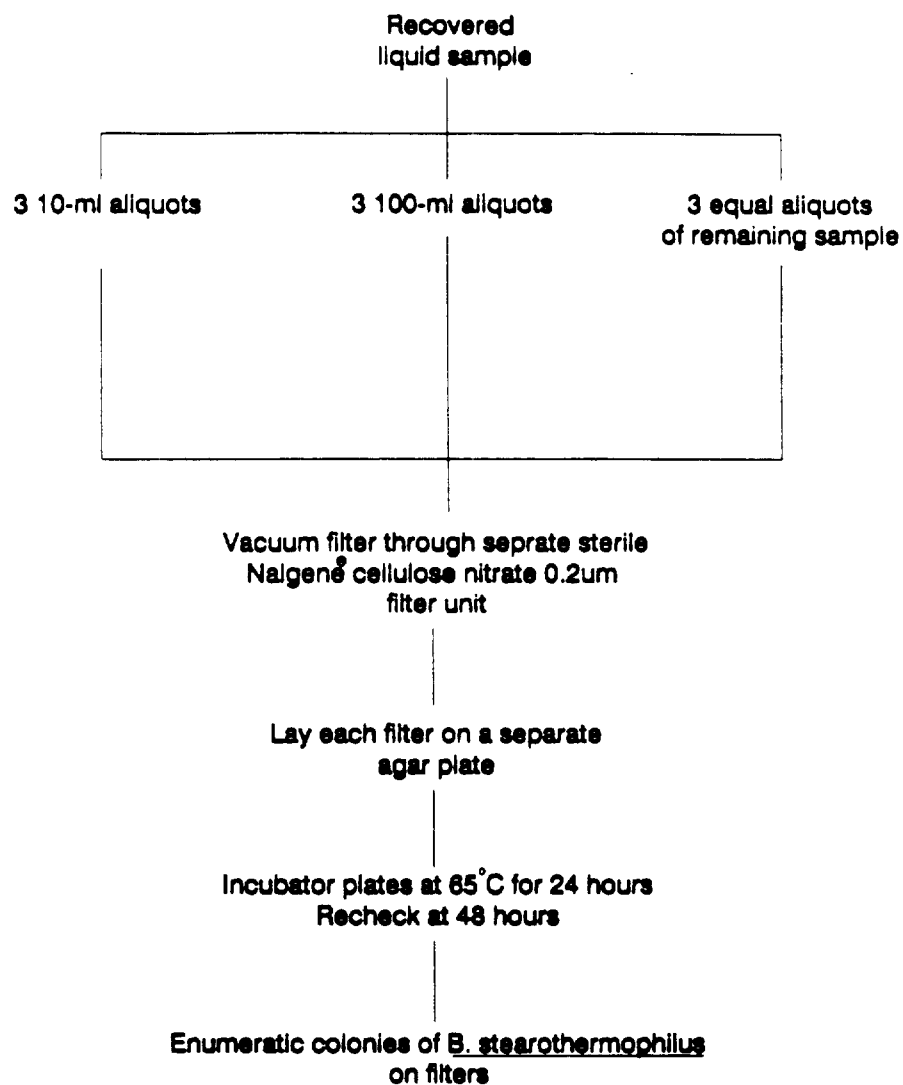


Figure 2. Sample Recovery Scheme for Microbial Testing



4.3.2 Culture Incubation. Pour molten trypticase soy agar into petri dishes. Allow the agar to harden. Using separate filter units, filter each sample aliquot. Rinse each incubation tube with sterile water and pass this rinse through the filter as well. Using sterile tweezers, remove the filters from each unit and place face up on separate agar plates. Aerobically incubate the plates in an air convection incubator at 65°C for 18 to 24 hours.

4.3.4 Quantification. Remove plates from incubator, identify and enumerate the bacterial colonies.

4.3.5 Identification of Indicator Microorganisms. Confirm that the colonies are B. stearothermophilus by testing representative colonies from the plates. A variety of tests, including gram staining and biochemical tests will be used as necessary to correctly identify the colonies.

4.4 Quality Control Procedures.

4.4.1 Meter Orifice Check. The procedures in Sections 4.4.1 and 4.4.2 of Method 5 are recommended, but are optional.

4.4.2 Indicator Microorganisms. Aliquots of the spore suspension used to spike the waste shall be filtered, cultured, and quantified simultaneously with the samples to establish the actual spike quantity.

5. Calibrations

Maintain a laboratory log of all calibrations. Calibrate the probe nozzle, pitot tube, metering system, and barometer as described in Method 5, Sections 5.1, 5.2, 5.3, and 5.7.

6. Calculations

Carry out calculations, retaining at least one extra decimal figure beyond that of the acquired data. Round off figures after the final calculation. Other forms of the equations may be used as long as they give equivalent results.

6.1 Nomenclature.

A = Cross-sectional area of stack, m^2 (ft^2).

A_n = Cross-sectional area of nozzle, m^2 (ft^2).

B_{ws} = Water vapor in the gas stream, proportion by volume.

C = Concentration of *B. stearothermophilus* in stack gas, dry basis, corrected to standard conditions, viable spores/ dsm^3 (viable spores/dscf).

DE = Destruction efficiency, percent.

I = Percent of isokinetic sampling.

M_w = Molecular weight of water, 18.0 g/g-mole (18.0 lb/lb-mole).

N = Number of viable indicator microorganisms in sample.

P_{bar} = Barometric pressure at the sampling site, mm Hg (in. Hg).

P_s = Absolute stack gas pressure, mm Hg (in. Hg).

P_{std} = Standard absolute pressure, 760 mm Hg (29.92 in. Hg).

Q_{sd} = Dry volumetric flue gas flow rate at standard conditions, dscm/min (dscf/min).

R = Ideal gas constant, $0.06236 (mm\ Hg)(m^3)/(^{\circ}K)(g-mole)$
 $[21.85 (in.\ Hg)(ft^3)/(^{\circ}R)(lb-mole)]$.

S_a = Average number of spore colonies counted for three replicate aliquots.

S_e = Number of viable spiked spores exiting stack.

S_s = Number of viable spores spiked in the waste feed.

T_m = Absolute average dry gas meter temperature (see Figure 5-2 of Method 5), $^{\circ}K$ ($^{\circ}R$).

T_s = Absolute average stack gas temperature (see Figure 5-2 of Method 5), $^{\circ}K$ ($^{\circ}R$).

T_{std} = Standard absolute temperature, $293^{\circ}K$ ($528^{\circ}R$).

- V_a = Volume of sample aliquot filtered.
- V_g = Volume of gas exiting stack during test period, dsm^3 (dscf).
- V_{lc} = Total volume of liquid collected in impingers and silica gel (difference between total weight of impingers before and after sampling divided by 1 g/ml), ml.
- V_{lf} = Final volume of liquid sample, ml.
- V_m = Volume of gas sample as measured by dry gas meter, dm^3 (dcf).
- $V_{m(\text{std})}$ = Volume of gas sample measured by the dry gas meter, corrected to standard conditions, dsm^3 (dscf).
- V_{pb} = Volume of buffer introduced into the probe, ml.
- $V_{w(\text{std})}$ = Volume of water vapor in the gas sample, corrected to standard conditions, sm^3 (scf).
- v_s = Stack gas velocity, calculated by Equation 2-9 of Method 2, using data obtained from this method, m/sec (ft/sec).
- Y = Dry gas meter calibration factor.
- ΔH = Average pressure differential across the orifice meter (see Figure 5-2 of Method 5), mm H_2O (in. H_2O).
- ρ_w = Density of water, 0.9982 g/ml (0.002201 lb/ml).
- θ = Total sampling time, min.
- 13.6 = Specific gravity of mercury.
- 60 = Sec/min.
- 100 = Conversion to percent.
- 460 = Correction to absolute temperature.

6.2 Average Dry Gas Meter Temperature and Average Orifice Pressure Drop. See data sheet (Figure 5-2 of Method 5).

6.3 Dry Gas Volume. Correct the sample volume measured by the dry gas meter to standard conditions (20°C, 760 mm Hg or 68°F, 29.92 in. Hg) by using Equation 1.

$$\begin{aligned} V_{m(std)} &= V_m Y (T_{std}/T_m) [(P_{bar} + (\Delta H/13.6))]/P_{std} \\ &= K_1 V_m Y [P_{bar} + (\Delta H/13.6)]/T_m \end{aligned} \quad \text{Eq. 1}$$

where:

$$\begin{aligned} K_1 &= 0.3858 \text{ } ^\circ\text{K/mm Hg for metric units,} \\ &= 17.64 \text{ } ^\circ\text{R/in. Hg for English units.} \end{aligned}$$

NOTE: Equation 1 can be used as written unless leakage is observed during any of the mandatory leakchecks.

6.4 Volume of Water Vapor.

$$V_{w(std)} = V_{lc} (p_w/M_w) (RT_{std}/P_{std}) = K_2 V_{lc} \quad \text{Eq. 2}$$

where:

$$\begin{aligned} K_2 &= 0.001333 \text{ m}^3/\text{ml for metric units,} \\ &= 0.04707 \text{ ft}^3/\text{ml for English units.} \end{aligned}$$

Note: V_{lc} is equal to the final weight of the impingers minus the initial weight of the charged impingers and the buffer introduced into the probe (V_{pb}).

6.5 Moisture Content. Same as in Method 5, Section 6.5.

6.6 Number of Indicator Microorganisms Collected. If possible, use the set of replicate sample values that yields between 20 and 200 counts per plate for conducting these calculations.

$$N = S_a V_{lf}/V_a \quad \text{Eq. 3}$$

6.7 Concentration of Indicator Organisms Collected.

$$C = N/V_{m(std)} \quad \text{Eq. 4}$$

6.8 Flue Gas Flow Rate at Standard Conditions.

$$Q_{sd} = 60 (1-B_{ws}) v_s A (T_{std}/T_s) (P_s/P_{std}) \quad \text{Eq. 5}$$

6.9 Volume of Gas Exiting Stack During Test Period.

$$V_g = Q_{sd} \theta \quad \text{Eq. 6}$$

6.10 Number of Viable Spores Exiting Stack During Test Period.

$$S_e = C V_g \quad \text{Eq. 7}$$

6.11 Destruction Efficiency of Incinerator for Indicator Spores.

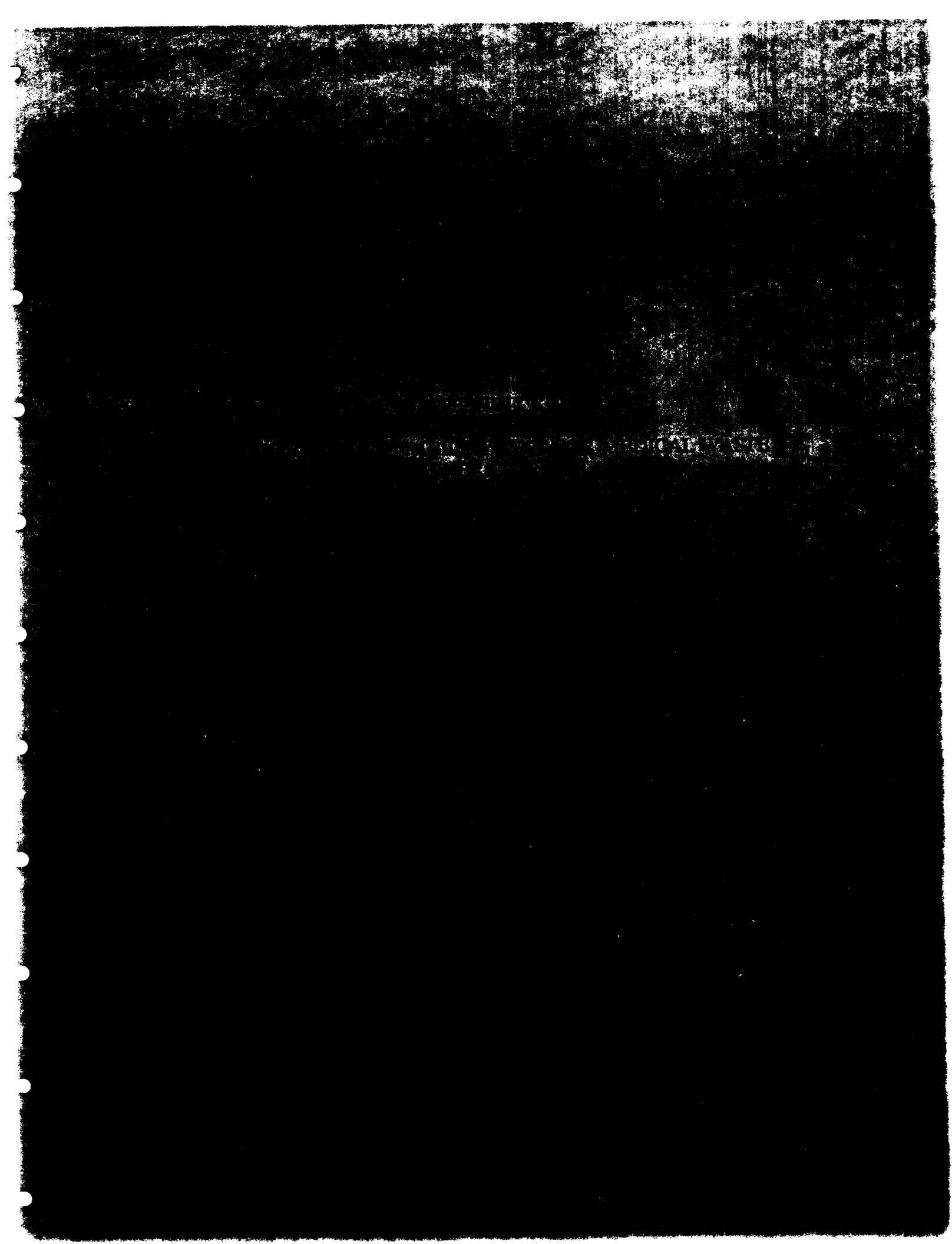
$$DE = [1 - (S_e/S_s)] 100 \quad \text{Eq. 8}$$

6.12 Isokinetic Variation. Same as in Method 5, Section 6.11.

6.12.3 Acceptable Results. Same as in Method 5, Section 6.12.

7. Bibliography

1. Same as in Bibliography of Method 5.
2. American Society for Microbiology. Manual of Methods for General Bacteriology. Washington, D.C., 1981. 524 p.
3. Buchannan, R.E. and N.E. Gibbons. Bergey's Manual of Determinative Bacteriology. Baltimore, MD. The Williams and Wilkins Company. 1974. 1268 p.
4. Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods. U.S. Environmental Protection Agency, Office of Research and Development. Research Triangle Park, NC, 27711. EPA-600/4-77-027b. August 1977.



MICROBIAL SURVIVABILITY TEST FOR MEDICAL WASTE INCINERATOR ASH

1. Applicability and Principle

1.1 Applicability. Two test methods will be performed to determine the survivability of microorganisms in the ash during the normal operation of the medical waste incinerator. The quantification of surviving indicator organisms is utilized as an indication of the effectiveness of incineration as a medical waste treatment technology. This test procedure is intended to recover, identify and quantify the indicator organisms used to determine the efficiency of the incinerator. Bacillus stearothermophilus, a spore forming bacterium, is used because this type of organism is typically the most resistant to thermal inactivation, thereby ensuring that more fragile organisms will be destroyed. The following procedures were developed to recover only the indicator organism.

1.2. Principle. With the incinerator operating under recommended conditions, the waste stream is charged with known quantities of Bacillus stearothermophilus spores in items normally found in the medical waste stream and in the insulated pipes. The samples are added to the incinerator with typical medical wastes and are recovered at the end of the burn cycle when ashes are batch-removed. The destruction efficiency of the incinerator is determined by establishing the survivability of the indicator microorganism.

2. Apparatus

Note: Mention of trade names or specific product in this method does not constitute endorsement by the U.S. Environmental Protection Agency.

2.1 Sterilization. Autoclave capable of steam sterilization conditions of 121°C for 15 minutes at 15 psi. Specific apparatus and reagents that

contact the recovered sample shall be sterilized under these conditions by autoclaving or other equivalent method.

2.2 Sampling. The direct ash samples are collected from the ash after cooling. A thief sampler is used for collection. The sample is collected into sterile containers and stored at 4°C prior to transportation to the laboratory. The pipe sample is shown in Figure 1 and is composed of the following components:

2.2.1 Outer Container. Steel pipe having a two-inch diameter and 6 in. long with end caps to contain the sample. (Note: Since components are commonly available in English units, only English units are specified). The ends of the pipe shall be threaded to attach the metal caps. Etch or stamp each tube for identification.

2.2.2 Inner Container. 2-in. length of 3/8-stainless-steel tubing with stainless-steel Swagelok caps. Other leak-free stainless-steel fittings may be used as alternatives.

2.2.3 Insulation. Vermiculite, or other thermal insulating material. The insulation shall be such that the inner container is maintained in the center portion of the outer container to protect it from thermal shock.

2.3 Sample Recovery.

2.3.1 Gloves. Of sufficient quality to protect the tester from microorganisms that may be present in the ash.

2.3.2 Sample Retrieval Instruments. Shovel, tongs, thieves or other instruments for removing an incinerator ash sample and the pipe sample from the ash dump.

2.3.3 Sample Storage Containers. Pipe Samples are placed inside plastic bags. Direct ash samples are placed in sterile containers then in plastic bags. All samples are stored at 4°C until transport to the laboratory.

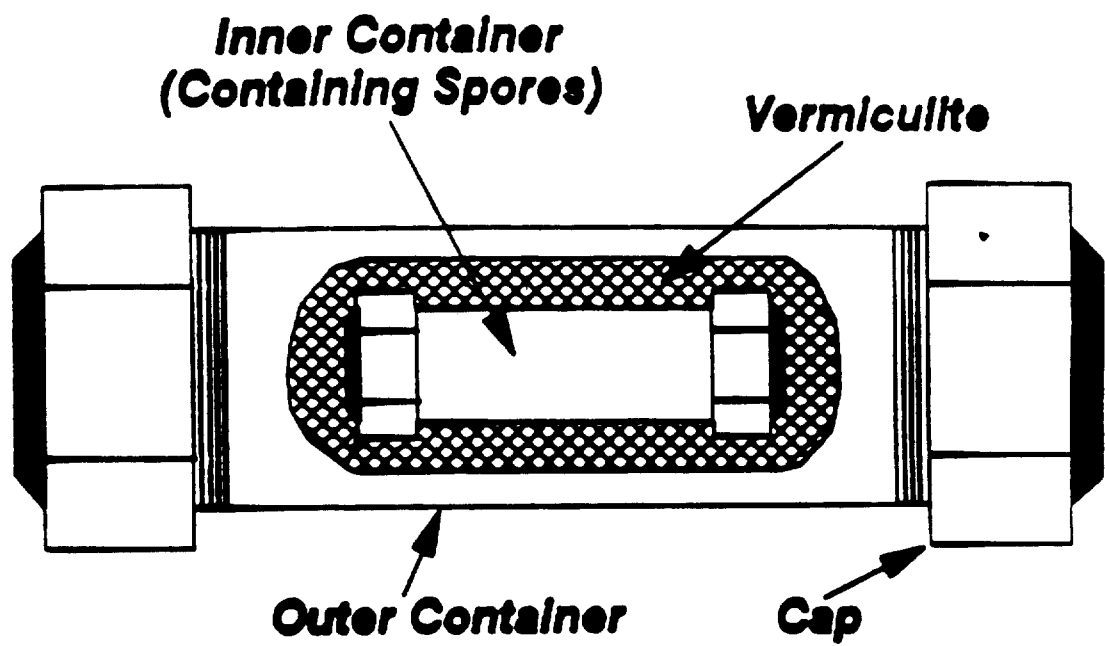


Figure 1. Pipe Sample Assembly

2.4 Analysis.

2.4.1 Incubator. Air convection type, capable of aerobic incubation at 55 to 65°C.

2.4.2 Incubation Tubes (Sterile). Heat-proof tubes or bottles.

2.4.3 Water Bath. Capable of maintaining a temperature of 80°C.

2.4.4 Petri Dishes (Sterile).

2.4.5 Filter Units (Sterile). Nalgene^R 0.2-µm cellulose nitrate membrane analytical filter units or equivalent.

3. Reagents

3.1 Sampling and Sample Recovery.

3.1.1 Crushed Ice. For sample storage in the field.

3.1.2 Indicator Microorganisms. Bacillus stearothermophilus spores. Each pipe should contain approximately 1×10^6 dry spores and approximately 1×10^{12} spores per day are being added to the actual waste stream. Dry spores of this quantity may be obtained from ATCC, 12301 Parklawn Drive, Rockville, MD 20857. (Telephone No. 800-638-6597).

B.stearothermophilus is also added to the waste stream at approximately 1×10^6 spores per day. Direct ash samples will be taken each day to determine actual spore survivability or the incinerator destruction efficiency.

3.2 Analysis. The analytical reagents will vary according to the culture and identification procedure used. The reagents described are required for the example tests listed in this method. Other reagents suitable for appropriate alternative tests are acceptable.

3.2.1 Water. All water used shall be sterile deionized.

3.2.2 Spore Reagent (Sterile). Buffered phosphate solution (2.0 M) prepared by dissolving 174.2 g dibasic potassium phosphate (K_2HPO_4) and

136.1 g monobasic potassium phosphate (KH_2PO_4) in water and diluting to 1 liter.

3.2.3 Trypticase Soy Agar Growth Medium. Prepare by mixing 15.0 g pancreatic digest of casein, 5.0 g papaic digest of soy meal, 5.0 g NaCl, and 15.0 g agar with 1 liter of water. Boil to dissolve the agar. Sterilize at 121°C for 15 minutes. This recipe will prepare 10 petri dishes.

4. Procedure

4.1 Sampling.

4.1.1 Sample Preparation.

4.1.1.1 Clean the inner pipe and caps before use. Remove the cap from the spore vial and breakup the spore cake using a clean instrument. Secure one end cap to the inner container. Carefully transfer the crushed cake of 1×10^6 spores into the inner sample container, and seal the other end cap. All sampling instruments (i.e. sampling thief) used to take the actual sample are sterilized. Sterile sample containers for the ash samples are obtained.

4.1.1.2 Secure one end cap to the outer container, and add enough vermiculite to allow the inner container to be positioned in the approximate middle and center of the outer tube. Add additional vermiculite, gently tapping the outer container to effect settling, until full. Secure the other end cap. The spore inoculation techniques are discussed in Appendix A.3 will be used for inoculation of waste items for direct ash sampling. A total of 1×10^{12} spores are added to the waste stream per sampling day.

4.1.2 Incinerator Spike. The incinerator spike will vary according to loading practice. For semi-continuous loading operations, add a set of three samples to the incinerator at the beginning, middle, and end of a normal day's loading period (9 total samples per daily burn). Disperse each sample per set in different sections of the wastes to be charged. For single-charge batch

operations, place all 9 samples on the incinerator bed before any wastes are charged. Divide the bed into a grid of 9 equal areas. Place a sample in the approximate center of each grid. Load the wastes charge in a manner that will not disturb the sample arrangement.

4.2 Sample Recovery. The sample recovery will vary according to incinerator ash-removal practice. Recover the samples during ash removal following the cool-down period for batch removal operations or as they emerge in the ash bin for continuous cleanout operations. NOTE: For units having water-quenched ash bins, care should be taken to remove the samples quickly from the bin to prevent contamination. Remove excess debris from the recovered samples, place in a plastic bag, and pack in ice to maintain at or below 4°C. Ensure that the samples are protected from contamination from melted ice.

4.3 Analysis.

4.3.1 Sample Preparation of Analysis. The samples should be delivered to the laboratory within 96 hours. A pH is performed on the direct ash samples at the time of recovery. Upon delivery to the laboratory the pipe sample is opened, the outer container and vermiculite are discarded after the inner container is recovered. The inner container should be cleaned sufficiently to prevent cross-contamination when opening the sample. The contents of the inner pipe container is then transferred aseptically into sterile test tubes. The inside of the container is rinsed with sterile water and this is placed in the test tube.

Ash samples must be thoroughly mixed to ensure homogeneity. Approximately one gram of ash is then added to 3-100 ml aliquots of sterile water. A six log serial dilution of each aliquot will then be prepared.

4.3.2 Culture Development. Pour molten trypticase soy agar into 10 petri dishes and allow the agar to harden. Using a separate cellulose nitrate

filter, for each serial dilution, filter each concentration from each ash suspension. Using sterile tweezers, remove the filters from each unit and place face up on separate agar plates. Aerobically incubate the plates in an air convection incubator at 65°C for 18 to 24 hours.

4.3.4 Identification of Indicator Microorganisms. A variety of tests may be used to identify B. stearothermophilus. As a minimum, techniques to establish that the microorganisms found are gram-positive, rod-shaped, spore-producers should be used. This may be performed using stain/morphological/biochemical tests or by strip/card testing units for determining biochemical profile.

4.4 Quality Control Procedures.

4.4.1 Indicator Organisms. Spores from a vial not subjected to the incinerator test shall be dissolved in spore reagent, appropriately aliquoted to yield a final plate count of between 20 and 200 colonies, developed, and enumerated simultaneously with the samples as a control to aid in establishing colony identity.

5. Calculation

5.1 Microbial Survivability of Indicator Spores.

$$MS = [1 - (S_r/S_s)] 100$$

Eq. 1

where:

MS = Microbial Survivability, percent (to 6 sig. figures).

S_r = Number of spore colonies counted in the analysis.

S_s = Number of spores in original spike vial.

100 = Conversion to percent.

6. Bibliography

1. American Society for Microbiology. Manual of Methods for General Bacteriology. Washington, D.C. 1981. 524 p.
2. Buchanan, R.E. and N.E. Gibbons. Bergey's Manual of Determinative Bacteriology. Baltimore, MD. The Williams and Wilkins Company. 1974. 1268 p.

EPA MEDICAL WASTE INCINERATION TESTS
PROPOSED ASH SAMPLING PROTOCOL
Revision 2 - 8/7/90

I. PRE-SAMPLING PREPARATION

A. Sifter (see Figure 1)

1. Scrub the sifter with soapy water and clean with a disinfectant such as Virex 128. Allow the sifter to air dry in a clean, dry area.
2. Disinfect with a 3 percent hydrogen peroxide solution, allow to air dry in a clean, dry area.
3. Cover the can with clean plastic and seal the lid until use.

B. Other

1. Where possible, use disposable items that have been disinfected for sampling. Examples of disposable items are disposable gloves, garments, etc. Use new bottles to store samples.

II. ASH SAMPLING PROCEDURE

- A. Open the incinerator door.
- B. Remove shovel from the storage container and allow to air dry in a clean, dry area.
- C. Remove ash from the chamber with a shovel and deposit it into the top of the sifter.
- D. Gently sift the ash until fines fall into the bottom of the sifter.
- E. Remove the sifter basket and deposit coarse material into a tared trash can.
- F. Repeat Steps C through E until the desired amount of ash is removed. The amount of the ash that is removed will be determined by the hospital's normal ash removal procedures.
- G. When the ash has been extracted, weigh and record the amount of coarse material removed.
- H. Place the lid tightly on the sifter.
- I. Roll the sifter for a minimum of one minute to uniformly mix ash fines.
- J. Remove the lid after the ash has settled.
- K. Remove sampling thief (grain sampler, three feet long with $\frac{1}{4}$ inch slots) from storage container and allow to air dry in a clean, dry place.
- L. Take samples using sampler. Collect four samples into 950 ml bottles by repeatedly inserting sampler into random locations in the ash bed within the sifter drum. Seal the bottles, wipe each

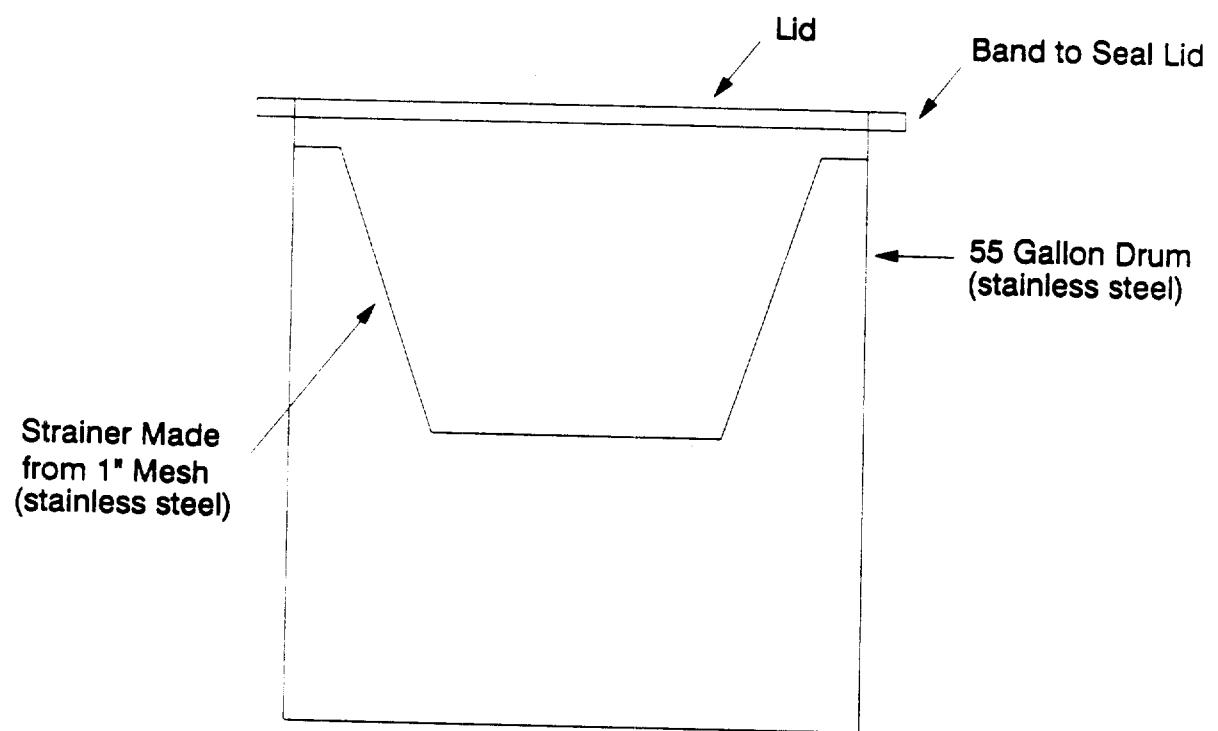


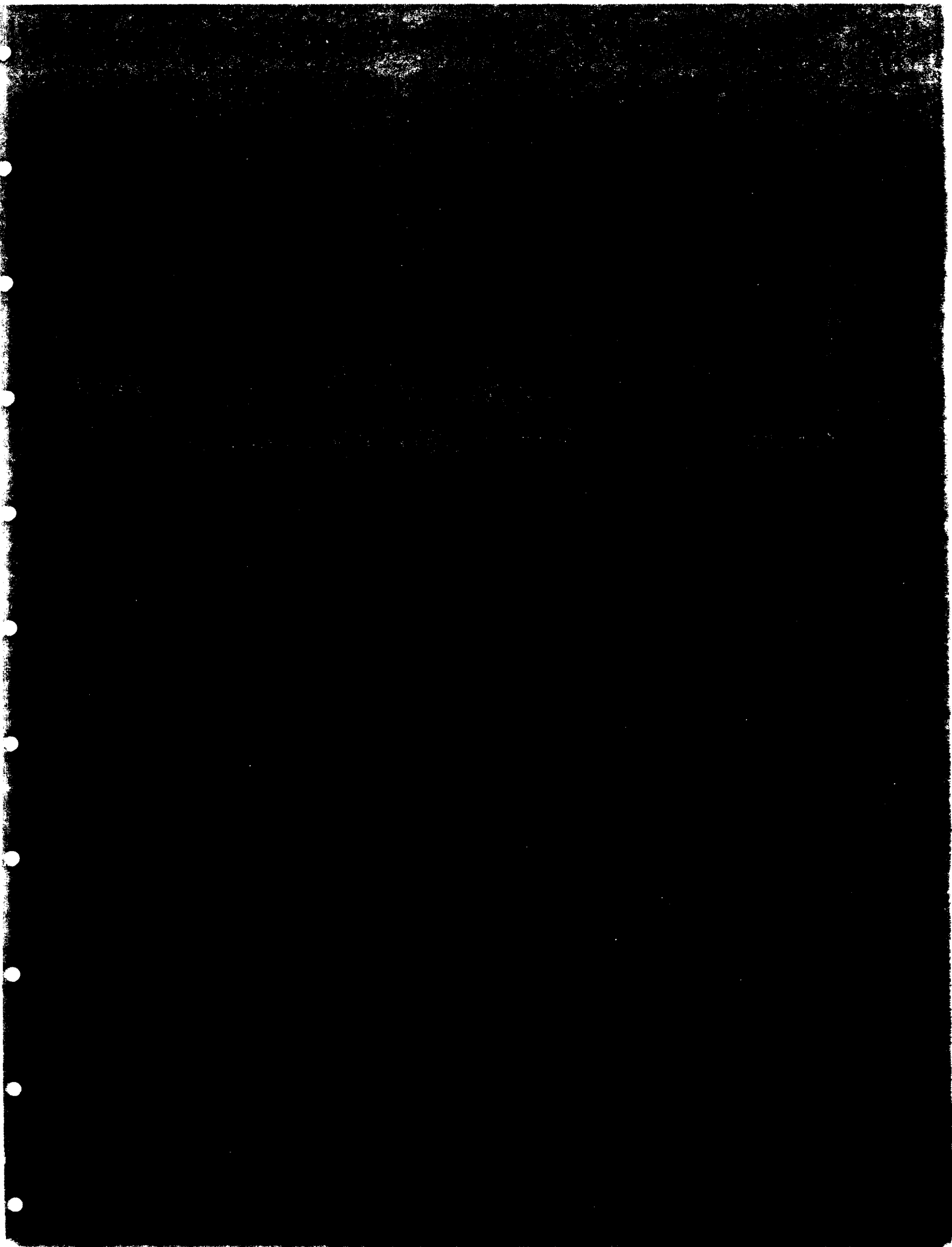
Figure 1. Incinerator Ash Sampling Sifter

with disinfectant and label the bottles immediately. Store labeled bottles in a refrigerator (microbial samples only).

- M. The four samples will be sent for analysis as follows:
1. 950 ml for dioxin analysis.
 2. 950 ml for metals/carbon/loss on ignition (LOI) analysis.
 3. 950 ml for spore enumeration analysis.
 4. 950 ml for archive purposes.

III. POST SAMPLING PREPARATION

- A. Clean and prepare the utensils for next use. Store them in containers filled with 3 percent hydrogen peroxide solution.
- B. Clean and disinfect the sifter for the next use.



* * * * *

METHOD 26 - DETERMINATION OF HYDROGEN CHLORIDE

EMISSIONS FROM STATIONARY SOURCES

1. Applicability, Principle, Interferences, Precision, Bias, and Stability

1.1 Applicability. This method is applicable for determining hydrogen chloride (HCl) emissions from stationary sources.

1.2 Principle. An integrated sample is extracted from the stack and passed through dilute sulfuric acid. In the dilute acid, the HCl gas is dissolved and forms chloride (Cl^-) ions. The Cl^- is analyzed by ion chromatography (IC).

1.3 Interferences. Volatile materials which produce chloride ions upon dissolution during sampling are obvious interferences. Another possible interferent is diatomic chlorine (Cl_2) gas which reacts to form HCl and hypochlorous acid (HOCl) upon dissolving in water. However, Cl_2 gas exhibits a low solubility in water and the use of acidic, rather than neutral or basic collection solutions, greatly reduces the chance of dissolving any chlorine present.

1.4 Precision and Bias. The within-laboratory relative standard deviations are 6.2 and 3.2 percent at HCl concentrations of 3.9 and 15.3 ppm, respectively. The method does not exhibit a bias to Cl_2 when sampling at concentrations less than 50 ppm.

1.5 Stability. The collected samples can be stored for up to 4 weeks before analysis.

1.6 Detection Limit. The analytical detection limit of the method is $0.1 \mu\text{g}/\text{ml}$.

2. Apparatus

2.1 Sampling. The sampling train is shown in Figure 26-1, and component parts are discussed below.

2.1.1 Probe. Borosilicate glass, approximately 3/8-in. (9-mm) I.D. with a heating system to prevent moisture condensation. A Teflon-glass filter in a mat configuration should be installed to remove particulate matter from the gas stream (see Section 2.1.5). A glass wool plug should not be used to remove particulate matter since a negative bias in the data could result.

2.1.2 Three-way Stopcock. A borosilicate-glass three-way stopcock with a heating system to prevent moisture condensation. The heated stopcock should connect to the outlet of the heated filter and the inlet of the first impinger. The heating system should be capable of preventing condensation up to the inlet of the first impinger. Silicone grease may be used, if necessary, to prevent leakage.

2.1.3 Impingers. Four 30-ml midget impingers with leak-free glass connectors. Silicone grease may be used, if necessary, to prevent leakage. For sampling at high moisture sources or for sampling times greater than one hour, a midget impinger with a shortened stem (such that the gas sample does not bubble through the collected condensate) should be used in front of the first impinger.

2.1.4 Drying Tube or Impinger. Tube or impinger, of Mae West design, filled with 6- to 16-mesh indicating type silica gel, or equivalent, to dry the gas sample and to protect the dry gas meter and pump. If the silica gel has been used previously, dry at 175°C (350°F) for 2 hours. New silica gel may be used as received. Alternatively, other types of desiccants (equivalent or better) may be used.

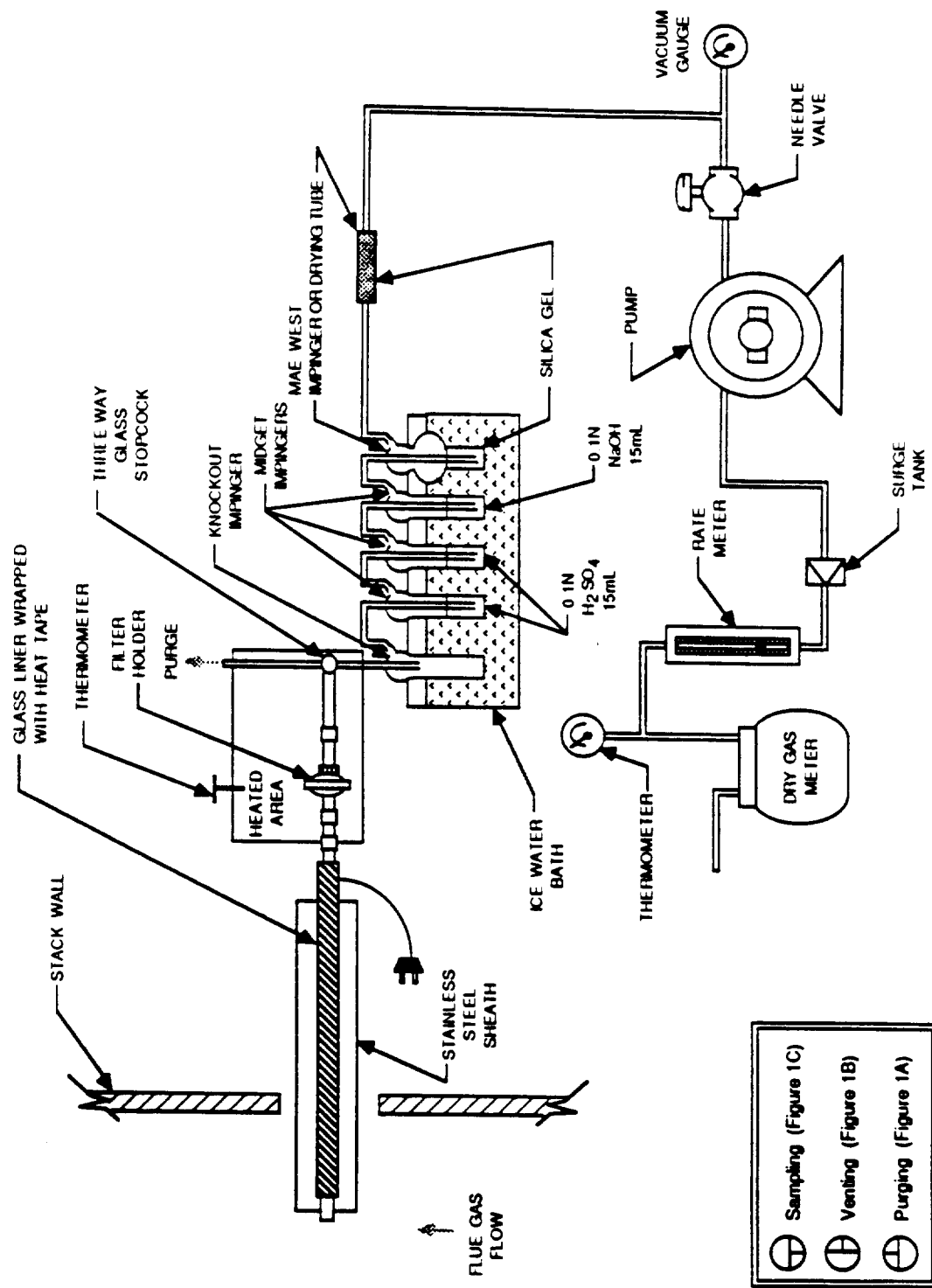


Figure 26-1. Sampling train.

2.1.5 Filter. A 25-mm (or other size) Teflon-glass mat, Pallflex TX40HI75 (Pallflex Inc., 125 Kennedy Drive, Putnam, CT 06260). This filter is in a mat configuration to prevent fine particulate matter from entering the sampling train. Its composition is 75% Teflon/25% borosilicate glass. Other filters may be used, but they must be in a mat (as opposed to a laminate) configuration and contain at least 75% Teflon.

2.1.6 Filter Holder and Support. The filter holder should be made of Teflon or quartz. The filter support shall be made of Teflon. All Teflon filter holders and supports are available from Savillex Corp., 5325 Hwy 101, Minnetonka, MN 55345.

2.1.7 Sample Line. Leak-free, with compatible fittings to connect the last impinger to the needle valve.

2.1.8 Rate Meter. Rotameter, or equivalent, capable of measuring flow rate to within 2 percent of the selected flow rate of 2 liters/min.

2.1.9 Purge Pump, Purge Line, Drying Tube, Needle Valve, and Rate Meter. Pump capable of purging the sampling probe at 2 liters/min, with drying tube, filled with silica gel or equivalent, to protect pump, and a rate meter capable of measuring 0 to 5 liters/min.

2.1.10 Stopcock Grease, Valve, Pump, Volume Meter, Barometer, and Vacuum Gauge. Same as in Method 6, Sections 2.1.4, 2.1.7, 2.1.8, 2.1.10, 2.1.11, and 2.1.12.

2.1.11 Temperature Measuring Devices. Temperature measuring device to monitor the temperature of the probe and a thermometer or other temperature measuring device to monitor the temperature of the sampling system from the outlet of the probe to the inlet of the first impinger.

2.1.12 Ice Water Bath. To minimize loss of absorbing solution.

2.2 Sample Recovery.

2.2.1 Wash Bottles. Polyethylene or glass, 500-ml or larger, two.

2.2.2 Storage Bottles. 100-ml glass, with Teflon-lined lids, to store impinger samples (two per sampling run).

2.3 Sample Preparation and Analysis. The materials required for volumetric dilution and chromatographic analysis of samples are described below.

2.3.1 Volumetric Flasks. Class A, 100-ml size.

2.3.2 Volumetric Pipets. Class A, assortment. To dilute samples into the calibration range of the instrument.

2.3.3 Ion Chromatograph. Suppressed or non-suppressed, with a conductivity detector and electronic integrator operating in the peak area mode. Other detectors, strip chart recorders, and peak height measurements may be used.

3. Reagents

Unless otherwise indicated, all reagents must conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society (ACS reagent grade). When such specifications are not available, the best available grade shall be used.

3.1 Sampling.

3.1.1 Water. Deionized, distilled water that conforms to ASTM Specification D 1193-77, Type 3.

3.1.2 Absorbing Solution, 0.1 N Sulfuric Acid (H_2SO_4). To prepare 100 ml of the absorbing solution for the front impinger pair, slowly add 0.28 ml of concentrated H_2SO_4 to about 90 ml of water while stirring, and adjust the

final volume to 100 ml using additional water. Shake well to mix the solution.

3.1.3 Chlorine Scrubber Solution, 0.1 N Sodium Hydroxide (NaOH). To prepare 100 ml of the scrubber solution for the fourth impinger, dissolve 0.40 g of solid NaOH in about 90 ml of water, and adjust the final solution volume to 100 ml using additional water. Shake well to mix the solution.

3.2 Sample Preparation and Analysis.

3.2.1 Water. Same as in Section 3.1.1.

3.2.2 Blank Solution. A separate blank solution of the absorbing reagent should be prepared for analysis with the field samples. Dilute 30 ml of absorbing solution to 100 ml with water in a separate volumetric flask.

3.2.3 Sodium Chloride (NaCl) Stock Standard Solution. Solutions containing a nominal certified concentration of 1000 mg/l are commercially available as convenient stock solutions from which working standards can be made by appropriate volumetric dilution. Alternately, concentrated stock solutions may be produced from reagent grade NaCl. The NaCl should be dried at 110°C for 2 or more hours and cooled to room temperature in a desiccator immediately before weighing. Accurately weigh 1.6 to 1.7 g of the dried NaCl to within 0.1 mg, dissolve in water, and dilute to 1 liter. The exact Cl⁻ concentration can be calculated using Eq. 26-1.

$$\mu\text{g Cl}^-/\text{ml} = \text{g of NaCl} \times 10^3 \times 35.45/58.44 \quad \text{Eq. 26-1}$$

Refrigerate the stock standard solution and store no longer than one month.

3.2.4 Chromatographic Eluent. Effective eluents for non-suppressed IC using a resin- or silica-based weak ion exchange column are a 4 mM potassium hydrogen phthalate solution, adjusted to pH 4.0 using a saturated sodium borate solution, and a 4 mM 4-hydroxy benzoate solution, adjusted to pH 8.6

using 1 N NaOH. An effective eluent for suppressed ion chromatography is a solution containing 3 mM sodium bicarbonate and 2.4 mM sodium carbonate. Other dilute solutions buffered to a similar pH and containing no interfering ions may be used. When using suppressed ion chromatography, if the "water dip" resulting from sample injection interferes with the chloride peak, use a 2 mM NaOH/2.4 mM sodium bicarbonate eluent.

4. Procedure

4.1 Sampling.

4.1.1 Preparation of Collection Train. Prepare the sampling train as follows: Pour 15 ml of the absorbing solution into each of the first two impingers, and add 15 ml of scrubber solution to the fourth impinger. Connect the impingers in series with the knockout impinger first, followed by the two impingers containing absorbing solution and the impinger containing the scrubber solution. Place a fresh charge of silica gel, or equivalent, in the drying tube or Mae West impinger.

4.1.2 Adjust the probe temperature and the temperature of the filter and the stopcock, i.e., the heated area in Figure 26-1 to a temperature sufficient to prevent water condensation. This temperature should be at least 20°C above the source temperature, but not greater than 120°C. The temperature should be monitored throughout a sampling run to ensure that the desired temperature is maintained.

4.1.3 Leak-Check Procedure. A leak-check prior to the sampling run is optional; however, a leak-check after the sampling run is mandatory. The leak-check procedure is as follows: Temporarily attach a suitable (e.g., 0-40 cc/min) rotameter to the outlet of the dry gas meter and place a vacuum gauge at or near the probe inlet. Plug the probe inlet, pull a vacuum of at

least 250 mm Hg (10 in. Hg), and note the flow rate as indicated by the rotameter. A leakage rate not in excess of 2 percent of the average sampling rate is acceptable. (NOTE: Carefully release the probe inlet plug before turning off the pump.) It is suggested (not mandatory) that the pump be leak-checked separately, either prior to or after the sampling run. If done prior to the sampling run, the pump leak-check shall precede the leak-check of the sampling train described immediately above; if done after the sampling run, the pump leak-check shall follow the train leak-check. To leak-check the pump, proceed as follows: Disconnect the drying tube from the probe-impinger assembly. Place a vacuum gauge at the inlet to either the drying tube or pump, pull a vacuum of 250 mm (10 in.) Hg, plug or pinch off the outlet of the flow meter, and then turn off the pump. The vacuum should remain stable for at least 30 sec. Other leak-check procedures may be used, subject to the approval of the Administrator, U.S. Environmental Protection Agency.

4.1.4 Purge Procedure. Immediately before sampling, connect the purge line to the stopcock, and turn the stopcock to permit the purge pump to purge the probe (see Figure 1A of Figure 26-1). Turn on the purge pump, and adjust the purge rate to 2 liters/min. Purge for at least 5 minutes before sampling.

4.1.5 Sample Collection. Turn on the sampling pump, pull a slight vacuum of approximately 25 mm Hg (1 in. Hg) on the impinger train, and turn the stopcock to permit stack gas to be pulled through the impinger train (see Figure 1C of Figure 26-1). Adjust the sampling rate to 2 liters/min, as indicated by the rate meter, and maintain this rate to within 10 percent during the entire sampling run. Take readings of the dry gas meter volume and temperature, rate meter, and vacuum gauge at least once every five minutes during the run. A sampling time of one hour is recommended. Shorter sampling

times may introduce a significant negative bias in the HCl concentration. At the conclusion of the sampling run, remove the train from the stack, cool, and perform a leak-check as described in Section 4.1.2.

4.2 Sample Recovery. Disconnect the impingers after sampling. Quantitatively transfer the contents of the first three impingers (the knockout impinger and the two absorbing solution impingers) to a leak-free storage bottle. Add the water rinses of each of these impingers and connecting glassware to the storage bottle. The contents of the scrubber impinger and connecting glassware rinses may be discarded. The sample bottle should be sealed, shaken to mix, and labeled. The fluid level should be marked so that if any sample is lost during transport, a correction proportional to the lost volume can be applied.

4.3 Sample Preparation for Analysis. Check the liquid level in each sample, and determine if any sample was lost during shipment. If a noticeable amount of leakage has occurred, the volume lost can be determined from the difference between the initial and final solution levels, and this value can be used to correct the analytical results. Quantitatively transfer the sample solution to a 100-ml volumetric flask, and dilute the solution to 100 ml with water.

4.4 Sample Analysis.

4.4.1 The IC conditions will depend upon analytical column type and whether suppressed or non-suppressed IC is used. An example chromatogram from a non-suppressed system using a 150-mm Hamilton PRP-X100 anion column, a 2 ml/min flow rate of a 4 mM 4-hydroxy benzoate solution adjusted to a pH of 8.6 using 1 N NaOH, a 50 μ l sample loop, and a conductivity detector set on 1.0 μ S full scale is shown in Figure 26-2.

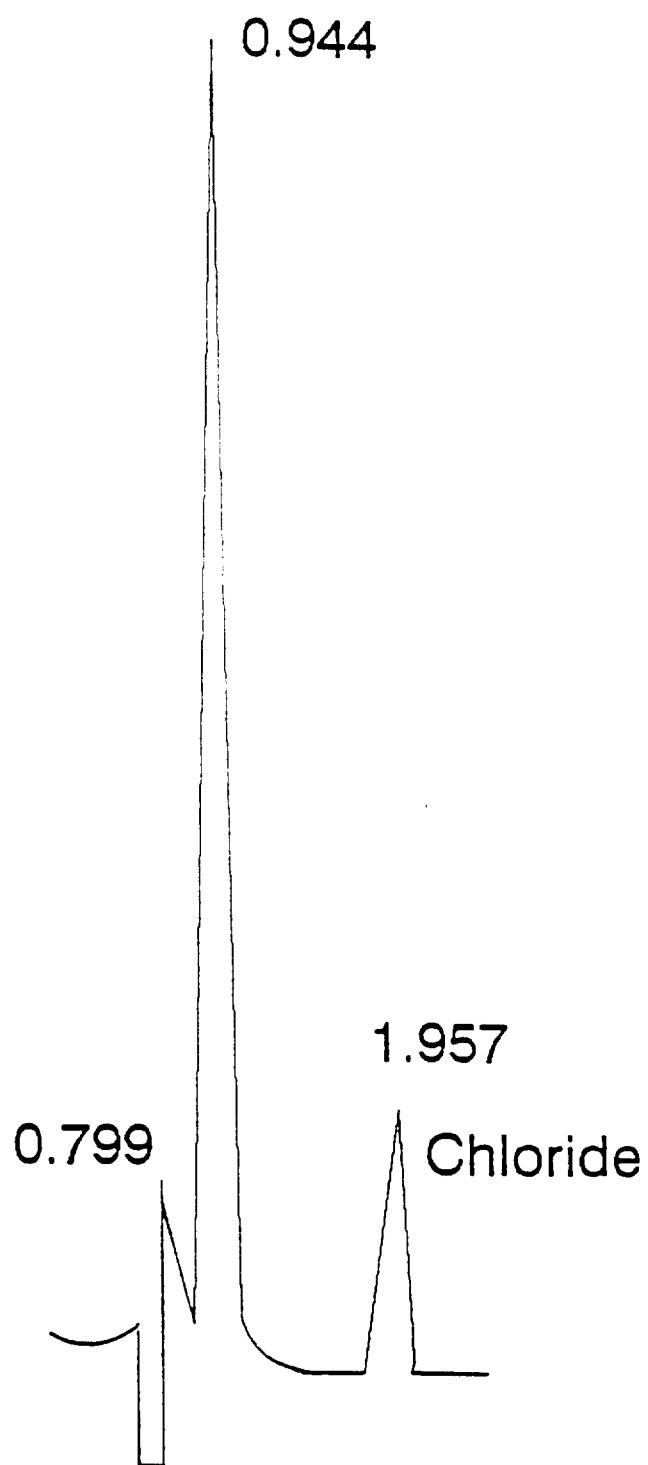


Figure 26-2. Example Chromatogram

4.4.2 Before sample analysis, establish a stable baseline. Next, inject a sample of water, and determine if any Cl^- appears in the chromatogram. If Cl^- is present, repeat the load/injection procedure until no Cl^- is present. At this point, the instrument is ready for use.

4.4.3 First, inject the calibration standards covering an appropriate concentration range, starting with the lowest concentration standard. Next, inject in duplicate, a QC sample followed by a water blank and the field samples. Finally, repeat the injection of calibration standards to allow compensation for any drift in the instrument during analysis of the field samples. Measure the Cl^- peak areas or heights of the samples. Use the average response from the duplicate injections to determine the field sample concentrations using a linear calibration curve generated from the standards.

4.5 Audit Analysis. There is currently no validated audit sample for this method. It is recommended to analyze a QC sample along with the field samples as described above.

5. Calibration

5.1 Dry Gas Metering System, Thermometers, Rate Meter, and Barometer. Same as in Method 6, Sections 5.1, 5.2, 5.3, and 5.4.

5.2 Calibration Curve for Ion Chromatograph. To prepare calibration standards, dilute given volumes (1.0 ml or greater) of the stock standard solution, with 0.1 N H_2SO_4 (Section 3.1.2) to convenient volumes. Prepare at least four standards that are within the linear range of the instrument and which cover the expected concentration range of the field samples. Analyze the standards as instructed in Section 4.4.3, beginning with the lowest concentration standard. Determine the peak areas or heights, and plot

individual values versus Cl^- concentration in $\mu\text{g}/\text{ml}$. Draw a smooth curve through the points. Use linear regression to calculate a formula describing the resulting linear curve.

6. Quality Assurance

6.1 Applicability. When the method is used to analyze samples to demonstrate compliance with a source emission regulation, a set of two audit samples must be analyzed.

6.2 Audit Procedure. The audit samples are chloride solutions. Concurrently analyze the two audit samples and a set of compliance samples in the same manner to evaluate the technique of the analyst and the standards preparation. The same analyst, analytical reagents, and analytical system shall be used both for compliance samples and the EPA audit samples. If this condition is met, auditing of subsequent compliance analyses for the same enforcement agency within 30 days is not required. An audit sample set may not be used to validate different sets of compliance samples under the jurisdiction of different enforcement agencies, unless prior arrangements are made with both enforcement agencies.

6.3 Audit Sample Availability. The audit samples may be obtained by writing or calling the EPA regional Office or the appropriate enforcement agency. The request for the audit samples must be made at least 30 days prior to the scheduled compliance sample analyses.

6.4 Audit Results. Calculate the concentrations in mg/dscm using the specified sample volume in the audit instructions. **NOTE:** Indication of acceptable results may be obtained immediately by reporting the audit results in mg/dscm and compliance results in total $\mu\text{g HCl}/\text{sample}$ to the responsible enforcement agency. Include the results of both audit samples, their

identification numbers, and the analyst's name with the results of the compliance determination samples in appropriate reports to the EPA regional office or the appropriate enforcement agency. Include this information with subsequent analyses for the same enforcement agency during the 30-day period.

The concentrations of the audit samples obtained by the analyst shall agree within 10 percent of the actual concentrations. If the 10 percent specification is not met, reanalyze the compliance samples and audit samples, and include initial and reanalysis values in the test report. Failure to meet the 10 percent specification may require retests until the audit problems are resolved. However, if the audit results do not affect the compliance or noncompliance status of the affected facility, the administrator may waive the reanalysis requirement, further audits, or retests and accept the results of the compliance test. While steps are being taken to resolve audit analysis problems, the Administrator may also choose to use the data to determine the compliance or noncompliance status of the affected facility.

7. Calculations

Retain at least one extra decimal figure beyond those contained in the available data in intermediate calculations, and round off only the final answer appropriately.

7.1 Sample Volume, Dry Basis, Corrected to Standard Conditions.

Calculate the sample volume using Eq. 6-1 of Method 6.

7.2 Total μg HCl Per Sample.

$$m = (S-B)(100)(36.46)/(35.45) = (102.8)(S-B) \quad \text{Eq. 26-2}$$

Where:

m = Mass of HCl in sample, μg .

S = Concentration of sample, $\mu\text{g Cl}^-/\text{ml}$.

B = Concentration of blank, $\mu\text{g Cl}^-/\text{ml}$.

100 = Volume of filtered and diluted sample, ml.

36.46 = Molecular weight of HCl, $\mu\text{g}/\mu\text{g-mole}$.

35.45 = Atomic weight of Cl, $\mu\text{g}/\mu\text{g-mole}$.

7.3 Concentration of HCl in the Flue Gas.

$$C = K m/V_{m(\text{std})}$$

Eq. 26-3

Where:

C = Concentration of HCl, dry basis, mg/dscm.

$K = 10^{-3} \text{ mg}/\mu\text{g}$.

m = Mass of HCl in sample, μg .

$V_{m(\text{std})}$ = Dry gas volume measured by the dry gas meter,
corrected to standard conditions, dscm.

8. Bibliography

1. Steinsberger, S. C. and J. H. Margeson, "Laboratory and Field Evaluation of a Methodology for Determination of Hydrogen Chloride Emissions from Municipal and Hazardous Waste Incinerators," U.S. Environmental Protection Agency, Office of Research and Development, Report No. 600/3-89/064, April 1989. Available from the National Technical Information Service, Springfield, VA 22161 as PB89220586/AS.

2. State of California, Air Resources Board, Method 421, "Determination of Hydrochloric Acid Emissions from Stationary Sources," March 18, 1987.

3. Cheney, J.L. and C.R. Fortune. Improvements in the Methodology for Measuring Hydrochloric Acid in Combustion Source Emissions. J. Environ. Sci. Health. A19(3): 337-350. 1984.

* * * * *

APPENDIX

SECRET

AMI Central Carolina Hospital
Incinerator Test Program

Subject: On - Site External QA/QC Daily Report, September 14,1990
From: External QA Team
To: Distribution

Friday(September 14)

Radian personnel unpacking truck and van. Scaffolding construction is complete. MRI is discussing incinerator operation with consumat service representative. Radian vans and recovery stations have electrical power. CEM instruments are being assembled for calibration and operation.

Radian performed field proof blanks for organics and particulate / metals sampling trains. Sampling probes will be proofed on Wednesday along with the HCL and pathogen sampling trains.

Wednesday(September 19)

Radian performed field proof blanks for the HCL and pathogen sampling trains with their respective probes. Organics and particulate / metals sampling probes were proofed also. Radian is placing the testing equipment at the sampling sites. MRI is conducting preliminary burning of rats. Radian suspected that hospital personnel had sprayed water into the incinerator due to the bottom ash looking wet. This was confirmed when a hospital representative was seen spraying water into the incinerator. After further investigation it was disclosed that it was common practice to spray water into the incinerator after the burn down cycle is complete when red bag waste was previously burned.

Water is sprayed to extinguish the flames that ignite when the incinerator door is opened in the morning after the burn down cycle. The flames are a result of the smoldering waste that has not been completely combusted during the burn down cycle. When the incinerator door is opened, oxygen rich air ignites the smoldering waste into flames. This will be a problem for ash sample recovery.

September 19 cont.

Radian informed Brenda Pierce that they would not spray water into the incinerator for fear of cracking the refractory lining and the liability there of. The CEM operator is having multiple problems with the HCL dilution probe operating properly. Since this unit is rated for 1200 °F, the test condition temperatures will exceed design requirements. The Probe is completely useless and attempts at soaking and cleaning the probe are unsatisfactory. After various conversations with the probe designer in Germany, and following his trouble shooting recommendations with no success, a new high temperature probe (1800 °F) with spare orifice and gauges was ordered with the permission of EMB mangement.

Radian has all sampling equipment at their respective locations. The Radian truck is leaving for waste pickup (rats) and will return tomorrow for the first test run of pathological waste.

Distribution: Ed Ball
Dan Bivins
Linda Brown
Ken Durkee
Jim Eddinger
Mary Greene
Dennis Holzschuh
Winton Kelly
Ed McCarley
Gene Riley

AMI Central Carolina Hospital
Incinerator Test Program

Subject: On - Site External QA/QC Daily Report, September 20, 1990
From: External QA Team
To: Distribution

Thursday(September 20)

Radian is preparing for the first test run. The HCL dilution probe arrived and is being assembled. CEM's are being calibrated and sampling trains are being setup at the various test sites. Radian truck returned with the pathological waste (rats).

Radian started the test run at approximately 14:00 pm. The test parameters consisted of organics (dioxin/furan), particulate / metals, HCL, and pathogen samples being collected at the incinerator flue gas stack. Visible emissions (method 9) observations were conducted simultaneously with particulate / metals sampling. Method 22 observations are being recorded by MRI during the manual loading of the waste.

Dual pipe samples (small/large) containing dried spores and heat indicating pellets were manually placed into the incinerator loading door at 14:00, 16:15, and 18:15. The pathogen sampling consisted of two complete sampling trains. Spore bag samples were charged at 14:00, 15:15, 16:00, and 17:00. Pathogen sampling was conducted from 13:58 to 15:58 for train A, and 15:58 to 17:58 for train B.

Particulate / metals sampling started at 14:00 to 14:20, 14:30 to 16:10, and 16:18 to 18:18. At 14:20 the sampling probe was accidentally broken and replaced. The dioxin train was stopped at this time, and restarted when the particulate / metals sampling train was running again to insure simultaneous sampling. No problems were encountered during the HCL manual sampling.

September 20 cont.

The HCL CEM came on line at 16:10 after proper assembly, purging / calibration. No problems were encountered after unit came on line. Brenda Pierce informed Radian that they could not allow the security guard to patrol anymore unless Radian would be liable in the event of injury. Arrangements are currently being made to acquire security. Brenda Pierce stated that she would have hospital security to make extra rounds observing testing area and equipment.

Medical waste is over flowing and will have to be burned for run 2. Initial ash sample was recovered satisfactorily.

MRI stated the test today will be pathological waste at 100 lbs/hr (25 lb charges every 15 minutes). The primary chamber set point will be 1500 °F. The secondary chamber set point will be 1900 °F, and the unit will be operated in the wet or pathological mode.

The primary chamber set point will turn the primary chamber burners and blower off at 1500 °F or greater and will turn the burners and blower back on if the temperature falls below 1500 °F. The secondary chamber set point will turn the secondary chamber burner off at temperatures of 1900 °F or greater and will turn the burner back on if the temperature falls below 1900 °F. The secondary chamber blower remains on during the entire burn cycle.

There was fairly good burnout of pathological waste from the pre - test burn on september 19, 1990 and the hearth was cleaned and air ports cleared in preparation for the first test run.

Radian was ready to begin at 13:40 and the unit was turned on. The first charge was introduced at 14:00 in keeping with the typical warm up period at this facility and the recommended minimum warm up time by consumat.

The incinerator ran smoothly with no problems. Due to the weight of the large boxes from EPA (30 - 60 lbs), the times were varied between charges in order to maintain approximately 100 lb/hr feed rate. The secondary chamber reached a temperature greater than 1800 °F only occasionally and then for less than 1 minute. The secondary chamber burner appears to be too small to maintain a temperature greater than the primary consistently while burning low BTU, high moisture waste.

September 20 cont.

The secondary blower which is manually set and runs continuously, is forcing too much air in the secondary at times while not supplying enough air at the other times. The last charge went into the unit at 18:15 and testing was completed at 18:20.

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Subject: On - Site External QA/QC Daily Report, September 21, 1990
From: External QA Team
To: Distribution

Friday(September 21)

MRI reported that the proposed test run for today would be for test condition 3, which would charge 160 lbs/hr at 15 minute intervals while maintaining a 1600 °F secondary temperature. Test run 2 was started at approximately 09:45. Organics, particulate / metals, HCL, and pathogen samples were collected at the incinerator flue gas stack. Opacity observations were performed at the stack exit.

Pathogen sampling was conducted from 09:43 to 11:23 and 11:28 to 13:43. Indicator spores were charged at 09:45, 11:00, 12:03, and 12:45. Dual pipe samples were charged at 09:45, 12:03, and 15:45. At 11:04 the pathogen sampling train meter box vacuum began increasing until reaching 19", sampling train was stopped at 11:28. The quartz glass wool filter between the third impinger and the silica gel impinger had plugged. It was decided to stop the sampling train 15 minutes short and sample 15 minutes longer in port A. The sampling probe was broken during sampling train assembly. The swadge lock unions were reamed at both ends to prevent future difficulty in assembling the probe into the water jacket.

HCL sampling was conducted from 09:53 to 10:03, 10:53 to 11:43, 12:30 to 12:35, and 13:21 to 14:36. At 10:03 the sampling train was stopped due to the teflon filter plugging. The filter was replaced and the sampling train leak checked and purged. The second HCL sampling train filter plugged at 12:35. The filter was replaced and the train purged. Sampling was resumed at 13:21. During sampling the vacuum began to increase slowly. The QA team gave permission to extend the sampling time to 80 minutes for this particular test run to obtain the required sample volume.

At the QA teams request, the HCL train operator increased the filter and probe heat temperatures to prevent further condensing and plugging. In addition, insulating wool and aluminum foil was wrapped around the sampling probe and filter assembly to help maintain a constant temperature. Only two HCL manual samples were taken due to time restraints.

September 21 cont.

Organics and particulate / metals sampling began at 09:45 and concluded at 13:57. All manual sampling trains met their required leak check criteria. Sample train recovery techniques were conducted as per method.

CEM operations were normal. CEM teflon filter was changed during manual sampling train port changes to avoid any possible testing delays. Test run 3 will consist of pathological waste.

MRI stated that the incinerator was opened at 07:15 with ash clean out beginning at 08:08 and completed by 09:05. There was fairly good burn out of waste with only a few clumps of smoldering unburned material. Today's test will be hospital waste at approximately 160 lbs/hr (40 lb charges every 15 minutes) with a secondary chamber temperature of 1600 °F. The primary chamber temperature was set at 1500 °F. The hospital feed rate was initially set at 200 lbs/hr and the design feed rate was of this unit according to consumat is 250 lbs/hr.

However, during the pre - test at 200 lbs/hr, the temperatures continued to climb throughout the test reaching very high levels (> 2400 °F) after the feeding cycles. The burn down was very poor making it almost impossible to clean out the incinerator the following morning. After charging for a couple of hours, the accumulation of unburned waste in the incinerator made charging dangerous. For these reasons, it was decided by Jim Eddinger, Charles Hester, and Ed Ball to try a lower hospital waste feed rate (red bag) of 160 lbs/hr.

The incinerator was started at 09:25 with charging beginning at 09:45. The incinerator ran smoothly with no major problems. At 11:25, the primary chamber temperature set was changed from 1500 °F to 1400 °F, in order to limit temperature increase in the secondary chamber just after the feeding cycle. With the primary chamber burner still on just after the feeding cycle, the secondary chamber temperature was climbing to greater than 2300 °F. At 11:56 the primary temperature set point was changed to 1300 °F since the secondary chamber temperature reached 2400 °F.

After this change, the primary chamber burner was off for the remainder of the test and the secondary chamber temperature remained between 1300 °F and 2100 °F. Since the secondary chamber combustion air is manually set and constant, perhaps there is not enough combustion air at the time when the majority of the volatiles are released from the charge. If the primary burners and blowers are on at this time, the temperature in the secondary climbs above 2400 °F, but if the primary burners and blowers are off at this time, then the temperature in the secondary peaks at

September 21 cont.

less than 2100 °F. It may be that even the secondary chamber is substoichiometric at these particular times. Testing was completed at 14:37 and the last charge was at 15:45. It would be interesting to see what the unit would do with hospital waste and a 1900 °F secondary chamber temperature. It is uncertain that this temperature could be maintained in the secondary chamber with the incinerators present configuration.

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Subject: On - Site External QA/QC Daily Report, September 22, 1990
From: External QA Team
To: Distribution

Saturday(September 22)

The test run today will be pathological waste. Radian removed the incinerator bottom ash sample prior to MRI initial firing of the incinerator. The test started approximately at 09:45.

Dioxin, particulate / metals, HCL, and pathogen sampling were conducted at the incinerator flue gas stack. Dioxin sampling began at 09:45 to 11:45, and 12:00 to 14:00. Particulate / metals were sampled from 09:47 to 11:47, and 12:00 to 14:00. No problems were encountered during the operation of the dioxin and particulate / metals manual sampling train.

The HCL manual sampling train began to decrease from the 2 liter / min sampling rate and eventually plugged at 09:59. The filter was replaced only to have it plug again at 10:30. It was decided to insert a quartz glass wool filter in front of the teflon filter to prevent the fine particulates from plugging the filter. This solved the filter plugging problem. The sampling rate can be maintained consistently. At the end of the first one hour HCL run, the sampling train would not leak check.

After further examination it was discovered that the teflon filter holder front support had melted through the probe union. This was a direct result from the probe / filter heat tape temperature being too high. The QA team requested that the first HCL test run be voided.

The remaining HCL test runs were conducted from 12:22 to 13:22, and 13:35 to 14:35 with no problems.

The pathogen sampling began at 09:43 and concluded at 13:43. The dual pipe samples were charged at 09:45, 12:15, and 14:30. The indicator spore bags were charged at 09:45, 11:00, 12:00, and 13:00. All manual sampling trains met acceptable leak check criteria. The sample train recovery techniques were acceptable.

September 22 cont.

The CEM monitoring operations were normal with the exception of the HCL monitor. The HCL CEM dilution probe was removed from the stack at 12:50, due to an increasing vacuum. It is suspected that the quartz glass wool filter in front of the orifice is plugged. The dilution probe is too hot to replace the quartz wool filter, and purge the sampling line in time to complete the last hour of testing.

MRI stated that there was a lot of unburned material remaining in the incinerator when the door was opened. Larry Romesberg of Radian stirred the material around with a hoe and left the mound flaming and the charging door open for approximately one hour before cleaning out the bottom ash. The material was still flaming when clean out began making the job extremely difficult and dangerous. The flames finally had to be quenched with water to continue. The position of the spore pipes could not be determined due to the flames and heat. It appears that burn down is still very bad, even with a feed rate of 160 lbs/hr of hospital waste (red bag).

The test today will be with approximately 100 lbs/hr of pathological waste and a secondary temperature setting of 1900 °F. The primary chamber temperature set point will be 1500 °F. Start - up began at 09:25 with the charging beginning at 09:45. The charging periods varied from 15 to 30 minute intervals due to the weight of the boxes obtained from EPA. Some of the large boxes weighed as much as 60 lbs. The time was varied between charges in order to maintain approximately 100 lbs/hr feed rate.

The incinerator ran smoothly with no problems. The secondary chamber temperature remained fairly low, and only occasionally reached a temperature greater than 1800 °F which lasted less than a minute. The secondary chamber burner appears to be too small to maintain a temperature greater than the primary chamber temperature, while burning low BTU, high moisture waste. The last charge went in at 14:30 and the testing was completed at 14:40.

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Subject: On - Site External QA/QC Daily Report, September 23, 1990
From: External QA Team
To: Distribution

Sunday (September 23)

The hospital storage room is full of medical waste and medical waste is beginning to smell. Medical waste will be burned today for testing and after testing is complete to accommodate storage room for new waste.

Testing began at 11:40 to 13:40, and 13:47 to 15:47 for dioxin and particulate / metals sampling trains.

The pathogen sampling was conducted from 11:38 to 12:33, 12:35 to 13:40, and 13:40 to 15:40. Sampling train was stopped at 12:33 to replace the quartz glass wool filter between the third impinger and the silica gel impinger. Indicator spore samples were charged at 11:40, 12:45, 13:45, and 14:45. The dual pipe samples were charged at 11:40, 14:15, and 17:45.

The HCL manual samples were taken from 11:42 to 12:42, 12:52 to 13:52, and 14:03 to 15:03. The CEM HCL dilution probe is working well.

Particle size sampling began at 14:14 and concluded at 14:24. The sampling train leak rate was .006 CFM at 0" Hg. After the particle size sample was recovered it was determined that the particle size run was overloaded. Another particle size will be performed when medical waste is burned again on Wednesday.

CEM monitoring operations are normal. No problems were encountered during testing.

Radian has not yet found a security guard. Security does not seem to be a problem. The test crew members are securing equipment prior to leaving the test site and no thefts have been reported. The Hospital security guard is making periodic rounds at night.

The incinerator bottom ash removal door latch pin broke. The door was wedged shut during testing with no problems encountered. The hospital maintenance crew will weld the latch assembly tomorrow morning.

September 23 cont.

MRI stated that the incinerator was opened at 09:20 and there was a small amount of smoldering unburned material in the ash bed. The ash removal started at 10:01 and was completed by 11:07.

The ash removal door was broken during the ash removal. According to the incinerator operator, this has happened several times in the past and another handle latch pin is welded on. This will apparently last a couple of months before breaking again. The maintenance crew is not working today but will repair the handle tomorrow. In order to run today, the ash door was closed and a wedge was driven into the latching mechanism to hold the door closed tightly.

Today's test run is for 160 lbs/hr of hospital waste with a 1600 °F secondary temperature. The incinerator was started at 11:20 and the first charge was introduced at 11:40. The incinerator appeared to operate smoothly with the exception of the smoking from the stack. There was a constant stream of brown smoke occasionally changing to dense black smoke coming from the stack throughout the test.

Since there appeared to be much more smoke than in the previous hospital waste test, MRI tried to determine if there had been some inadvertent process change. The closed ash door was tightened, blowers, burners, and all seals were examined and all appeared normal. The smoking continued. The testing was completed at 15:54 and the last charge was placed in the incinerator at 17:45.

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Subject: On - Site External QA/QC Daily Report, September 24, 1990
From: External QA Team
To: Distribution

Monday (September 24)

Radian plans to conduct test run 5 condition (3 - 1) today. The test condition will consist of a charge rate of 150 lbs/hr of pathological waste with a secondary chamber temperature of 1600 °F.

The hospital maintenance crew has not repaired the broken latch pin on the bottom ash door yet. According to the maintenance crew this breakage occurs about every three to four months. It was suggested by the hospital maintenance supervisor to have the latch pin cut off the bottom ash door and let a local machine shop repair the pin, but this suggestion would cause unwanted testing delays if the machine shop could not repair the door as scheduled.

Radian purchased a large C - clamp and the door was sealed tight after the bottom ash removal was completed at 11:13.

MRI started the incinerator at 11:25 and charging began at 11:45.

The organics, particulate / metals, HCL and pathogen sampling trains were started at 11:45 and sampling was completed by 15:52.

Pathogen sampling began at 11:44 to 13:44, and 13:44 to 14:59, and 15:04 to 15:44. At 14:34 it was noticed by the train operator that the meter box cubic feet indicator was sticking and not revolving properly. However, the stack sampling rate had not changed. Efforts to prevent the meter from sticking, by tapping and removing the plastic cover, were not successful. The sampling train was stopped at 14:59 and the sampling lines changed within 5 seconds to meter box #1 (Y = 1.002). The volume readings taken from 14:34 to 14:59 are an estimation based on the existing sampling rates prior to the meter box sticking. After switching meter boxes lubrication solved the sticking problem.

September 24 cont.

Indicator spore charges were charged into the incinerator at 11:45, 12:40, 13:45 and 14:40. The dual pipe samples were charged at 11:45, 13:45 and 15:50.

Three one hour manual samples were collected starting at 11:54 to 12:54, 13:17 to 14:17, 14:29 to 15:29.

No problems were encountered with the organics, particulate / metals, and the HCL sampling trains. All of the sampling trains met their initial and final leak check criteria.

The CEM operator reported that all CEM monitoring equipment operated normally with no problems encountered during testing.

MRI stated that the incinerator door was opened at 08:28 and there were flaming and smoldering patches of unburned waste on the ash bed. Ash removal started at 09:31 and was completed by 11:13. The ash bed burst into flames when agitated and had to be quenched with water in order to continue clean out procedures. There were large amounts of unburned material in the waste bed.

After the hearth was cleaned out and the air ports cleared, the maintenance personnel attempted to repair the ash door handle. The maintenance personnel could not repair the door handle until a latch pin could be obtained so Radian clamped the door with a C - clamp. This method, which is more effective at sealing the ash door than the original handle will be used until a latch pin is obtained and the handle replaced.

Today's test will be for the 150 lbs/hr of pathological waste and a 1600 °F secondary chamber temperature. The incinerator was started at 11:25 and the charging began at 11:45. The incinerator ran smoothly with no problems throughout the test. Testing was completed at approximately 15:45 and the last charge was introduced at 15:50.

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Subject: On - Site External QA/QC Daily Report, September 25, 1990
From: External QA Team
To: Distribution

Tuesday (September 25)

Radian will conduct the sixth test run today consisting of pathological waste. The test condition (3 - 2) will consist of a charge rate of 160 lbs/hr at 15 minute intervals while maintaining a temperature of 1600 °F in the secondary chamber.

Radian started the test at approximately 10:10. Organics, particulate / metals, HCL, and pathogen samples were collected at the incinerator flue gas stack. The visible emissions were observed to be all zeros at the stack exit. All testing was completed by 14:15.

HCL samples were collected from 10:22 to 11:22, and 11:33 to 12:33, and 12:41 to 13:41. No filter plugging problems were experienced.

Particle sizing began at 12:52 and concluded at 13:22. After the particle size was recovered, it was discovered that the impactor was loaded slightly on the low side.

Pathogen sampling was conducted from 10:08 to 14:08 with the dual pipe samples being charged at 10:10, 12:10, and 14:10. The indicator spore samples were charged at 10:10, 11:15, 12:10, and 13:15.

All sampling recovery techniques were acceptable. The sampling trains met all initial and final leak check criteria.

The CEM operator stated that all CEM monitoring equipment was functioning normal throughout the test and no problems were experienced.

MRI stated that the incinerator was opened at 08:38 and there was a large mound of smoldering unburned waste remaining. The cleanout procedures were started at 08:38 and were completed by 09:41. There were recognizable unburned rats and rat parts in the center of the waste bed. Burnout, which was fairly good on the 100 lbs/hr pathological waste condition, appears to be very poor on the 160 lbs/hr pathological waste condition.

September 25 cont.

Today's test will again be 160 lbs/hr of pathological waste with a 1600 °F secondary temperature. Due to the large size boxes obtained from EPA, the waste charge and charge intervals will vary from approximately 40 lbs every 15 minutes to approximately 53 lbs every 20 minutes. The incinerator was started at 09:50 and the waste charging began at 10:10. The incinerator appeared to run smoothly with no problems throughout the test. Testing was completed at 14:15 and the last charge was introduced at that time.

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Subject: On - Site External QA/QC Daily Report, September 26, 1990
From: External QA Team
To: Distribution

Wednesday (September 26)

Radian will perform the last test condition for medical waste today. Medical waste will be charged at 160 lbs/hr at 15 minute intervals while maintaining a secondary chamber temperature of 1600 °F. During the bottom ash recovery this morning, unburn mice were found near the bottom of the hearth below the loading door.

Although red bag waste is being burned today, the smoke is by far less dense than the previous red bag test, with medium dense smoke observed only once during the particle size test run this morning. It is suspected that the current waste being charged is dryer than the previous red bag test by not seeing any dripping liquid coming from the red bags.

The particulate / metals and dioxin sampling trains were started at 10:00 to 12:00, and 12:06 to 14:06. No testing problems were experienced during the sampling period.

Pathogen sampling was conducted from 09:58 to 11:58 for train A, and 11:58 to 13:58 for train B. The dual pipe samples were placed in the incinerator at 10:00, 12:00, and 14:30. Indicator spore samples were charged at 10:00, 11:00, 12:00, and 13:00.

Three one hour manual HCL samples were taken at 10:06, 11:17, and 12:27 with no plugging problems.

The particle size run was started at 10:45 and stopped at 10:47:50. After recovery, it was noticed that the front portion of the impactor was loaded, while the back portion had fine ash build up. This particle size test run started when the waste load cycle had just began. Inadvertly the incinerator stack began smoking immediately after loading for about three to four minutes. The opacity appeared to be in the 50 % range. Another particle size test was performed from 13:15 to 13:30. After recovery it was determined that the particle size distribution was evenly loaded with piles just beginning to break up. This is the best particle size sample taken for red bag waste yet.

September 26 cont.

The CEM operator stated that all monitoring equipment was operating normally during testing. All sampling trains met their respective leak check criteria with the exception of the dioxin sampling train.

The dioxin sampling train could not be leak checked. After testing was complete, the sampling nozzle was observed by the QA team and operator to be slightly twisted when the sampling probe was removed from the stack port. It was confirmed that, the sampling probe was broken in middle within the water cooled jacket. This dioxin test run will voided and retested with red bag waste tomorrow.

Consequently pathological waste levels are low and one testing day may have to be skipped to obtain the required amount of waste to complete the last two pathological test runs. The retesting of red bag waste will allow pathological waste to accumulate.

MRI stated that the incinerator was opened at and there was a large amount of smoldering unburned waste remaining. The ash bed was, however, some what smaller than the ash bed after run 2 - 1. Cleanout was started at and completed at . There was again unburned rats and rat parts in the center of the waste bed. Burnout was very poor.

Today's test will be with hospital waste at 160 lbs/hr (40 lbs every 15 minutes) and a 1600 °F secondary chamber temperature. The incinerator was started at 09:40 and charging began at 10:00. The incinerator ran smoothly throughout the test with no apparent problems. There was some smoking from the stack from time to time which was very similar to test 2 - 1. This was very different, however, from test 2 - 2, which smoked almost constantly. The reason is unknown for the heavy smoke during test 2 - 2. It was noticed that there was more plastic sharps containers in the waste during run 2 - 2 , than for any other test.

During today's test heavy smoke was observed for seven minutes, after a large bag containing plastic sharps was charged. Larry Romesberg placed a pipe with a thermocouple in the suspected cold spot of the incinerator so that we might have a continuous readout of the temperature in this area. The temperature climbed from 119 °F to 1245 °F in 1.5 hours and then started to decline. Within one hour the temperature had dropped to 424 °F and then another hour later, stabilized around 220 °F. The temperature in the primary chamber at this time was apparently 1400 °F.

September 26 cont.

Testing was completed at 14:06 and the last charge was introduced at 14:30. At the end of the test, it was discovered that the dioxin sampling probe had broken. This test will be discarded and retested tomorrow.

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Subject: On - Site External QA/QC Daily Report, September 27, 1990
From: External QA Team
To: Distribution

Thursday (September 27)

Today's test will be a retest of run 7, medical waste, due to dioxin sampling probe breakage on 9/26/90. Bottom ash removal started at 09:56 and was completed by 11:45. Testing could not start as scheduled due to the secondary burner flame going out after igniting for only a few minutes.

The hospital incinerator operator examined the incinerator and cleaned the igniter in the secondary burner. The problem was not solved. The operator then called the consumat representative and trouble shot the incinerator by telephone. Testing began at 13:45 and was completed by 17:45.

Dioxin and particulate / metals sampling started at 13:45 to 15:45 and 15:50 to 17:50. No problems were experienced or broken glassware. The sampling trains passed there respective leak checks.

Three one hour HCL samples were taken at 13:51, 15:01, and 16:12. The testing was normal with no plugging of the sampling trains.

Pathogen testing began at 13:43 to 14:38, and 14:39 to 15:44 for train A. At 14:38 the train was stopped to replace the quartz glass wool filter between the third impinger and the silica gel impinger. Pathogen sampling was started at 15:44 to 17:04, 17:05 to 17:20, 17:21 to 17:22, and 17:31 to 17:56 for sampling train B.

The sampling train was stopped to replace the quartz glass wool filter at 17:04 and 17:20. At 17:22 the train was stopped due to sampling rate not being maintained. After examining the sampling train, it was found that the third impinger (modified smith - greenberg) stem had plugged. Sampling train B was restarted at 17:31 and testing was completed by 17:56.

Indicator spores were charged at 13:45, 14:45, 15:46, and 16:45. Dual pipe samples were charged at 13:45, 16:15, and 18:00. This series of pipe samples did not contain any temperature indicating pellets due to the quantities remaining to complete the scheduled test runs.

September 27 cont.

MRI stated that the incinerator door was opened at 09:25 and large amounts of still burning and unburned waste can be seen. Ash cleanout started at 09:56 and was completed by 11:45. As the waste bed was being removed, there were many flame ups which had to be quenched with water.

Today's test will be the fourth run of hospital waste at 160 lbs/hr at 15 minute charge intervals with a secondary chamber temperature of 1600 °F. The incinerator was started at 11:20 but the secondary chamber burner was flaming out every few seconds. The igniter and pilot were taken out and cleaned. The unit was started again at 13:25. Everything appeared to be working properly and charging began at 13:45. The incinerator ran smoothly throughout the test with no apparent problems. The pipe with the thermocouple was placed in the center of the hearth directly in line of the primary burners. The pipe heated to 1500 °F very quickly and then started to decline as the waste bed was slowly increasing. At the end of the test, the pipe temperature was approximately 440 °F. Testing was completed at 17:56 and the last charge was introduced at 18:00.

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Subject: On - Site External QA/QC Daily Report, September 28, 1990
From: External QA Team
To: Distribution

Friday(September 28)

Today's test (3 - 3) will be pathological waste 160 lbs/hr at 15 minute charge intervals with a secondary chamber temperature of 1600 °F. During ash removal, several flame ups were observed while locating the pipe samples. Water was sprayed to quench the fire to continue cleanout procedures.

Pathogen sampling was conducted from 10:58 to 14:58. Indicator spore samples were charged into the incinerator at 11:00, 12:00, 13:00, and 14:00. Dual pipe samples were charged at 11:00, 13:15, and 15:50.

Dioxin and particulate / metals sampling was conducted from 11:00 to 13:00, and 13:05 to 15:05.

Three one hour HCL samples were taken at 11:11, 12:22, and 13:22.

A fifteen minute particle size sample was taken. After recovery, the particle size loading was determined to be acceptable.

CEM operations were normal with no problems being reported by the Radian CEM operator.

MRI stated that the incinerator was opened at 09:03 and there was a large smoldering mound of ashes and unburned waste. A few spots were still flaming when the door was opened. Ash removal was started at 09:30 and was completed at 10:30. The waste bed burst into flames when agitated and had to be quenched with water to continue cleanout.

September 28 cont.

There was poor burnout with recognizable items such as packaging, plastic needle covers, readable papers, blue gowns and whole blood bags. Today's test was for pathological waste at approximately 160 lbs/hr (40 lbs every 15 minutes) and a 1600 °F secondary chamber temperature. The incinerator was started at 10:40 with the first charge being introduced at 11:00. The incinerator ran smoothly throughout the test with no problems. Testing was completed by 15:05 with the last charge at 15:55.

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Subject: On - Site External QA/QC Daily Report, October, 2 1990
From: External QA Team
To: Distribution

Tuesday(October 2)

Today's test (1 - 3) will be pathological waste 100 lbs/hr at 15 minute charge intervals with a secondary chamber temperature of 1900 °F.

Pathogen sampling was conducted from 10:15 to 14:15. Indicator spore samples were charged into the incinerator at 10:15, 11:15, 13:15, and 14:15. Dual pipe samples were charged at 10:15, 12:15, and 14:30.

Dioxin and particulate / metals sampling was conducted from 10:15 to 12:15, and 12:21 to 14:21.

Three one hour HCL samples were taken at 10:26, 11:38, and 12:47.

CEM operations were normal with no problems being reported by the Radian CEM operator.

MRI stated that the incinerator was cleaned out and the air ports cleared in preparation for today's test. The hospital staff had burned their accumulated hospital waste yesterday. Today's test was for pathological waste at approximately 100 lbs/hr (25 lbs every 15 minutes) and a 1900 °F secondary chamber temperature.

The incinerator was started at 09:55 and then it was discovered that the temperature indicator pipe had not been placed in the furnace. The incinerator was shut down at 10:01. The pipe was placed on the hearth, and the incinerator was restarted at 10:03. The first charge was introduced at 10:15 and testing was begun.

October 2 cont.

The incinerator ran smoothly with no apparent problems throughout the test. Testing was completed at 14:21 and the last charge was introduced at 14:30.

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