AMTEST
AIR QUALITY, INC.

AmTest-Air Quality, Inc.
30545 S.E. 84th St., #5
Preston, WA 98050
Office: (206) 222-7746
FAX: (206) 222-7849

SOURCE

EMISSION

EVALUATION

108 tons Clinker
Lime

December 15, 1994

Prepared For:

ASH GROVE CEMENT COMPANY
MAIN CEMENT KILN STACK
SEATTLE, WASHINGTON
SEPTEMBER 26-27, 1994

Submitted by:

Kris A. Hansen
Project Manager

James A. Guenthoer
Sr. Project Engineer

K. Steven Mackey
Sr. Air Quality Specialist

Angela F. Blaisdell
Sr. Technical Writer

Am Test-Air Quality, Inc.
Preston, Washington

We certify that the information contained herein is accurate and complete to the best of our knowledge.

[jwa\c:\w\r\ashgrsea-Job #94-152]

627397
AGCS2M000078

S4000509

AMTEST AIR QUALITY, INC.

TABLE 2.0 - SUMMARY OF HAZARDOUS AIR POLLUTANTS QUANTIFIED

File name: S716\AGSEAHAP
Client: Ashgrove Cement Company
Location: Seattle, Washington
Sample Site: Main Cement Kiln Stack
Date: September 26-27, 1994

	RAW MILL ON		RAW MILL OFF	
	lb/hr	tons/yr	lb/hr	tons/yr
SW-846 Method 0011				
Acetaldehyde				
Acrolein				
Formaldehyde				
Methyl Ethyl Ketone (2-Butanone)				
Methyl Isobutyl Ketone (Hexone)				
Propionaldehyde				
Quinone				
40 CFR 60, Methods 13A, 13B, 26/26A				
SW-846 Methods 0050, 0051, 13A, 13B				
Chlorine				
Hydrogen Chloride	< 0.19	< 0.82	< 0.20	< 0.88
Hydrogen Fluoride	< 0.19	< 0.84	< 0.21	< 0.90
40 CFR 60, Method 29				
SW-846 Method 0012				
Antimony Compounds				
Arsenic Compounds (Inorganic Including Arsine)				
Beryllium Compounds				
Cadmium Compounds				
Chromium Compounds				
Cobalt Compounds				
Lead Compounds				
Manganese Compounds				
Mercury Compounds				
Nickel Compounds				
Phosphine (as Phosphorus)				
Phosphorus				
Radionuclides (including Radon)				
Selenium Compounds				
Titanium				

	RAW MILL ON		RAW MILL OFF	
	lb/hr	tons/yr	lb/hr	tons/yr
40 CFR 60, Method 18				
Compendium Method TO-14				
SW-846 Method 0030				
Acetonitrile				
Acrylonitrile				
Allyl Chloride				
Benzene	0.695	3.04	0.835	3.66
Bis (Chloromethyl) Ether				
Bromoform				
1,3-Butadiene				
Carbon Disulfide				
Carbon Tetrachloride	< 0.038	< 0.17	< 0.040	< 0.18
Carbonyl Sulfide				
Chlorobenzene	0.030	0.13	< 0.029	< 0.13
Chloroform	< 0.029	< 0.13	< 0.031	< 0.14
Chloromethyl Methyl Ether				
Chloroprene				
Cumene				
1,3-Dichloropropene				
1,1-Dimethyl Hydrazine				
1,4-Dichlorobenzene (p)	< 0.036	< 0.16	< 0.038	< 0.17
1,4-Dioxane (1,4-Diethyleneoxide)				
1,2-Epoxybutane				
Ethyl Acrylate				
Ethyl Benzene	0.031	0.14	0.035	0.15
Ethyl Chloride (Chloroethane)	< 0.016	< 0.07	< 0.017	< 0.07
Ethylene Dibromide (Dibromoethane)	< 0.046	< 0.20	< 0.049	< 0.21
Ethylene Dichloride (1,2-Dichloroethane)	< 0.024	< 0.11	< 0.026	< 0.11
Ethylene Imine (Aziridine)				
Ethylene Oxide				
Ethylidene Dichloride (1,1-Dichloroethane)	< 0.024	< 0.11	< 0.026	< 0.11
Hexane	< 2.54	< 11.1	< 0.899	< 3.94
Hexachlorobutadiene	< 0.064	< 0.28	< 0.067	< 0.29
Hexachloroethane				
Hydrazine				
Methyl Bromide (Bromomethane)	0.101	0.44	0.129	0.57
Methyl Chloride (Chloromethane)	0.581	2.54	0.497	2.18
Methyl Chloroform (1,1,1-Trichloroethane)	< 0.033	< 0.14	< 0.035	< 0.15
Methyl Hydrazine				
Methyl Iodide (Iodomethane)				
Methyl Isocyanate				
Methyl Methacrylate				
Methyl Tert Butyl Ether				
Methylene Chloride (Dichloromethane)	< 0.021	< 0.09	< 0.022	< 0.10
Nitrobenzene				
2-Nitropropane				
Propylene Dichloride (1,2-Dichloropropane)	< 0.028	< 0.12	< 0.030	< 0.13
Propylene Oxide				
1,2-Propylenimine (2-Methyl Aziridine)				
Styrene	< 0.026	< 0.11	0.040	< 0.18
1,1,2,2-Tetrachloroethane	< 0.041	< 0.18	< 0.044	< 0.19
Tetrachloroethylene (Perchloroethylene)	< 0.041	< 0.18	< 0.043	< 0.19

(Continued)	RAW MILL ON lb/hr	RAW MILL ON tons/yr	RAW MILL OFF lb/hr	RAW MILL OFF tons/yr
40 CFR 60, Method 18				
Compendium Method TO-14				
SW-846 Method 0030				
Toluene	0.282	1.24	0.313	1.37
1,1,2-Trichloroethane	< 0.033	< 0.14	< 0.035	< 0.15
Trichloroethylene	< 0.032	< 0.14	< 0.034	< 0.15
Triethylamine				
2,2,4-Trimethylpentane				
Vinyl Acetate				
Vinyl Bromide				
Vinyl Chloride	0.036	0.16	0.024	0.11
Vinylidene Chloride (1,1-Dichloroethylene)				
Xylenes (Isomers & Mixture)				
o-Xylenes	0.036	0.16	0.039	0.17
m,p-Xylenes	0.042	0.18	0.045	0.20
40 CFR 60, Method 23				
SW-846 Method 0010				
Acetamide				
Acetophenone				
2-Acetylaminofluorene				
Acrylic Acid				
4-Aminobiphenyl				
Aniline				
o-Anisidine				
Benzidine				
Benzyl Chloride				
Biphenyl				
Bis(2-Ethylhexyl) Pthalate (DEHP)				
Caprolactam				
Captan				
Catechol				
Chlordane				
Chloroacetic Acid				
2-Chloroacetophenone				
Chlorobenzilate				
o-Cresol				
m-Cresol				
p-Cresol				
DDE				
Dibenzofurans (Tetra-Octa)	8.1E-05	3.6E-04	0.006	0.025
Dibutylphthalate				
3,3-Dichlorobenzidene				
Dichloroethyl Ether (Bis(2-Chloroethyl Ether)				
Dichlorvos				
N,N-Diethyl Aniline (N,N-Dimethylaniline)				
Diethyl Sulfate				
2,4-Dinitrophenol				
2,4-Dinitrotoluene				
1,2-Diphenylhydrazine				
Epichlorohydrin (1-Chloro-2,3-Epoxypropane)				

(Continued)	RAW MILL ON lb/hr	RAW MILL ON tons/yr	RAW MILL OFF lb/hr	RAW MILL OFF tons/yr
40 CFR 60, Method 23				
SW-846 Method 0010				
Ethyl Carbamate (Urethane)				
Heptachlor				
Hexachlorobenzene				
Hexachlorocyclopentadiene				
Hexamethylene-1,6,-Diisocyanate				
Hexamethylphosphoramide				
Hydroquinone				
Isophorone				
Lindane (All Aeomers)				
Maleic Anhydride				
Methoxychlor				
4,4-Methylene Bis(2-Chloroaniline)				
4,4'-Methylenedianiline				
Napthalene				
4-Nitrobiphenyl				
4-Nitrophenol				
N-Nitrosodimethylamine				
N-Nitrosomorpholine				
Parathion				
Pentachloronitrobenzene (Quintobenzene)				
Pentachlorophenol				
Phenol				
p-Phenylenediamine				
Phthalic Anhydride				
Polychlorinated Biphenyls (Aroclors) (Mono-Deca)				
1,3-Propane Sultone				
Beta-Propiolactone				
Quinoline				
Styrene Oxide				
2,3,7,8-Tetrachlorodibenzo-p-Dioxin				
2,4-Toluene Diamine				
2,4-Toluene Diisocyanate				
o-Toluidine				
Toxaphene (Chlorinated Camphene)				
1,2,4-Trichlorobenzene				
2,4,5-Trichlorophenol				
2,4,6-Trichlorophenol				
Trifluralin				
Polycylic Organic Matter				
40 CFR 63, Method 308				
Methanol				
40 CFR 60, Modified Method 6				
Cyanide Compounds				

	RAW MILL ON		RAW MILL OFF	
	lb/hr	tons/yr	lb/hr	tons/yr
Compounds with unlisted methods				
Acrylamide				
Benzotrichloride				
Calcium Cyanamide				
Carbaryl				
Chloramben				
Cresylic Acid				
2,4-D, Salts & Esters				
Diazomethane				
1,2-Dibromo-3-Chloropropane				
Diethanolamine				
4,6-Dinitro-O-Cresol & Salts				
Ethylene Glycol				
Ethylene Thiourea				
Glycol Ethers				
Methylene Diphenyl Diisocyanate (MDI)				
N-Nitroso-N-Methylurea				
Phosgene				
Propoxur (Baygon)				

AMTEST
AIR QUALITY, INC.

EMISSION RATE RESULTS
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS
AM TEST - AIR QUALITY, INC.

FILE NAME: S715\AGS-RSUM
CLIENT: Ashgrove Cement Company
LOCATION: Seattle, Washington
SAMPLE DATE: September 26-27, 1994

	KILN STACK		
ANALYTE	Run 1 ng/min	Run 2 ng/min	Run 3 ng/min
2, 3, 7, 8-TCDF	17.5 *	140.8 *	954.0 *
Total TCDF	120.3 B	996.5	39556
2, 3, 7, 8-TCDD	10.9 U	10.8 U	128.0
Total TCDD	< DL	13.0	16288
1, 2, 3, 7, 8-PeCDF	54.7 U	54.2 U	68.6
2, 3, 4, 7, 8-PeCDF	54.7 U	54.2 U	267.6
Total PeCDF	< DL	108.3	3956
1, 2, 3, 7, 8-PeCDD	54.7 U	54.2 U	221.0
Total PeCDD	< DL	< DL	5468
1, 2, 3, 4, 7, 8-HxCDF	54.7 U	54.2 U	58.2 U
1, 2, 3, 6, 7, 8-HxCDF	54.7 U	54.2 U	58.2 U
2, 3, 4, 6, 7, 8-HxCDF	54.7 U	54.2 U	58.2 U
1, 2, 3, 7, 8, 9-HxCDF	54.7 U	54.2 U	58.2 U
Total HxCDF	< DL	< DL	174.5
1, 2, 3, 4, 7, 8-HxCDD	54.7 U	54.2 U	58.2 U
1, 2, 3, 6, 7, 8-HxCDD	54.7 U	54.2 U	79.1
1, 2, 3, 7, 8, 9-HxCDD	54.7 U	54.2 U	65.2
Total HxCDD	< DL	< DL	2210
1, 2, 3, 4, 6, 7, 8-HpCDF	54.7 U	54.2 U	58.2 U
1, 2, 3, 4, 7, 8, 9-HpCDF	54.7 U	54.2 U	58.2 U
Total HpCDF	< DL	< DL	< DL
1, 2, 3, 4, 6, 7, 8-HpCDD	54.7 U	54.2 U	109.4
Total HpCDD	< DL	< DL	349.0
OCDF	109.4 U	108.3 U	116.3 U
OCDD	175.0	162.5 B	197.8
PCDD (as 2,3,7,8,TCDD) Equivalent	1.97	14.1	488.6
Total Tetra-Octa PCDD	175.0	175.5	24513
Total Tetra-Octa PCDF	120.3	1105	43686
Total Tetra-Octa PCDD/PCDF	295.3	1280	68200

< DL designates that the compound was not detected, or was found at levels below the quantitation limit (QL).

U = not detected at the specified reporting limits.

B = Less than 5 times higher than the background or associated method blank.

ng/min = nanograms of analyte emitted per minute

* = Value may include contributions from other TCDF isomers.

AMTEST
AIR QUALITY, INC.

SUMMARY OF RESULTS - METHODS 1, 2, 3A, 4 AND 23
AM TEST - AIR QUALITY, INC.

FILE NAME: S705\ASHSVSUM
CLIENT: Ash Grove Cement Company
LOCATION: Seattle, Washington

	KILN STACK		
	RUN #1	RUN #2	RUN #3
AM TEST LAB #:	6665	6666	6667
HUNTINGDON LAB #:	41485	41486	41487
DATE:	9/26/94	9/26/94	9/27/94
START TIME:	11:48	15:53	08:07
STOP TIME:	14:59	19:03	11:17
SAMPLE LENGTH (minutes):	180.0	180.0	180.0
CONDITION (RAW MILL ON/OFF):	ON	ON	OFF
VOLUME SAMPLED (cubic feet):	103.407	104.973	105.470
VOLUME SAMPLED (dry std. cubic feet):	103.228	104.651	103.611
VOLUME SAMPLED (dry std. cubic meters):	2.923	2.964	2.934
STACK GAS MOISTURE (percent):	12.65	12.14	4.38
BAROMETRIC PRESSURE (inches of Hg):	30.05	29.95	30.00
STATIC PRESSURE (inches of H2O):	-0.30	-0.29	-0.69
STACK PRESSURE (inches of Hg):	30.03	29.93	29.95
STACK GAS TEMPERATURE (degrees F.):	231.1	210.7	432.9
STACK GAS TEMPERATURE (degrees R.):	691.1	670.7	892.9
CARBON DIOXIDE (percent):	22.6	22.4	21.6
OXYGEN (percent):	8.7	9.0	9.3
CARBON MONOXIDE (ppm):	642.6	707.2	690.2
MOLECULAR WEIGHT (dry, g/g-mole):	31.96	31.94	31.83
MOLECULAR WEIGHT (wet, g/g-mole):	30.20	30.25	31.22
AVERAGE VELOCITY HEAD (inches of H2O):	0.114	0.111	0.145
PITOT TUBE Cp:	0.84	0.84	0.84
STACK GAS VELOCITY (feet/second):	21.2	20.6	26.7
STACK DIAMETER (inches):	156.0	156.0	156.0
STACK AREA (square feet):	132.7	132.7	132.7
STACK GAS AIRFLOW (dry std. cubic feet per min.):	112895.5	113365.0	120529.8
STACK GAS AIRFLOW (actual cubic feet per min.):	168552.7	163846.6	212963.9
NOZZLE DIAMETER (inches):	0.363	0.363	0.363
ISOKINETICS (percent):	94	95	88

AMTEST
AIR QUALITY, INC.

SUMMARY OF RESULTS - METHOD 25A
AM TEST-AIR QUALITY, INC.

FILE NAME: S713\ASHSUMS
CLIENT: Ash Grove Cement Company
LOCATION: Seattle, Washington

	KILN STACK			
	RUN #1	RUN #2	RUN #3	AVERAGE RUNS 1 & 2
DATE:	9/26/94	9/26/94	9/27/94	
START TIME:	11:55	16:00	08:00	
STOP TIME:	14:55	19:00	11:08	
CONDITION (RAW MILL ON/OFF):	ON	ON	OFF	
AIRFLOW (dry std. cubic feet per min.):	112895.5	113365.0	120529.8	113130.3
AVERAGE STACK GAS MOISTURE (%):	12.65	12.14	4.38	12.40
Bws:	0.1265	0.1214	0.0438	0.1240
METHOD 25A - TOTAL HYDROCARBONS (THC)				
THC EMISSION CONCENTRATION (ppm, wet):	10.8	10.3	15.4	10.6
THC EMISSION CONCENTRATION (ppm, dry):	12.4	11.7	16.1	12.0
THC EMISSION RATE (lb/hr):	9.58	9.13	13.3	9.35
THC EMISSION RATE (tons/yr):	42.0	40.0	58.4	41.0

AMTEST
AIR QUALITY, INC.

SUMMARY OF RESULTS - METHOD 26
AM TEST - AIR QUALITY, INC.

FILE NAME: S717\ASHM26S
CLIENT: Ash Grove Cement Company
LOCATION: Seattle, Washington
SAMPLE DATE: September 26-27, 1994
OPERATORS: Guenthoer/Lawrence

KILN STACK

FIELD DATA	RUN 1	RUN 2	RUN 3	AVERAGE RUNS 1 & 2
CONDITION (raw mill ON/OFF):	ON	ON	OFF	
AM TEST LAB #:	6668	6669	6670	
SAMPLE DATE:	9/26/94	9/26/94	9/27/94	
START TIME (24-hour clocktime):	11:50	16:53	08:19	
STOP TIME (24-hour clocktime):	12:50	17:53	09:19	
INITIAL METER VOLUME (cubic feet):	334.367	339.450	343.841	
FINAL METER VOLUME (cubic feet):	338.536	343.548	347.974	
VOLUME SAMPLED (cubic feet):	4.169	4.098	4.133	
BAROMETRIC PRESSURE (inches of Hg):	30.05	29.95	30.00	
METER TEMPERATURE (degrees F):	94.3	84.0	93.3	
METER CALIBRATION FACTOR (Y):	1.028	1.028	1.028	
STANDARD VOLUME SAMPLED (dscf):	4.100	4.093	4.065	
STANDARD VOLUME SAMPLED (dscm):	0.116	0.116	0.115	
AIRFLOW (dscf/min):	112896	113365	120530	113130

LABORATORY ANALYSIS RESULTS	RUN 1	RUN 2	RUN 3	DETECTION LIMITS (ug/mL)	DILUTION FACTOR
TOTAL VOLUME OF SAMPLE (milliliters):	100	100	100		
CHLORIDE IN SAMPLE (micrograms):	< 50	< 50	< 50	0.025	20
FLUORIDE IN SAMPLE (micrograms):	< 50	< 50	< 50	0.025	20
AMMONIA IN SAMPLE (micrograms):	56.0	43.0	1900	0.01	10

HYDROGEN CHLORIDE (HCl) EMISSION RESULTS	RUN 1	DETECTION LIMITS	RUN 2	DETECTION LIMITS	RUN 3	DETECTION LIMITS	AVERAGE RUNS 1 & 2
HCl CONCENTRATION IN AIR (mg/dscm):	< 0.44	0.44	< 0.44	0.44	< 0.45	0.45	< 0.44
HCl EMISSION CONCENTRATION (ppm):	< 0.29	0.29	< 0.29	0.29	< 0.29	0.29	< 0.29
HCl EMISSION RATE (lb/hr):	< 0.19	0.19	< 0.19	0.19	< 0.20	0.20	< 0.19
HCl EMISSION RATE (tons/yr):	< 0.82	0.82	< 0.83	0.83	< 0.88	0.88	< 0.82
HYDROGEN FLUORIDE (HF) EMISSION RESULTS							
HF CONCENTRATION IN AIR (mg/dscm):	< 0.45	0.45	< 0.45	0.45	< 0.46	0.46	< 0.45
HF EMISSION CONCENTRATION (ppm):	< 0.55	0.55	< 0.55	0.55	< 0.55	0.55	< 0.55
HF EMISSION RATE (lb/hr):	< 0.19	0.19	< 0.19	0.19	< 0.21	0.21	< 0.19
HF EMISSION RATE (tons/yr):	< 0.84	0.84	< 0.85	0.85	< 0.90	0.90	< 0.84
AMMONIA (AS AMMONIUM (NH4+)) EMISSION RESULTS							
NH4 CONCENTRATION IN AIR (mg/dscm):	0.51	0.09	0.39	0.09	17.5	0.09	0.45
NH4 EMISSION CONCENTRATION (ppm):	0.68	0.12	0.52	0.12	23.3	0.12	0.60
NH4 EMISSION RATE (lb/hr):	0.22	0.04	0.17	0.04	7.89	0.04	0.19
NH4 EMISSION RATE (tons/yr):	0.95	0.17	0.73	0.17	34.6	0.18	0.84

AGCS2M000087
S4000518

AMTEST
AIR QUALITY, INC.

SUMMARY OF RESULTS - METHOD 26
AM TEST - AIR QUALITY, INC.

FILE NAME: S717\ASHM26S
CLIENT: Ash Grove Cement Company
LOCATION: Seattle, Washington
SAMPLE DATE: September 26-27, 1994
OPERATORS: Guenthoer/Lawrence

KILN STACK

FIELD DATA	RUN 1	RUN 2	RUN 3	AVERAGE RUNS 1 & 2
CONDITION (raw mill ON/OFF):	ON	ON	OFF	
AM TEST LAB #:	6668	6669	6670	
SAMPLE DATE:	9/26/94	9/26/94	9/27/94	
START TIME (24-hour clocktime):	11:50	16:53	08:19	
STOP TIME (24-hour clocktime):	12:50	17:53	09:19	
INITIAL METER VOLUME (cubic feet):	334.367	339.450	343.841	
FINAL METER VOLUME (cubic feet):	338.536	343.548	347.974	
VOLUME SAMPLED (cubic feet):	4.169	4.098	4.133	
BAROMETRIC PRESSURE (inches of Hg):	30.05	29.95	30.00	
METER TEMPERATURE (degrees F):	94.3	84.0	93.3	
METER CALIBRATION FACTOR (Y):	1.028	1.028	1.028	
STANDARD VOLUME SAMPLED (dscf):	4.100	4.093	4.065	
STANDARD VOLUME SAMPLED (dscm):	0.116	0.116	0.115	
AIRFLOW (dscf/min):	112896	113365	120530	113130

LABORATORY ANALYSIS RESULTS	RUN 1	RUN 2	RUN 3	DETECTION LIMITS (ug/mL)	DILUTION FACTOR
TOTAL VOLUME OF SAMPLE (milliliters):	100	100	100		
CALCIUM IN SAMPLE (micrograms):	< 100	< 100	< 100	0.1	10
MAGNESIUM IN SAMPLE (micrograms):	< 100	< 100	< 100	0.1	10
SODIUM IN SAMPLE (micrograms):	< 500	< 500	< 500	0.5	10
POTASSIUM IN SAMPLE (micrograms):	< 1000	< 1000	< 1000	1.0	10

METALS EMISSION RESULTS	RUN 1	DETECTION LIMITS	RUN 2	DETECTION LIMITS	RUN 3	DETECTION LIMITS	AVERAGE RUNS 1 & 2
CALCIUM EMISSION CONCENTRATION (mg/dscm):	< 0.86	0.86	< 0.86	0.86	< 0.87	0.87	< 0.87
CALCIUM EMISSION RATE (lb/hr):	< 0.36	0.36	< 0.37	0.37	< 0.39	0.39	< 0.38
CALCIUM EMISSION RATE (tons/yr):	< 1.60	1.60	< 1.60	1.60	< 1.72	1.72	< 1.66
MAGNESIUM EMISSION CONCENTRATION (mg/dscm):	< 0.86	0.86	< 0.86	0.86	< 0.87	0.87	< 0.87
MAGNESIUM EMISSION RATE (lb/hr):	< 0.36	0.36	< 0.37	0.37	< 0.39	0.39	< 0.38
MAGNESIUM EMISSION RATE (tons/yr):	< 1.60	1.60	< 1.60	1.60	< 1.72	1.72	< 1.66
SODIUM EMISSION CONCENTRATION (mg/dscm):	< 4.31	4.31	< 4.31	4.31	< 4.34	4.34	< 4.33
SODIUM EMISSION RATE (lb/hr):	< 1.82	1.82	< 1.83	1.83	< 1.96	1.96	< 1.90
SODIUM EMISSION RATE (tons/yr):	< 7.98	7.98	< 8.02	8.02	< 8.59	8.59	< 8.31
POTASSIUM EMISSION CONCENTRATION (mg/dscm):	< 8.61	8.61	< 8.63	8.63	< 8.69	8.69	< 8.66
POTASSIUM EMISSION RATE (lb/hr):	< 3.64	3.64	< 3.66	3.66	< 3.92	3.92	< 3.79
POTASSIUM EMISSION RATE (tons/yr):	< 16.0	16.0	< 16.0	16.0	< 17.2	17.2	< 16.6

AGCS2M000088
S4000519

AMTEST
AIR QUALITY, INC.

EMISSION RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
Am Test-Air Quality, Inc.

File Name: S716\ASHSEASM
Client: Ashgrove Cement Company
Location: Seattle, Washington

	MAIN CEMENT KILN STACK							
	Emission Concentration				Emission Rate			
	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average
Date:	9/26/94	9/26/94	9/27/94	Runs 1 & 2	9/26/94	9/26/94	9/27/94	Runs 1 & 2
Start Time:	14:20	16:22	09:37		14:20	16:22	09:37	
Stop Time:	15:28	16:58	10:09		15:28	16:58	10:09	
Condition (raw mill on/off):	ON	ON	OFF		ON	ON	OFF	
Analyte	µg/m3	µg/m3	µg/m3	µg/m3	lb/hr	lb/hr	lb/hr	lb/hr
Dichlorodifluoromethane	70 U	70 U	70 U	70 U	0.030 U	0.030 U	0.032 U	0.030 U
Chloromethane	1340	1400	1100	1370	0.567	0.595	0.497	0.581
1,2-Dichloro-1,1,2,2-tetrafluoroethane	100 U	100 U	99 U	100 U	0.042 U	0.042 U	0.045 U	0.042 U
Vinyl chloride	80	88	54	84	0.034	0.037	0.024	0.036
Bromomethane	233	243	287	238	0.099	0.103	0.129	0.101
Chloroethane	38 U	38 U	37 U	38 U	0.016 U	0.016 U	0.017 U	0.016 U
Trichlorofluoromethane	80 U	80 U	79 U	80 U	0.034 U	0.034 U	0.036 U	0.034 U
1,1-Dichloroethene	56 U	56 U	56 U	56 U	0.024 U	0.024 U	0.025 U	0.024 U
Methylene Chloride	49 U	54	49 U	49 U	0.021 U	0.023	0.022 U	0.021 U
1,1,2-Trichloro-1,2,2-trifluoroethane	160	554	3540	357	0.068	0.235	1.60	0.151
1,1-Dichloroethane	58 U	58 U	57 U	58 U	0.024 U	0.024 U	0.026 U	0.024 U
cis-1,2-Dichloroethane	56 U	56 U	56 U	56 U	0.024 U	0.024 U	0.025 U	0.024 U
Chloroform	70 U	70 U	69 U	70 U	0.029 U	0.030 U	0.031 U	0.029 U
1,2-Dichloroethane	58 U	58 U	57 U	58 U	0.024 U	0.024 U	0.026 U	0.024 U
1,1,1-Trichloroethane	78 U	78 U	77 U	78 U	0.033 U	0.033 U	0.035 U	0.033 U
Benzene	1630	1650	1850	1640	0.689	0.701	0.835	0.695
Carbon Tetrachloride	90 U	90 U	89 U	90 U	0.038 U	0.038 U	0.040 U	0.038 U
1,2-Dichloropropane	66 U	66 U	65 U	66 U	0.028 U	0.028 U	0.030 U	0.028 U
Trichloroethylene	76 U	76 U	76 U	76 U	0.032 U	0.032 U	0.034 U	0.032 U
cis-1,3-Dichloropropene	65 U	65 U	64 U	65 U	0.027 U	0.027 U	0.029 U	0.027 U
trans-1,3-Dichloropropene	65 U	65 U	64 U	65 U	0.027 U	0.027 U	0.029 U	0.027 U
1,1,2-Trichloroethane	78 U	78 U	77 U	78 U	0.033 U	0.033 U	0.035 U	0.033 U
Toluene	658	674	694	666	0.278	0.286	0.313	0.282
1,2-Dibromoethane	109 U	109 U	109 U	109 U	0.046 U	0.046 U	0.049 U	0.046 U
Tetrachloroethylene	97 U	97 U	96 U	97 U	0.041 U	0.041 U	0.043 U	0.041 U
Chlorobenzene	70	69	65 U	70	0.030	0.029	0.029 U	0.030
Ethylbenzene	72	76	77	74	0.030	0.032	0.035	0.031
m,p-Xylene	99	102	100	100	0.042	0.043	0.045	0.042
Styrene	61 U	61 U	88	61 U	0.026 U	0.026 U	0.040	0.026 U
1,1,2,2-Tetrachloroethane	98 U	98 U	97 U	98 U	0.041 U	0.042 U	0.044 U	0.041 U
o-Xylene	86	86	86	86	0.036	0.037	0.039	0.036
1,3,5-Trimethylbenzene	70 U	70 U	70 U	70 U	0.030 U	0.030 U	0.031 U	0.030 U
1,2,4-Trimethylbenzene	70 U	70 U	70 U	70 U	0.030 U	0.030 U	0.031 U	0.030 U
1,3-Dichlorobenzene	86 U	86 U	85 U	86 U	0.036 U	0.036 U	0.038 U	0.036 U
1,4-Dichlorobenzene	86 U	86 U	85 U	86 U	0.036 U	0.036 U	0.038 U	0.036 U
1,2-Dichlorobenzene	86 U	86 U	85 U	86 U	0.036 U	0.036 U	0.038 U	0.036 U
1,2,4-Trichlorobenzene	106 U	106 U	105 U	106 U	0.045 U	0.045 U	0.047 U	0.045 U
Hexachlorobutadiene	150 U	150 U	149 U	150 U	0.064 U	0.064 U	0.067 U	0.064 U
Methane	10400	8560	8630	9480	4.40	3.64	3.90	4.02
Ethane	8840	4560	4190	6700	3.74	1.94	1.89	2.84
n-Propane	5110 U	2570	2650	3070 U	2.16 U	1.09	1.20	1.30 U
n-Butane	6740 U	2070	2480	4045 U	2.85 U	0.879	1.12	1.71 U
n-Pentane	8370 U	2870	2860	5025 U	3.54 U	1.22	1.29	2.13 U
n-Hexane	9990 U	2010 U	1990 U	6000 U	4.22 U	0.854 U	0.899 U	2.54 U

T = Exceeded holding time; J = Estimated value; U = Not detected at specified reporting limits

EPA METHODS 1, 2, 3A, 4 AND 23
AM TEST-AIR QUALITY, INC.

FILE NAME:	LB602\ASHSEAR3	LAB #:	6667
CLIENT:	Ash Grove Cement Company	START TIME:	08:07 o'clock
LOCATION:	Seattle, Washington	STOP TIME:	11:17 o'clock
SAMPLE SITE:	Kiln Stack	SAMPLE LENGTH:	180.0 minutes
SAMPLE DATE:	September 27, 1994		
RUN #:	3 - Method 23		
OPERATORS:	JAG/ERL		

IMPINGER WEIGHTS

FINAL grams	INITIAL grams	NET grams
412.6	338.9	73.7
633.0	631.5	1.5
624.4	626.6	-2.2
873.2	845.5	27.7
TOTAL H2O GAIN:		100.7
TOTAL VOLUME (scf):		4.75
PERCENT MOISTURE:		4.38
Bws:		0.0438

PITOT TUBE Cp:	0.84		
NOZZLE DIAMETER:	0.363	inches	
NOZZLE AREA:	0.0007	sq. feet	
STACK DIAMETER:	156.0	inches	
STACK AREA:	132.7	sq. feet	
METER TEMPERATURE:	86.5	degrees F	
BAROMETRIC PRES.:	30.00	inches Hg	
STATIC PRESSURE:	-0.69	inches H2O	
STACK PRESSURE:	29.95	inches Hg	
ORIFICE PRESSURE:	1.244	inches H2O	
METER PRESSURE:	30.09	inches Hg	
INIT. METER VOLUME:	469.023	AVERAGE CONC. CO2:	21.6 percent
FINAL METER VOLUME:	574.493	AVERAGE CONC. O2:	9.3 percent
VOLUME SAMPLED:	105.470	AVERAGE CONC. CO:	690.2 ppm
STD VOLUME (dscf):	103.611	MOLECULAR WEIGHT:	31.83 g/g-mole-dry
STD VOLUME (dscm):	2.934	MOLECULAR WEIGHT:	31.22 g/g-mole-wet
Y FACTOR:	1.011		

SAMPLE POINT	VELOCITY " H2O	TEMPERATURE °F	SAMPLE POINT	VELOCITY " H2O	TEMPERATURE °F
NW 1	0.135	429	SE 1	0.125	420
2	0.150	435	2	0.150	435
3	0.170	436	3	0.170	440
SW 1	0.120	420	NE 1	0.115	430
2	0.150	433	2	0.140	439
3	0.175	434	3	0.150	444

PERCENT ISOKINETICS:	88 %	
STACK GAS TEMPERATURE:	432.9 degrees F	892.9 degrees R
AVERAGE VELOCITY HEAD:	0.145 inches H2O	
STACK GAS VELOCITY:		26.7 ft/sec
STACK GAS AIR FLOW:	212963.9 acf/min	120529.8 dscf/min

EMISSION CONCENTRATION RESULTS
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS
AM TEST - AIR QUALITY, INC.

FILE NAME: S715\ASHPCDD1
CLIENT: Ashgrove Cement Company
LOCATION: Seattle, Washington
SAMPLE DATE: September 26, 1994
SAMPLE TIMES: 11:48-14:59
LAB NUMBER(S): 6665, 41485, 41488
SAMPLE VOLUME: 2.923 dscm
AIRFLOW: 112895.5 dscf/min KILN STACK

ANALYTE		Run 1 ng/m3	Blank ng/m3	QL Run 1 ng/m3
2, 3, 7, 8-TCDF	*	0.005	< DL	0.003
Total TCDF	B	0.038	0.014	
2, 3, 7, 8-TCDD		< DL	< DL	0.003
Total TCDD		< DL	< DL	
1, 2, 3, 7, 8-PeCDF		< DL	< DL	0.017
2, 3, 4, 7, 8-PeCDF		< DL	< DL	0.017
Total PeCDF		< DL	< DL	
1, 2, 3, 7, 8-PeCDD		< DL	< DL	0.017
Total PeCDD		< DL	< DL	
1, 2, 3, 4, 7, 8-HxCDF		< DL	< DL	0.017
1, 2, 3, 6, 7, 8-HxCDF		< DL	< DL	0.017
2, 3, 4, 6, 7, 8-HxCDF		< DL	< DL	0.017
1, 2, 3, 7, 8, 9-HxCDF		< DL	< DL	0.017
Total HxCDF		< DL	< DL	
1, 2, 3, 4, 7, 8-HxCDD		< DL	< DL	0.017
1, 2, 3, 6, 7, 8-HxCDD		< DL	< DL	0.017
1, 2, 3, 7, 8, 9-HxCDD		< DL	< DL	0.017
Total HxCDD		< DL	< DL	
1, 2, 3, 4, 6, 7, 8-HpCDF		< DL	< DL	0.017
1, 2, 3, 4, 7, 8, 9-HpCDF		< DL	< DL	0.017
Total HpCDF		< DL	< DL	
1, 2, 3, 4, 6, 7, 8-HpCDD		< DL	< DL	0.017
Total HpCDD		< DL	< DL	
OCDF		< DL	< DL	0.034
OCDD		0.055	0.058	0.034

< DL designates that the compound was not detected, or was found at levels below the quantitation limit (QL).
B = Less than 5 times higher than the background or associated method blank.
ng/m3 = nanograms of analyte collected per dry standard cubic meter of gas sampled.
* Value may include contributions from other TCDF isomers.

EMISSION CONCENTRATION RESULTS
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS
AM TEST - AIR QUALITY, INC.

FILE NAME:	S715\ASHPCDD2
CLIENT:	Ashgrove Cement Company
LOCATION:	Seattle, Washington
SAMPLE DATE:	September 26, 1994
SAMPLE TIMES:	15:53-19:03
LAB NUMBER(S):	6666, 41486, 41488
SAMPLE VOLUME:	2.964 dscm
AIRFLOW:	113365.0 dscf/min

KILN STACK

ANALYTE		Run 2 ng/m3	Blank ng/m3	QL Run 2 ng/m3
2, 3, 7, 8-TCDF	*	0.044	< DL	0.003
Total TCDF		0.310	0.014	
2, 3, 7, 8-TCDD		< DL	< DL	0.003
Total TCDD		0.004	< DL	
1, 2, 3, 7, 8-PeCDF		< DL	< DL	0.017
2, 3, 4, 7, 8-PeCDF		< DL	< DL	0.017
Total PeCDF		0.034	< DL	
1, 2, 3, 7, 8-PeCDD		< DL	< DL	0.017
Total PeCDD		< DL	< DL	
1, 2, 3, 4, 7, 8-HxCDF		< DL	< DL	0.017
1, 2, 3, 6, 7, 8-HxCDF		< DL	< DL	0.017
2, 3, 4, 6, 7, 8-HxCDF		< DL	< DL	0.017
1, 2, 3, 7, 8, 9-HxCDF		< DL	< DL	0.017
Total HxCDF		< DL	< DL	
1, 2, 3, 4, 7, 8-HxCDD		< DL	< DL	0.017
1, 2, 3, 6, 7, 8-HxCDD		< DL	< DL	0.017
1, 2, 3, 7, 8, 9-HxCDD		< DL	< DL	0.017
Total HxCDD		< DL	< DL	
1, 2, 3, 4, 6, 7, 8-HpCDF		< DL	< DL	0.017
1, 2, 3, 4, 7, 8, 9-HpCDF		< DL	< DL	0.017
Total HpCDF		< DL	< DL	
1, 2, 3, 4, 6, 7, 8-HpCDD		< DL	< DL	0.017
Total HpCDD		< DL	< DL	
OCDF		< DL	< DL	0.034
OCDD	B	0.051	0.057	0.034

< DL designates that the compound was not detected, or was found at levels below the quantitation limit (QL).

B = Less than 5 times higher than the background or associated method blank.

ng/m3 = nanograms of analyte collected per dry standard cubic meter of gas sampled.

* Value may include contributions from other TCDF isomers.

EMISSION CONCENTRATION RESULTS
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS
AM TEST - AIR QUALITY, INC.

FILE NAME: S715\ASHPCDD3
CLIENT: Ashgrove Cement Company
LOCATION: Seattle, Washington
SAMPLE DATE: September 27, 1994
SAMPLE TIMES: 08:07-11:17
LAB NUMBER(S): 6667, 41487, 41488
SAMPLE VOLUME: 2.934 dscm
AIRFLOW: 120529.8 dscf/min KILN STACK

ANALYTE		Run 3 ng/m3	Blank ng/m3	QL Run 3 ng/m3
2, 3, 7, 8-TCDF	*	0.279	< DL	0.003
Total TCDF		11.6	0.014	
2, 3, 7, 8-TCDD		0.037	< DL	0.003
Total TCDD		4.77	< DL	
1, 2, 3, 7, 8-PeCDF		0.020	< DL	0.017
2, 3, 4, 7, 8-PeCDF		0.078	< DL	0.017
Total PeCDF		1.16	< DL	
1, 2, 3, 7, 8-PeCDD		0.065	< DL	0.017
Total PeCDD		1.60	< DL	
1, 2, 3, 4, 7, 8-HxCDF		< DL	< DL	0.017
1, 2, 3, 6, 7, 8-HxCDF		< DL	< DL	0.017
2, 3, 4, 6, 7, 8-HxCDF		< DL	< DL	0.017
1, 2, 3, 7, 8, 9-HxCDF		< DL	< DL	0.017
Total HxCDF		0.051	< DL	
1, 2, 3, 4, 7, 8-HxCDD		< DL	< DL	0.017
1, 2, 3, 6, 7, 8-HxCDD		0.023	< DL	0.017
1, 2, 3, 7, 8, 9-HxCDD		0.019	< DL	0.017
Total HxCDD		0.648	< DL	
1, 2, 3, 4, 6, 7, 8-HpCDF		< DL	< DL	0.017
1, 2, 3, 4, 7, 8, 9-HpCDF		< DL	< DL	0.017
Total HpCDF		< DL	< DL	
1, 2, 3, 4, 6, 7, 8-HpCDD		0.032	< DL	0.017
Total HpCDD		0.102	< DL	
OCDF		< DL	< DL	0.034
OCDD		0.058	0.058	0.034

< DL designates that the compound was not detected, or was found at levels below the quantitation limit (QL).
B = Less than 5 times higher than the background or associated method blank.
ng/m3 = nanograms of analyte collected per dry standard cubic meter of gas sampled.
* Value may include contributions from other TCDF isomers.

EMISSION RATE RESULTS
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS
AM TEST - AIR QUALITY, INC.

FILE NAME: S715\ASHPCDD1
CLIENT: Ashgrove Cement Company
LOCATION: Seattle, Washington
SAMPLE DATE: September 26, 1994
SAMPLE TIMES: 11:48-14:59
LAB NUMBER(S): 6665, 41485, 41488
SAMPLE VOLUME: 2.923 dscm
AIRFLOW: 112895.5 dscf/min KILN STACK

ANALYTE		Run 1 ng/min	Blank ng/min	QL Run 1 ng/min
2, 3, 7, 8-TCDF	*	17.5	< DL	10.9
Total TCDF	B	120.3	44.8	
2, 3, 7, 8-TCDD		< DL	< DL	10.9
Total TCDD		< DL	< DL	
1, 2, 3, 7, 8-PeCDF		< DL	< DL	54.7
2, 3, 4, 7, 8-PeCDF		< DL	< DL	54.7
Total PeCDF		< DL	< DL	
1, 2, 3, 7, 8-PeCDD		< DL	< DL	54.7
Total PeCDD		< DL	< DL	
1, 2, 3, 4, 7, 8-HxCDF		< DL	< DL	54.7
1, 2, 3, 6, 7, 8-HxCDF		< DL	< DL	54.7
2, 3, 4, 6, 7, 8-HxCDF		< DL	< DL	54.7
1, 2, 3, 7, 8, 9-HxCDF		< DL	< DL	54.7
Total HxCDF		< DL	< DL	
1, 2, 3, 4, 7, 8-HxCDD		< DL	< DL	54.7
1, 2, 3, 6, 7, 8-HxCDD		< DL	< DL	54.7
1, 2, 3, 7, 8, 9-HxCDD		< DL	< DL	54.7
Total HxCDD		< DL	< DL	
1, 2, 3, 4, 6, 7, 8-HpCDF		< DL	< DL	54.7
1, 2, 3, 4, 7, 8, 9-HpCDF		< DL	< DL	54.7
Total HpCDF		< DL	< DL	
1, 2, 3, 4, 6, 7, 8-HpCDD		< DL	< DL	54.7
Total HpCDD		< DL	< DL	
OCDF		< DL	< DL	109.4
OCDD		175.0	186.0	109.4

< DL designates that the compound was not detected, or was found at levels below the quantitation limit (QL).
B = Less than 5 times higher than the background or associated method blank.
ng/min = nanograms of analyte emitted per minute.
* Value may include contributions from other TCDF isomers.

EMISSION RATE RESULTS
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS
AM TEST - AIR QUALITY, INC.

FILE NAME: S715\ASHPCDD2
CLIENT: Ashgrove Cement Company
LOCATION: Seattle, Washington
SAMPLE DATE: September 26, 1994
SAMPLE TIMES: 15:53-19:03
LAB NUMBER(S): 6666, 41486, 41488
SAMPLE VOLUME: 2.964 dscm
AIRFLOW: 113365.0 dscf/min KILN STACK

ANALYTE		Run 2 ng/min	Blank ng/min	QL Run 2 ng/min
2, 3, 7, 8-TCDF	*	140.8	< DL	10.8
Total TCDF		996.5	44.4	
2, 3, 7, 8-TCDD		< DL	< DL	10.8
Total TCDD		13.0	< DL	
1, 2, 3, 7, 8-PeCDF		< DL	< DL	54.2
2, 3, 4, 7, 8-PeCDF		< DL	< DL	54.2
Total PeCDF		108.3	< DL	
1, 2, 3, 7, 8-PeCDD		< DL	< DL	54.2
Total PeCDD		< DL	< DL	
1, 2, 3, 4, 7, 8-HxCDF		< DL	< DL	54.2
1, 2, 3, 6, 7, 8-HxCDF		< DL	< DL	54.2
2, 3, 4, 6, 7, 8-HxCDF		< DL	< DL	54.2
1, 2, 3, 7, 8, 9-HxCDF		< DL	< DL	54.2
Total HxCDF		< DL	< DL	
1, 2, 3, 4, 7, 8-HxCDD		< DL	< DL	54.2
1, 2, 3, 6, 7, 8-HxCDD		< DL	< DL	54.2
1, 2, 3, 7, 8, 9-HxCDD		< DL	< DL	54.2
Total HxCDD		< DL	< DL	
1, 2, 3, 4, 6, 7, 8-HpCDF		< DL	< DL	54.2
1, 2, 3, 4, 7, 8, 9-HpCDF		< DL	< DL	54.2
Total HpCDF		< DL	< DL	
1, 2, 3, 4, 6, 7, 8-HpCDD		< DL	< DL	54.2
Total HpCDD		< DL	< DL	
OCDF		< DL	< DL	108.3
OCDD	B	162.5	184.1	108.3

< DL designates that the compound was not detected, or was found at levels below the quantitation limit (QL).
B = Less than 5 times higher than the background or associated method blank.
ng/min = nanograms of analyte emitted per minute.
* Value may include contributions from other TCDF isomers.

EMISSION RATE RESULTS
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS
AM TEST - AIR QUALITY, INC.

FILE NAME: S715\ASHPCDD3
CLIENT: Ashgrove Cement Company
LOCATION: Seattle, Washington
SAMPLE DATE: September 27, 1994
SAMPLE TIMES: 08:07-11:17
LAB NUMBER(S): 6667, 41487, 41488
SAMPLE VOLUME: 2.934 dscm
AIRFLOW: 120529.8 dscf/min KILN STACK

ANALYTE		Run 3 ng/min	Blank ng/min	QL Run 3 ng/min
2, 3, 7, 8-TCDF	*	954.0	< DL	11.6
Total TCDF		39556	47.7	
2, 3, 7, 8-TCDD		128.0	< DL	11.6
Total TCDD		16288	< DL	
1, 2, 3, 7, 8-PeCDF		68.6	< DL	58.2
2, 3, 4, 7, 8-PeCDF		267.6	< DL	58.2
Total PeCDF		3956	< DL	
1, 2, 3, 7, 8-PeCDD		221.0	< DL	58.2
Total PeCDD		5468	< DL	
1, 2, 3, 4, 7, 8-HxCDF		< DL	< DL	58.2
1, 2, 3, 6, 7, 8-HxCDF		< DL	< DL	58.2
2, 3, 4, 6, 7, 8-HxCDF		< DL	< DL	58.2
1, 2, 3, 7, 8, 9-HxCDF		< DL	< DL	58.2
Total HxCDF		174.5	< DL	
1, 2, 3, 4, 7, 8-HxCDD		< DL	< DL	58.2
1, 2, 3, 6, 7, 8-HxCDD		79.1	< DL	58.2
1, 2, 3, 7, 8, 9-HxCDD		65.2	< DL	58.2
Total HxCDD		2210	< DL	
1, 2, 3, 4, 6, 7, 8-HpCDF		< DL	< DL	58.2
1, 2, 3, 4, 7, 8, 9-HpCDF		< DL	< DL	58.2
Total HpCDF		< DL	< DL	
1, 2, 3, 4, 6, 7, 8-HpCDD		109.4	< DL	58.2
Total HpCDD		349.0	< DL	
OCDF		< DL	< DL	116.3
OCDD		197.8	197.8	116.3

< DL designates that the compound was not detected, or was found at levels below the quantitation limit (QL).
B = Less than 5 times higher than the background or associated method blank.
ng/min = nanograms of analyte emitted per minute.
* Value may include contributions from other TCDF isomers.

EMISSION RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
Am Test-Air Quality, Inc.

File Name:	S716\ASHSEAR1	Sample Date:	9/26/94
Client:	Ash Grove Cement Company	Sample Time:	14:20-15:28
Location:	Seattle, Washington	Lab Numbers:	6662, 755901
Run Number:	1		
Sample Location:	Main Cement Kiln		
Airflow:	112895.5 dscf/min		

	Concentration		Rate	
Analyte	Detection Limit µg/m3	Emission Conc. µg/m3	Detection Limit lb/hr	Emission Rate lb/hr
Dichlorodifluoromethane	70	70	0.030	0.030 U
Chloromethane	29	1340	0.012	0.567
1,2-Dichloro-1,1,2,2-tetrafluoroethane	100	100	0.042	0.042 U
Vinyl chloride	36	80	0.015	0.034
Bromomethane	55	233	0.023	0.099
Chloroethane	38	38	0.016	0.016 U
Trichlorofluoromethane	80	80	0.034	0.034 U
1,1-Dichloroethene	56	56	0.024	0.024 U
Methylene Chloride	49	49	0.021	0.021 U
1,1,2-Trichloro-1,2,2-trifluoroethane	109	160	0.046	0.068
1,1-Dichloroethane	58	58	0.024	0.024 U
cis-1,2-Dichloroethene	56	56	0.024	0.024 U
Chloroform	70	70	0.029	0.029 U
1,2-Dichloroethane	58	58	0.024	0.024 U
1,1,1-Trichloroethane	78	78	0.033	0.033 U
Benzene	45	1630	0.019	0.689
Carbon Tetrachloride	90	90	0.038	0.038 U
1,2-Dichloropropane	66	66	0.028	0.028 U
Trichloroethylene	76	76	0.032	0.032 U
cis-1,3-Dichloropropene	65	65	0.027	0.027 U
trans-1,3-Dichloropropene	65	65	0.027	0.027 U
1,1,2-Trichloroethane	78	78	0.033	0.033 U
Toluene	54	658	0.023	0.278
1,2-Dibromoethane	109	109	0.046	0.046 U
Tetrachloroethylene	97	97	0.041	0.041 U
Chlorobenzene	66	70	0.028	0.030
Ethylbenzene	62	72	0.026	0.030
m,p-Xylene	62	99	0.026	0.042
Styrene	61	61	0.026	0.026 U
1,1,2,2-Tetrachloroethane	98	98	0.041	0.041 U
o-Xylene	62	86	0.026	0.036
1,3,5-Trimethylbenzene	70	70	0.030	0.030 U
1,2,4-Trimethylbenzene	70	70	0.030	0.030 U
1,3-Dichlorobenzene	86	86	0.036	0.036 U
1,4-Dichlorobenzene	86	86	0.036	0.036 U
1,2-Dichlorobenzene	86	86	0.036	0.036 U
1,2,4-Trichlorobenzene	106	106	0.045	0.045 U
Hexachlorobutadiene	150	150	0.064	0.064 U
Methane	1860	10400	0.787	4.40
Ethene	3490	8840	1.48	3.74
n-Propane	5110	5110	2.16	2.16 U
n-Butane	6740	6740	2.85	2.85 U
n-Pentane	8370	8370	3.54	3.54 U
n-Hexane	9990	9990	4.22	4.22 U

T=Exceeded holding time; J=Estimated value; U=Not detected at specified reporting limits

EMISSION RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
Am Test-Air Quality, Inc.

File Name:	S716\ASHSEAR2	Sample Date:	9/26/94
Client:	Ash Grove Cement Company	Sample Time:	16:22-16:58
Location:	Seattle, Washington	Lab Numbers:	6663, 755902
Run Number:	2		
Sample Location:	Main Cement Kiln		
Airflow:	113365.0 dscf/min		

	Concentration		Rate		
Analyte	Detection Limit µg/m3	Emission Conc. µg/m3	Detection Limit lb/hr	Emission Rate lb/hr	
Dichlorodifluoromethane	70	70	0.030	0.030	U
Chloromethane	29	1400	0.012	0.595	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	100	100	0.042	0.042	U
Vinyl chloride	36	88	0.015	0.037	
Bromomethane	55	243	0.023	0.103	
Chloroethane	38	38	0.016	0.016	U
Trichlorofluoromethane	80	80	0.034	0.034	U
1,1-Dichloroethene	56	56	0.024	0.024	U
Methylene Chloride	49	54	0.021	0.023	
1,1,2-Trichloro-1,2,2-trifluoroethane	109	554	0.046	0.235	
1,1-Dichloroethane	58	58	0.024	0.024	U
cis-1,2-Dichloroethene	56	56	0.024	0.024	U
Chloroform	70	70	0.030	0.030	U
1,2-Dichloroethane	58	58	0.024	0.024	U
1,1,1-Trichloroethane	78	78	0.033	0.033	U
Benzene	45	1650	0.019	0.701	
Carbon Tetrachloride	90	90	0.038	0.038	U
1,2-Dichloropropane	66	66	0.028	0.028	U
Trichloroethylene	76	76	0.032	0.032	U
cis-1,3-Dichloropropene	65	65	0.027	0.027	U
trans-1,3-Dichloropropene	65	65	0.027	0.027	U
1,1,2-Trichloroethane	78	78	0.033	0.033	U
Toluene	54	674	0.023	0.286	
1,2-Dibromoethane	109	109	0.046	0.046	U
Tetrachloroethylene	97	97	0.041	0.041	U
Chlorobenzene	66	69	0.028	0.029	
Ethylbenzene	62	76	0.026	0.032	
m,p-Xylene	62	102	0.026	0.043	
Styrene	61	61	0.026	0.026	U
1,1,2,2-Tetrachloroethane	98	98	0.042	0.042	U
o-Xylene	62	86	0.026	0.037	
1,3,5-Trimethylbenzene	70	70	0.030	0.030	U
1,2,4-Trimethylbenzene	70	70	0.030	0.030	U
1,3-Dichlorobenzene	86	86	0.036	0.036	U
1,4-Dichlorobenzene	86	86	0.036	0.036	U
1,2-Dichlorobenzene	86	86	0.036	0.036	U
1,2,4-Trichlorobenzene	106	106	0.045	0.045	U
Hexachlorobutadiene	150	150	0.064	0.064	U
Methane	373	8560	0.158	3.64	
Ethane	700	4560	0.297	1.94	
n-Propane	1030	2570	0.437	1.09	
n-Butane	1350	2070	0.573	0.879	
n-Pentane	1680	2870	0.713	1.22	
n-Hexane	2010	2010	0.854	0.854	U

T=Exceeded holding time;U=Not detected at specified reporting limits

EMISSION RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
Am Test-Air Quality, Inc.

File Name:	S716\ASHSEAR3	Sample Date:	9/27/94
Client:	Ash Grove Cement Company	Sample Time:	09:37-10:09
Location:	Seattle, Washington	Lab Numbers:	6664, 755903
Run Number:	3		
Sample Location:	Main Cement Kiln		
Airflow:	120529.8 dscf/min		

	Concentration		Rate	
Analyte	Detection Limit µg/m3	Emission Conc. µg/m3	Detection Limit lb/hr	Emission Rate lb/hr
Dichlorodifluoromethane	70	70	0.032	0.032 U
Chloromethane	29	1100	0.013	0.497
1,2-Dichloro-1,1,2,2-tetrafluoroethane	99	99	0.045	0.045 U
Vinyl chloride	36	54	0.016	0.024
Bromomethane	55	287	0.025	0.129
Chloroethane	37	37	0.017	0.017 U
Trichlorofluoromethane	79	79	0.036	0.036 U
1,1-Dichloroethene	56	56	0.025	0.025 U
Methylene Chloride	49	49	0.022	0.022 U
1,1,2-Trichloro-1,2,2-trifluoroethane	108	3540	0.049	1.60
1,1-Dichloroethane	57	57	0.026	0.026 U
cis-1,2-Dichloroethene	56	56	0.025	0.025 U
Chloroform	69	69	0.031	0.031 U
1,2-Dichloroethane	57	57	0.026	0.026 U
1,1,1-Trichloroethane	77	77	0.035	0.035 U
Benzene	45	1850	0.020	0.835
Carbon Tetrachloride	89	89	0.040	0.040 U
1,2-Dichloropropane	65	65	0.030	0.030 U
Trichloroethylene	76	76	0.034	0.034 U
cis-1,3-Dichloropropene	64	64	0.029	0.029 U
trans-1,3-Dichloropropene	64	64	0.029	0.029 U
1,1,2-Trichloroethane	77	77	0.035	0.035 U
Toluene	53	694	0.024	0.313
1,2-Dibromoethane	109	109	0.049	0.049 U
Tetrachloroethylene	96	96	0.043	0.043 U
Chlorobenzene	65	65	0.029	0.029 U
Ethylbenzene	61	77	0.028	0.035
m,p-Xylene	62	100	0.028	0.045
Styrene	60	88	0.027	0.040
1,1,2,2-Tetrachloroethane	97	97	0.044	0.044 U
o-Xylene	61	86	0.028	0.039
1,3,5-Trimethylbenzene	70	70	0.031	0.031 U
1,2,4-Trimethylbenzene	70	70	0.031	0.031 U
1,3-Dichlorobenzene	85	85	0.038	0.038 U
1,4-Dichlorobenzene	85	85	0.038	0.038 U
1,2-Dichlorobenzene	85	85	0.038	0.038 U
1,2,4-Trichlorobenzene	105	105	0.047	0.047 U
Hexachlorobutadiene	149	149	0.067	0.067 U
Methane	369	8630	0.167	3.90
Ethane	692	4190	0.312	1.89
n-Propane	1020	2650	0.461	1.20
n-Butane	1340	2480	0.605	1.12
n-Pentane	1660	2860	0.750	1.29
n-Hexane	1990	1990	0.899	0.899 U

T=Exceeded holding time; U=Not detected at specified reporting limits

ASH GROVE CEMENT COMPANY 176

"WESTERN REGION"

Date: October 3, 1994

To: Hans Steuch

From: Gerald J. Brown

Subject: Operating Conditions
HAPS Testing

Below are the test times and raw mill status, averaged operating parameters, and numbers of samples taken during each of the three HAPS test conducted 26 and 27 September 1994.

TEST TIMES	TEST 1	TEST 2	TEST 3
DATE	09/26/94	09/26/94	09/27/94
START	1148	1553	0807
STOP	1459	1903	1117
RAW MILL STATUS	UP	UP	DOWN

OPERATING PARAMETERS	Units	TEST 1	TEST 2	TEST 3	
RAW MEAL TO KILN FEED	t/h	160.	166.	162.	163
FLOW RATE NAT. GAS KILN	CFM	25.6	20.2	6	
FLOW RATE KILN PF. FEED	t/h	10.2	9.8	10.8	
FLOW RATE NAT.GAS CALCIN	CFM	0.0	0.0	0.0	
FLOW RATE CALCIN. PF.FEED	t/h	2.78	2.78	2.85	
HEAT CONSUMPTION	MBTU/T	3.06	2.89	3.17	
BAGHOUSE INLET TEMP	degF	222.	220.	486.	
BAGHOUSE DRY BULB TEMP	degF	228.	207.	435.	
TEMP. KILN FEED HOOD	degF	1873.	1759.	1808.	
TEMP. STG5 EXIT PREHEATER	degF	1551.	1548.	1546.	
TEMP. STG1 EXIT PREHEATER	degF	619.	604.	620.	
O2 % KILN INLET GAS	%	1.6	2.0	2.2	
CO % KILN INLET GAS	%	0.03	0.04	0.03	
NO KILN INLET GAS	ppm	467.	468.	400.	
O2 % PREHEATER GAS	%	2.8	3.1	3.0	
CO % PREHEATER GAS	%	0.12	0.19	0.10	
LAST VALID O2%, STACK MON	%	8.5	8.8	9.2	
LAST VALID CO, STACK MON	ppm	845.	758.	675.	
LAST VALID NOX, STACK MON	ppm	210.	191.	198.	
LAST VALID SO2, STACK MON	ppm	19.	21.	20.	

Sample Numbers	TEST 1	TEST 2	TEST 3
Dust Collector Return Dust	1417-94	1420-94	1423-94
Kiln Feed	1418-94	1421-94	1424-94
Clinker	1419-94	1422-94	1425-94

Attached is the complete set of raw data obtained for the above operating parameters. Please call if you need further information.

AGCS2M000100

3801 EAST MARGINAL WAY, SOUTH • SEATTLE, WA 98134 • PLANT OFFICE: (206) 623-5596 • FAX: (206) 623-5355

S4000531

Plant Report 23 SPARE Demand Report 26 Sep 94

BAGHOUSE DRY BULB TEMP..... .....TEMP. KILN FEED HOOD
BAGHOUSE INLET TEMP..... .....TEMP STG5 EXIT PREHEATER
HEAT CONSUMPTION..... .....TEMP STG1 EXIT PREHEATER
FLOW RATE CALC. PF.FEED.....
FLOW RATE NAT.GAS CALCIN.....
FLOW RATE KILN PF. FEED.....
FLOW RATE NAT'L GAS KILN .....
RAW MEAL TO KILN FEED .....

H:M	KILN-FEED t/h	463140.FI1 CFM	463210.FI1 t/h	431370.FI1 CFM	751210.FI1 t/h	MBTU/T	342050.TI1 degF	342050.TI2 degF	421100.TI10 degF	421100.TI8 degF	421100.TI1 degF
10:00	150	190	8.8	0	2.78	3.37	501	369	1946	1553	631
10:05	151	207	8.9	0	2.78	3.35	505	378	1943	1556	635
10:10	149	176	8.8	0	2.78	3.39	508	388	1941	1555	639
10:15	152	209	8.8	0	2.78	3.43	510	396	1939	1555	640
10:20	151	205	8.8	0	2.78	3.35	511	403	1939	1555	641
10:25	153	173	8.8	0	2.78	3.33	513	409	1937	1554	640
10:30	153	128	9.2	0	2.78	3.23	512	412	1935	1554	636
10:35	155	95	10.0	0	2.78	3.30	511	418	1933	1554	634
10:40	158	94	10.0	0	2.78	3.27	510	421	1932	1560	633
10:45	157	81	10.0	0	2.78	3.23	493	423	1930	1561	632
10:50	161	87	10.1	0	2.78	3.17	504	423	1930	1555	631
10:55	159	43	10.5	0	2.78	3.19	508	427	1929	1551	629
11:00	161	32	10.6	0	2.78	3.17	509	432	1928	1553	631
11:05	159	28	10.7	0	2.78	3.26	510	435	1926	1549	630
11:10	163	28	10.6	0	2.78	3.22	510	436	1925	1550	629
11:15	162	28	10.7	0	2.78	3.23	486	436	1925	1554	628
11:20	162	28	10.6	0	2.78	3.16	410	421	1924	1559	625
11:25	164	28	10.7	0	2.78	3.15	288	364	1922	1555	627
11:30	160	28	10.9	0	2.78	3.20	248	326	1921	1552	625
11:35	161	27	10.9	0	2.78	3.13	237	305	1920	1550	622
11:40	164	27	10.9	0	2.78	3.23	229	298	1919	1550	619
11:45	164	27	10.9	0	2.78	3.15	225	274	1918	1554	620
11:50	163	27	10.9	0	2.78	3.18	225	265	1917	1555	621
11:55	160	28	10.5	0	2.78	3.14	223	256	1915	1556	622
12:00	159	27	10.4	0	2.78	3.14	223	247	1914	1549	621
(Avg)	161.5	27.25	10.6	0	2.78	3.15	224	261	1916	1553.5	621

#1

AGCS2M000101

S4000532

Plant Report 23 SPARE Demand Report 26 Sep 94

LAST VALID O2%,STACK MON
LAST VALID CO, STACK MON
LAST VALID NOX,STACK MON
LAST VALID SO2,STACK MON
CO % PREHEATER GAS
O2 % PREHEATER GAS
NO % KILN INLET GAS
CO % KILN INLET GAS
O2 % KILN INLET GAS

H:M	421200.AI1 %	421200.AI2 %	421200.AI3 ppm	421202.AI1 %	421202.AI2 %	342150.AI20K %	342150.AI10K ppm	342150.AI40K ppm	342150.AI30K ppm
10:00	3.7	0.00	404	2.6	0.10	8.4	673	179	17
10:05	4.4	0.00	437	2.6	0.08	8.4	585	200	11
10:10	4.6	0.00	488	2.4	0.09	8.5	575	201	7
10:15	4.5	0.00	552	2.4	0.09	8.4	610	208	5
10:20	5.4	0.00	625	2.4	0.09	8.3	609	231	10
10:25	6.1	0.00	705	2.4	0.10	8.3	566	233	11
10:30	6.0	0.00	753	2.6	0.08	8.5	576	263	8
10:35	5.4	0.00	688	2.3	0.10	8.2	712	248	13
10:40	4.7	0.00	662	2.2	0.13	8.3	913	227	14
10:45	4.5	0.00	639	2.4	0.12	8.8	784	213	15
10:50	4.9	0.00	558	2.6	0.09	8.3	677	241	15
10:55	5.1	0.00	623	2.7	0.07	8.5	559	270	12
11:00	4.9	0.01	598	3.0	0.08	8.6	547	269	13
11:05	5.0	0.00	650	3.0	0.07	8.7	527	289	19
11:10	3.6	0.00	555	2.8	0.08	8.5	602	268	18
11:15	2.8	0.00	560	2.4	0.15	10.0	927	189	19
11:20	2.1	0.01	466	2.6	0.12	9.6	703	177	16
11:25	2.8	0.01	471	3.0	0.08	9.0	551	225	3
11:30	2.5	0.01	455	3.0	0.10	8.9	610	226	0
11:35	2.3	0.05	441	2.7	0.10	8.6	677	239	5
11:40	2.6	0.01	475	2.6	0.11	8.5	734	253	17
11:45	3.5	0.01	537	2.5	0.14	8.5	933	231	23
11:50	1.8	0.05	375	2.3	0.18	8.3	1227	188	13
11:55	1.4	0.04	418	2.6	0.16	8.3	1162	178	11
12:00	1.6	0.01	418	3.0	0.09	8.4	999	175	13
Avg	1.87	0.027	442	2.6	0.142	8.3	1080.2	188	15

#1

Plant Report 23 SPARE Demand Report 26 Sep 94

BAGHOUSE DRY BULB TEMP..... .....TEMP. KILN FEED HOOD
BAGHOUSE INLET TEMP..... .....TEMP STG5 EXIT PREHEATER
HEAT CONSUMPTION..... .....TEMP STG1 EXIT PREHEATER
FLOW RATE CALC. PF.FEED..... .....
FLOW RATE NAT.GAS CALCIN..... .....
FLOW RATE KILN PF. FEED.... .....
FLOW RATE NAT'L GAS KILN ....
RAW MEAL TO KILN FEED ....

	KILN-FEED	463140.FI1	463210.FI1	342030.TI1	421100.TI10	421100.TI1
	431370.FI1	751210.FI1	MBTU/T	342030.TI2	421100.TI8	

H:M	t/h	CFM	t/h	CFM	t/h	MBTU/T	degF	degF	degF	degF	degF
12:00	159	27	10.4	0	2.78	3.14	223	249	1914	1549	621
12:05	153	27	10.5	0	2.78	3.25	222	245	1912	1546	623
12:10	157	27	10.4	0	2.78	3.20	222	240	1910	1549	628
12:15	157	27	10.3	0	2.78	3.17	221	237	1910	1552	634
12:20	154	27	10.3	0	2.78	3.22	221	233	1907	1553	636
12:25	160	27	10.2	0	2.78	3.29	221	230	1906	1550	637
12:30	156	27	10.2	0	2.78	3.19	221	228	1904	1551	636
12:35	157	27	10.3	0	2.78	3.19	221	225	1902	1553	636
12:40	157	27	10.3	0	2.73	3.17	221	223	1900	1547	633
12:45	159	27	10.3	0	2.78	3.19	221	222	1899	1551	632
12:50	161	27	10.4	0	2.78	3.13	220	221	1897	1553	632
12:55	159	27	10.3	0	2.78	3.16	221	219	1894	1552	630
13:00	157	27	10.3	0	2.78	3.17	221	218	1893	1553	629
13:05	159	27	10.3	0	2.78	3.11	221	217	1891	1554	630
13:10	160	27	10.2	0	2.78	3.15	222	217	1889	1554	628
13:15	157	27	10.2	0	2.78	3.16	221	216	1887	1552	627
13:20	160	27	10.1	0	2.78	3.08	221	215	1884	1551	626
13:25	158	27	10.1	0	2.78	3.13	221	215	1883	1550	627
13:30	160	27	10.1	0	2.78	3.14	221	214	1881	1551	627
13:35	159	27	10.1	0	2.78	3.09	221	214	1878	1551	627
13:40	160	27	10.1	0	2.78	3.09	221	213	1876	1552	629
13:45	158	27	10.0	0	2.78	3.03	221	213	1874	1550	629
13:50	160	27	10.0	0	2.78	3.03	221	212	1871	1552	626
13:55	164	27	10.0	0	2.78	2.97	221	212	1870	1550	624
14:00	169	27	9.7	0	2.73	2.89	221	212	1868	1549	618
Avg	158.8	27	10.2	0	2.78	3.13	221	219.4	1852	1551	629

#1

AGCS2M000103

S4000534

Plant Report 23 SPARE Demand Report 26 Sep 94

LAST VALID O2%,STACK MON.....LAST VALID CO, STACK MON
.....LAST VALID NOX,STACK MON
CO % PREHEATER GAS.....LAST VALID SO2,STACK MON
O2 % PREHEATER GAS.....
.....
NO % KILN INLET GAS.....
CO % KILN INLET GAS.....
O2 % KILN INLET GAS.....

H:M	421200.AI1 %	421200.AI3 %	421202.AI1 ppm	421200.AI2 %	421202.AI2 %	342150.AI23K %	342150.AI40K ppm	342150.AI15K ppm	342150.AI30K ppm
12:00	1.6	0.01	418	3.0	0.09	8.4	999	175	13
12:05	1.6	0.01	450	3.0	0.09	8.6	640	226	12
12:10	1.4	0.02	422	2.8	0.08	8.4	624	238	15
12:15	1.6	0.02	414	3.0	0.07	8.5	578	238	17
12:20	1.6	0.02	459	2.9	0.08	8.6	543	236	9
12:25	1.4	0.01	451	3.0	0.09	8.7	609	211	11
12:30	1.9	0.03	457	3.3	0.11	8.9	709	210	16
12:35	1.7	0.01	446	3.0	0.10	8.6	632	215	19
12:40	2.3	0.01	463	3.0	0.09	8.7	672	226	24
12:45	1.6	0.02	460	2.9	0.09	8.5	624	229	23
12:50	1.6	0.02	465	2.7	0.11	8.5	685	236	22
12:55	1.7	0.02	465	2.9	0.10	8.4	632	233	23
13:00	1.5	0.01	494	2.8	0.10	8.3	668	230	33
13:05	1.5	0.02	518	2.7	0.10	8.3	746	222	30
13:10	1.4	0.02	513	2.8	0.10	8.4	709	223	32
13:15	1.7	0.02	533	2.8	0.11	8.4	671	234	28
13:20	1.6	0.02	520	2.9	0.08	8.5	635	244	23
13:25	1.4	0.02	539	2.9	0.09	8.5	666	242	22
13:30	1.5	0.17	535	3.0	0.09	8.5	750	253	24
13:35	1.3	0.02	542	2.9	0.09	8.4	671	240	29
13:40	1.3	0.02	535	2.3	0.10	8.5	685	234	30
13:45	1.5	0.02	508	3.0	0.10	8.5	674	255	20
13:50	1.6	0.02	517	2.9	0.09	8.5	697	233	19
13:55	1.7	0.02	548	3.0	0.10	8.5	658	237	21
14:00	1.1	0.02	514	2.8	0.11	8.5	717	238	30
Avg	1.59	.024	485.4	2.9	0.094	8.5	676.9	229.5	21.4

#1

AGCS2M000104

S4000535

BAGHOUSE DRY BULB TEMP..... .....TEMP. KILN FEED HOOD
BAGHOUSE INLET TEMP..... .....TEMP STG5 EXIT PREHEATER
HEAT CONSUMPTION..... .....TEMP STG1 EXIT PREHEATER
FLOW RATE CALC. PF.FEED.....
FLOW RATE NAT.GAS CALCIN.....
FLOW RATE KILN PF. FEED.....
FLOW RATE NAT'L GAS KILN .....
RAW MEAL TO KILN FEED .....

H:M	t/h	CFM	t/h	CFM	t/h	MBTU/T	degF	degF	degF	degF	degF
	KILN-FEED		463140.FI1		463210.FI1		342030.TI1		421100.TI10		421100.TI1
	431370.FI1		751210.FI1		MBTU/T		342030.TI2		421100.TI8		
14:00	169	27	9.9	0	2.78	2.89	221	212	1868	1549	618
14:05	165	27	9.9	0	2.78	2.94	220	211	1864	1548	611
14:10	168	27	9.7	0	2.78	2.91	220	211	1862	1550	609
14:15	164	27	9.9	0	2.78	2.89	221	211	1859	1550	608
14:20	167	27	9.8	0	2.78	2.93	221	211	1858	1550	608
14:25	168	27	9.8	0	2.78	2.88	221	210	1855	1551	607
14:30	169	15	9.8	0	2.78	2.72	220	210	1852	1548	606
14:35	168	20	9.8	0	2.78	2.86	221	210	1848	1548	605
14:40	167	19	9.8	0	2.78	2.86	220	210	1846	1547	605
14:45	167	19	9.8	0	2.78	2.87	220	210	1846	1546	604
14:50	167	19	10.0	0	2.78	2.91	220	209	1842	1546	603
14:55	167	20	10.1	0	2.78	2.93	220	209	1839	1545	603
15:00	166	20	10.1	0	2.78	2.96	220	209	1836	1548	603
(avg)	159.4	22.6	9.9	0	2.78	2.87	220	209.7	1851.9	1548.1	604.9
TEST #1											
MEAN	157.9	25.6	10.2	0	2.78	3.06	221.6	228.4	1873	1551	619.

#1

15:45	168	20	10.0	0	2.78	2.90	220	209	1812	1548	604
15:50	166	20	10.0	0	2.78	2.94	220	208	1809	1548	604
15:55	169	20	10.0	0	2.78	2.83	220	208	1805	1550	605
16:00	170	20	10.0	0	2.78	2.94	220	208	1802	1550	604
(avg)	168.3	20	10.0	0	2.78	2.92	220	208	1805.3	1549.5	604.5

#2

Plant Report 23 SPARE Demand Report 26 Sep 94

LAST VALID O2%,STACK MON.....LAST VALID CO, STACK MON
.....LAST VALID NOX,STACK MON
CO % PREHEATER GAS.....LAST VALID SO2,STACK MON
O2 % PREHEATER GAS.....
.....
NO % KILN INLET GAS.....
CO % KILN INLET GAS.....
O2 % KILN INLET GAS.....

	421200.AI1	421200.AI3	421202.AI1		342150.AI20K	342150.AI40K
	421200.AI2		421202.AI2	342150.AI10K	342150.AI30K	

H:M	%	%	ppm	%	%	%	ppm	ppm	ppm
14:00	1.1	0.02	516	2.8	0.11	8.5	717	238	30
14:05	1.2	0.02	499	2.8	0.12	8.4	806	228	29
14:10	1.2	0.03	470	2.8	0.12	8.5	792	224	33
14:15	1.0	0.02	502	2.8	0.13	8.4	925	211	20
14:20	1.3	0.03	505	2.7	0.13	8.4	970	209	18
14:25	1.3	0.02	506	2.9	0.13	8.5	950	195	20
14:30	1.5	0.02	495	2.9	0.12	8.6	819	203	17
14:35	1.5	0.03	479	3.0	0.11	8.7	693	210	20
14:40	1.6	0.02	479	3.2	0.11	8.9	666	219	16
14:45	1.7	0.03	478	3.3	0.10	9.0	622	221	15
14:50	1.4	0.02	415	3.2	0.09	8.8	726	204	25
14:55	1.5	0.03	419	3.3	0.10	8.9	688	196	22
15:00	1.2	0.05	403	3.0	0.13	8.8	759	189	14
	1.27	0.026	473.5	2.97	0.115	8.6	779.5	211.3	21.46
Test 1 MEAN	1.6	0.03	457	2.8	0.12	8.5	845	210	19

#1

15:50	3.8	0.02	598	3.3	0.09	8.9	698	250	28
15:55	2.7	0.02	487	2.8	0.13	8.6	825	207	15
16:00	2.1	0.03	466	2.8	0.13	8.6	856	206	22
Avg	2.86	0.023	516.3	2.96	0.116	8.7	793	219.3	21.6

#2

Plant Report 23 SPARE Demand Report 26 Sep 94

BAGHOUSE DRY BULB TEMP..... .....TEMP. KILN FEED HOOD
BAGHOUSE INLET TEMP..... .....TEMP STG5 EXIT PREHEATER
HEAT CONSUMPTION..... .....TEMP STG1 EXIT PREHEATER
FLOW RATE CALC. PF.FEED..... .....
FLOW RATE NAT.GAS CALCIN..... .....
FLOW RATE KILN PF. FEED..... .....
FLOW RATE NAT'L GAS KILN ....
RAW MEAL TO KILN FEED ....

	KILN-FEED	465140.FI1	463210.FI1	342030.TI1	421100.TI10	421100.TI1	451370.FI1	751210.FI1	MBTU/T	342030.TI2	421100.TI8
H:M	t/h	CFM	t/h	CFM	t/h	MBTU/T	degF	degF	degF	degF	degF
16:00	170	20	10.0	0	2.78	2.94	220	208	1802	1550	604
16:05	166	20	10.0	0	2.78	2.91	220	208	1802	1550	603
16:10	165	20	10.0	0	2.78	2.96	220	208	1797	1550	604
16:15	166	20	10.0	0	2.78	2.95	220	207	1794	1550	604
16:20	167	20	10.0	0	2.78	2.91	220	207	1789	1550	604
16:25	163	20	10.0	0	2.78	2.95	220	207	1786	1549	604
16:30	166	20	10.0	0	2.78	2.92	220	207	1783	1550	604
16:35	165	20	10.0	0	2.78	2.92	220	208	1782	1550	604
16:40	163	20	10.0	0	2.78	2.92	220	207	1778	1550	604
16:45	167	20	10.0	0	2.78	2.89	220	207	1775	1550	604
16:50	165	20	10.2	0	2.78	2.94	221	208	1770	1550	604
16:55	163	20	10.0	0	2.78	2.93	220	207	1767	1548	604
17:00	165	20	9.9	0	2.78	2.94	219	207	1767	1548	605
17:05	163	20	9.9	0	2.78	2.92	219	207	1762	1548	606
17:10	164	20	9.9	0	2.78	2.92	219	206	1759	1549	607
17:15	166	20	9.9	0	2.78	2.96	219	207	1755	1549	605
17:20	166	20	9.9	0	2.78	2.90	219	206	1751	1549	605
17:25	166	20	9.8	0	2.78	2.89	219	206	1751	1549	605
17:30	166	20	9.8	0	2.78	2.90	219	206	1748	1548	605
17:35	168	20	9.5	0	2.78	2.81	219	207	1743	1547	604
17:40	165	20	9.5	0	2.78	2.83	220	207	1739	1543	603
17:45	166	20	9.5	0	2.78	2.82	219	207	1736	1545	602
17:50	166	20	9.3	0	2.78	2.79	220	207	1736	1545	602
17:55	166	20	9.4	0	2.78	2.86	220	207	1732	1545	600
18:00	164	20	9.4	0	2.78	2.84	219	207	1727	1545	602
Avg	165.5	20	9.84	0	2.78	2.90	219.6	207	1765.2	1548.3	603.4

#2

Plant Report 23 SPARE Demand Report 26 Sep 94

LAST VALID O2%,STACK MON.....LAST VALID CO, STACK MON
.....LAST VALID NOX,STACK MON
CO % PREHEATER GAS.....LAST VALID SO2,STACK MON
O2 % PREHEATER GAS.....
.....
NO % KILN INLET GAS.....
CO % KILN INLET GAS.....
O2 % KILN INLET GAS.....

H:M	421200.AI1 %	421200.AI3 %	421202.AI1 ppm	421200.AI2 %	421202.AI2 %	542150.AI20K %	542150.AI10K ppm	542150.AI40K ppm	542150.AI30K ppm
16:00	2.1	0.03	466	2.8	0.13	8.6	856	206	22
16:05	1.5	0.04	453	2.8	0.13	8.5	899	193	33
16:10	1.5	0.05	449	2.9	0.12	8.6	855	192	18
16:15	2.1	0.03	460	2.8	0.14	8.6	893	189	22
16:20	1.8	0.04	451	2.8	0.13	8.5	947	189	24
16:25	2.0	0.04	440	2.9	0.13	8.6	901	191	20
16:30	1.5	0.03	420	2.7	0.13	8.6	948	184	21
16:35	1.6	0.03	439	2.7	0.13	8.6	863	200	20
16:40	2.0	0.02	447	2.9	0.11	8.6	865	191	26
16:45	1.4	0.03	427	2.8	0.14	8.6	958	194	25
16:50	1.1	0.04	441	2.8	0.13	8.6	969	189	20
16:55	2.2	0.03	483	2.9	0.10	8.7	789	214	23
17:00	2.9	0.03	482	2.9	0.10	8.7	764	208	18
17:05	1.9	0.03	433	2.8	0.13	8.7	835	192	15
17:10	1.9	0.04	452	2.9	0.13	8.8	785	190	14
17:15	1.4	0.04	416	2.9	0.13	8.8	830	181	19
17:20	1.7	0.03	417	2.9	0.13	8.8	779	184	17
17:25	1.5	0.03	404	3.0	0.13	8.8	801	180	23
17:30	2.0	0.05	411	3.1	0.12	8.8	755	169	20
17:35	2.1	0.02	413	3.3	0.09	9.0	672	190	14
17:40	2.0	0.02	365	3.4	0.08	9.0	636	201	22
17:45	2.7	0.03	369	3.4	0.09	9.0	592	210	31
17:50	2.2	0.05	343	3.3	0.08	9.0	645	193	28
17:55	1.2	0.05	353	3.6	0.09	9.3	624	170	23
18:00	2.1	0.05	383	3.2	0.09	9.0	642	176	20
AVG	1.85	0.034	423.4	2.98	0.116	8.75	809.5	190.8	21.4

#2

BAGHOUSE DRY BULB TEMP..... .....TEMP. KILN FEED HOOD
BAGHOUSE INLET TEMP..... .....TEMP STG5 EXIT PREHEATER
HEAT CONSUMPTION..... .....TEMP STG1 EXIT PREHEATER
FLOW RATE CALC. PF.FEED..... .....
FLOW RATE NAT.GAS CALCIN..... .....
FLOW RATE KILN PF. FEED..... .....
FLOW RATE NAT'L GAS KILN ....
RAW MEAL TO KILN FEED ....

KILN-FEED 463140.FI1 465210.FI1 342030.TI1 421100.TI10 421100.TI1
431370.FI1 751210.FI1 MBTU/T 342050.TI2 421100.TI8

H:M	t/h	CFM	t/h	CFM	t/h	MBTU/T	degF	degF	degF	degF	degF
18:00	164	20	9.4	0	2.78	2.84	219	207	1727	1545	602
18:05	165	20	9.4	0	2.78	2.82	219	207	1723	1546	606
18:10	162	20	9.4	0	2.78	2.86	220	206	1719	1546	607
18:15	167	21	9.4	0	2.78	2.79	220	206	1716	1544	607
18:20	166	20	9.4	0	2.78	2.81	220	207	1715	1543	602
18:25	168	20	9.4	0	2.78	2.80	220	207	1711	1545	601
18:30	166	21	9.5	0	2.78	2.82	220	207	1708	1545	599
18:35	165	20	9.5	0	2.78	2.85	219	207	1704	1547	598
18:40	163	21	9.5	0	2.78	2.84	219	207	1700	1547	601
18:45	167	21	9.6	0	2.78	2.85	220	207	1696	1549	604
18:50	163	21	9.7	0	2.78	2.91	220	207	1696	1549	603
18:55	162	21	9.8	0	2.78	2.96	220	207	1691	1547	605
19:00	161	21	9.8	0	2.77	2.95	220	207	1687	1545	609
19:05	162	21	9.8	0	2.78	2.95	219	207	1683	1546	611
(avg)	164.2	20.6	9.54	0	2.78	2.86	219.6	206.8	1705.4	1546	603.9

#2

TEST #2
MEAN·166 20.2 9.8 0 2.78 2.89 219.7 207.2 1759. 604.0
1548

AGCS2M000109

S4000540

FLS Automation 29 Sep 1994 Ver 4.2a B 11.52.24 Ash Grove Cement Wes 186

Plant Report 23 SPARE Demand Report 26 Sep 94

LAST VALID O2%,STACK MON..... .....LAST VALID CO, STACK MON
....LAST VALID NOX,STACK MON
CO % PREHEATER GAS..... .....LAST VALID SO2,STACK MON
O2 % PREHEATER GAS.....
.....
NO % KILN INLET GAS.....
CO % KILN INLET GAS.
O2 % KILN INLET GAS.

	421200.AI1	421200.AI3	421202.AI1		342150.AI20K	342150.AI40K
	421200.AI2		421202.AI2	342150.AI10K	342150.AI30K	

H:M	%	%	ppm	%	%	%	ppm	ppm	ppm
18:00	2.1	0.05	353	3.2	0.09	9.0	642	176	20
18:05	1.6	0.05	352	3.3	0.08	9.0	628	180	18
18:10	1.4	0.05	349	3.4	0.08	9.0	636	170	24
18:15	1.1	0.05	352	3.5	0.10	9.0	672	165	19
18:20	1.5	0.03	354	3.3	0.09	9.0	646	173	16
18:25	1.9	0.03	346	3.4	0.08	9.0	617	169	22
18:30	1.8	0.07	328	3.3	0.10	9.0	653	173	25
18:35	1.5	0.11	328	3.2	0.12	8.9	710	165	52
18:40	1.7	0.14	328	3.1	0.09	8.9	713	162	25
18:45	1.1	0.25	325	3.0	0.10	8.9	747	147	15
18:50	1.2	0.09	327	3.1	0.09	8.9	791	141	23
18:55	1.2	0.07	357	3.2	0.09	8.9	672	168	29
19:00	1.1	0.05	351	3.3	0.10	8.9	661	169	16
19:05	1.2	0.07	354	3.2	0.09	8.9	670	169	18
Avg	1.46	0.079	343.1	3.25	.093	8.95	675.6	167.6	21.6

#2

TEST #2
MEAN 2.0 0.04 428. 3.1 .19 8.8 758. 191 21.

AGCS2M000110

S4000541

Plant Report 23 SPARE Demand Report 27 Sep 94

BAGHOUSE DRY BULB TEMP.....TEMP. KILN FEED HOOD
BAGHOUSE INLET TEMP.....TEMP STG5 EXIT PREHEATER
HEAT CONSUMPTION.....TEMP STG1 EXIT PREHEATER
FLOW RATE CALC. PF.FEED.....
FLOW RATE NAT.GAS CALCIN.....
FLOW RATE KILN PF. FEED.....
FLOW RATE NAT'L GAS KILN .....
RAW MEAL TO KILN FEED .....

KILN-FEED 463140.FI1 463210.FI1 342030.TI1 421100.TI10 421100.TI1
431370.FI1 751210.FI1 MBTU/T 342050.TI2 421100.TI8

H:M	t/h	CFM	t/h	CFM	t/h	MBTU/T	degF	degF	degF	degF	degF
7:00	162	7	10.5	0	2.85	3.13	493	449	1843	1548	618
7:05	162	7	10.5	0	2.85	3.13	491	446	1838	1542	619
7:10	165	7	10.5	0	2.85	3.12	488	445	1825	1538	621
7:15	161	6	10.6	0	2.84	3.16	487	443	1815	1540	621
7:20	162	6	10.6	0	2.85	3.15	487	443	1815	1541	621
7:25	163	7	10.7	0	2.85	3.20	485	441	1809	1540	621
7:30	157	6	10.8	0	2.84	3.23	479	439	1806	1542	620
7:35	159	7	10.8	0	2.85	3.24	478	438	1806	1540	623
7:40	162	7	10.8	0	2.85	3.20	478	436	1802	1538	621
7:45	159	7	10.8	0	2.85	3.21	477	436	1796	1538	619
7:50	160	7	10.9	0	2.85	3.22	475	433	1795	1541	620
7:55	163	7	10.8	0	2.85	3.24	475	433	1792	1541	622
8:00	162	7	10.8	0	2.85	3.21	475	432	1797	1545	622
8:05	161	7	10.9	0	2.85	3.30	474	431	1806	1546	624
8:10	163	7	10.9	0	2.85	3.20	474	430	1813	1546	625
8:15	159	7	10.9	0	2.85	3.19	476	430	1813	1546	625
8:20	164	7	11.0	0	2.85	3.22	477	432	1815	1543	624
8:25	162	7	11.0	0	2.85	3.26	477	431	1811	1542	624
8:30	160	7	11.0	0	2.85	3.23	478	430	1810	1546	62[illegible]
8:35	161	7	11.0	0	2.85	3.21	477	431	1817	1548	624
8:40	162	7	10.9	0	2.85	3.16	477	431	1820	1545	623
8:45	162	7	11.0	0	2.85	3.10	476	431	1820	1545	621
8:50	164	7	11.0	0	2.85	3.17	475	429	1820	1546	617
8:55	166	6	11.0	0	2.85	3.13	474	428	1825	1548	616
9:00	166	7	11.0	0	2.85	3.17	471	428	1821	1549	615
(Avg)	162.4	7	11.0	0	2.85	3.19	475.5	430	1815.75	1543.8	621.9

#3.

Plant Report 23 SPARE Demand Report 27 Sep 94

LAST VALID O2%,STACK MON.....
.....LAST VALID CO, STACK MON
.....LAST VALID NOX,STACK MON
CO % PREHEATER GAS.....LAST VALID SO2,STACK MON
O2 % PREHEATER GAS.....
.....
NO % KILN INLET GAS.....
CO % KILN INLET GAS.....
O2 % KILN INLET GAS.....

	421200.AI1	421200.AI3	421202.AI1		342150.AI20K	342150.AI40K			
	421200.AI2			421202.AI2	342150.AI10K	342150.AI50K			
H:M	%	%	ppm	%	%	%	ppm	ppm	ppm
7:00	2.7	0.02	419	3.4	0.07	9.3	582	211	20
7:05	2.5	0.02	397	3.7	0.08	9.4	563	228	19
7:10	3.7	0.02	434	3.9	0.07	9.6	528	269	17
7:15	2.9	0.02	415	3.7	0.09	9.4	554	253	25
7:20	3.1	0.02	400	3.6	0.09	9.7	531	242	22
7:25	2.6	0.02	393	3.6	0.08	9.7	570	224	23
7:30	2.7	0.02	393	3.6	0.08	9.9	540	227	28
7:35	2.3	0.02	384	3.7	0.08	9.9	523	221	30
7:40	2.7	0.02	392	3.6	0.08	9.9	523	221	30
7:45	2.8	0.02	379	3.5	0.08	9.9	523	221	30
7:50	3.1	0.02	400	3.5	0.10	9.9	523	221	30
7:55	2.3	0.02	391	3.2	0.08	9.9	523	221	30
8:00	2.3	0.02	379	3.3	0.10	9.7	589	220	41
8:05	2.5	0.02	380	3.1	0.11	9.7	578	202	26
8:10	2.3	0.02	389	3.1	0.12	9.7	578	202	26
8:15	2.7	0.02	389	3.2	0.10	9.7	578	202	26
8:20	3.2	0.02	429	3.3	0.09	9.7	578	202	26
8:25	3.0	0.02	447	3.2	0.09	9.7	578	202	26
8:30	2.3	0.02	402	2.9	0.10	9.7	578	202	26
8:35	2.6	0.02	396	3.1	0.10	9.7	578	202	26
8:40	2.3	0.02	392	3.4	0.12	9.8	702	179	14
8:45	2.1	0.02	420	3.0	0.10	9.5	671	209	17
8:50	2.0	0.02	388	3.0	0.10	9.5	666	195	26
8:55	1.8	0.02	391	2.9	0.12	9.4	770	199	54
9:00	2.0	0.03	367	2.9	0.14	9.6	800	168	18
Avg	2.4	0.02	399	2.8	0.11	9.6	637.9	196.	24

#3

Plant Report 23 SPARE Demand Report 27 Sep 94

BAGHOUSE DRY BULB TEMP..... .....TEMP. KILN FEED HOOD
BAGHOUSE INLET TEMP..... .....TEMP STG5 EXIT PREHEATER
HEAT CONSUMPTION..... .....TEMP STG1 EXIT PREHEATER
FLOW RATE CALC. PF.FEED..... .....
FLOW RATE NAT.GAS CALCIN..... .....
FLOW RATE KILN PF. FEED.... .....
FLOW RATE NAT'L GAS KILN ....
RAW MEAL TO KILN FEED ....

	KILN-FEED	463140.FI1	463210.FI1	342030.TI1	421100.TI10	421100.TI1
	431570.FI1	751210.FI1	MBTU/T	342030.TI2	421100.TI8	

H:M	t/h	CFM	t/h	CFM	t/h	MBTU/T	degF	degF	degF	degF	degF
9:00	166	7	11.0	0	2.85	3.17	471	428	1821	1549	615
9:05	166	7	11.1	0	2.85	3.15	471	427	1820	1546	615
9:10	167	7	11.1	0	2.85	3.14	471	427	1820	1546	615
9:15	166	7	11.1	0	2.85	3.17	472	426	1817	1548	612
9:20	168	7	11.1	0	2.85	3.14	470	426	1815	1549	612
9:25	169	7	11.2	0	2.85	3.13	470	427	1815	1552	612
9:30	166	6	11.2	1	2.84	3.16	471	426	1815	1547	610
9:35	168	6	11.2	1	2.84	3.16	470	424	1814	1547	609
9:40	170	6	11.1	1	2.85	3.09	469	424	1814	1548	608
9:45	166	6	11.0	1	2.84	3.12	479	429	1814	1550	607
9:50	167	6	11.0	0	2.84	3.11	486	430	1812	1548	606
9:55	166	6	11.0	0	2.84	3.14	488	431	1810	1547	607
10:00	166	6	10.9	0	2.84	3.15	488	432	1809	1547	608
10:05	162	6	11.0	0	2.85	3.18	489	435	1806	1546	609
10:10	163	6	10.9	0	2.84	3.16	490	435	1807	1547	610
10:15	167	6	10.9	0	2.85	3.15	490	435	1810	1547	613
10:20	166	6	10.9	0	2.85	3.11	491	436	1810	1546	614
10:25	164	6	10.9	0	2.85	3.14	491	437	1806	1546	615
10:30	165	6	10.9	0	2.85	3.13	491	438	1804	1546	612
10:35	166	6	10.9	0	2.85	3.11	492	438	1809	1546	615
10:40	165	6	10.8	0	2.85	3.16	492	438	1800	1548	615
10:45	164	6	10.8	0	2.84	3.06	492	438	1803	1547	614
10:50	160	6	10.8	0	2.84	3.17	492	440	1802	1546	614
10:55	160	6	10.7	0	2.84	3.17	493	440	1801	1546	619
11:00	156	6	10.8	0	2.85	3.28	496	441	1801	1546	623
Avg	165	6.24	10.97	0	2.85	3.14	483	432	1809.8	1547	612.3

#3

Plant Report 23 SPARE Demand Report 27 Sep 94

LAST VALID O2%,STACK MON.....
.....
CO % PREHEATER GAS.....
O2 % PREHEATER GAS.....
.....
NO % KILN INLET GAS.....
CO % KILN INLET GAS.
O2 % KILN INLET GAS.

.....LAST VALID CO, STACK MON
.....LAST VALID NOX,STACK MON
.....LAST VALID SO2,STACK MON

H:M	421200.AI1 %	421200.AI2 %	421200.AI3 ppm	421202.AI1 %	421202.AI2 %	342150.AI20K %	342150.AI10K ppm	342150.AI40K ppm	342150.AI30K ppm
9:00	2.0	0.03	367	2.9	0.14	9.6	800	168	18
9:05	2.0	0.02	395	3.1	0.11	9.4	833	173	19
9:10	2.3	0.02	382	2.8	0.13	9.4	849	162	23
9:15	1.8	0.03	379	3.1	0.13	9.4	896	185	25
9:20	1.7	0.02	381	2.8	0.13	9.4	885	168	28
9:25	1.7	0.04	374	2.7	0.15	9.3	1038	151	29
9:30	1.8	0.03	396	2.8	0.14	9.5	879	168	38
9:35	1.4	0.04	375	2.9	0.14	9.4	835	166	38
9:40	1.2	0.04	360	2.8	0.14	8.8	965	155	45
9:45	2.2	0.08	379	2.7	0.19	8.8	1183	153	37
9:50	2.2	0.03	389	2.9	0.12	8.7	841	178	34
9:55	2.4	0.04	383	2.9	0.13	8.6	793	190	32
10:00	1.6	0.04	377	2.9	0.10	8.7	798	190	34
10:05	2.9	0.02	399	3.0	0.11	8.7	781	198	31
10:10	2.2	0.03	389	3.0	0.11	8.8	780	193	30
10:15	1.6	0.02	389	3.1	0.12	8.7	744	189	26
10:20	2.1	0.04	422	3.2	0.10	8.8	718	206	21
10:25	2.1	0.03	400	3.2	0.10	8.8	689	204	17
10:30	2.1	0.04	404	3.3	0.10	9.0	653	224	16
10:35	2.4	0.03	407	3.2	0.09	8.9	677	210	15
10:40	1.8	0.03	393	3.1	0.12	8.9	724	192	12
10:45	1.8	0.03	407	3.1	0.11	8.8	719	190	13
10:50	1.9	0.03	397	3.2	0.11	9.0	650	200	14
10:55	1.6	0.03	399	3.2	0.10	8.8	652	219	10
11:00	1.7	0.03	402	3.2	0.09	9.0	615	209	8
(Avg)	1.94	0.03	389.8	3.0	0.12	9.0	800	177.7	24.5

#3

Plant Report 23 SPARE Demand Report 27 Sep 94

BAGHOUSE DRY BULB TEMP..... .....TEMP. KILN FEED HOOD
BAGHOUSE INLET TEMP..... .....TEMP STG5 EXIT PREHEATER
HEAT CONSUMPTION..... .....TEMP STG1 EXIT PREHEATER
FLOW RATE CALC. PF.FEED.....
FLOW RATE NAT.GAS CALCIN.....
FLOW RATE KILN PF. FEED.....
FLOW RATE NAT'L GAS KILN .....
RAW MEAL TO KILN FEED .....

KILN-FEED 465140.FI1 463210.FI1 342030.TI1 421100.TI10 421100.TI1
431370.FI1 751210.FI1 MBTU/T 342050.TI2 421100.TI8

H:M	t/h	CFM	t/h	CFM	t/h	MBTU/T	degF	degF	degF	degF	degF
11:00	156	6	10.8	0	2.85	3.28	496	441	1801	1546	623
11:05	159	6	10.5	0	2.85	3.19	500	442	1802	1546	628
11:10	160	6	10.5	0	2.84	3.14	500	443	1801	1543	628
11:15	160	6	10.5	0	2.84	3.13	504	447	1798	1543	627
11:20	157	6	10.5	0	2.80	3.18	504	448	1792	1544	627
(Avg)	158.4	6	10.5	0	2.84	3.18	501	444	1799	1544	627

#3

TEST #3

MEAN	162	6	10.8	0	2.85	3.17	486	435	1808	1546	620

LAST VALID O2%,STACK MON.....
LAST VALID CO, STACK MON
LAST VALID NOX,STACK MON
LAST VALID SO2,STACK MON
CO % PREHEATER GAS.....
O2 % PREHEATER GAS.....
NO % KILN INLET GAS.....
CO % KILN INLET GAS.....
O2 % KILN INLET GAS.....

	421200.AI1	421200.AI2	421200.AI3	421202.AI1	421202.AI2	342150.AI10K	342150.AI20K	342150.AI30K	342150.AI40K
H:M	%	%	ppm	%	%	%	ppm	ppm	ppm
11:00	1.7	0.03	402	3.2	0.09	9.0	615	209	8
11:05	1.9	0.03	417	3.4	0.09	9.0	588	213	10
11:10	2.4	0.03	417	3.6	0.07	9.0	582	221	12
11:15	2.4	0.03	425	3.5	0.08	8.9	580	231	14
11:20	2.7	0.03	394	3.5	0.09	9.0	566	226	14
Avc	2.2	.03	411	3.4	0.08	9.0	586	220	11.6

#3

TEST #3

mean	2.2	0.03	400	3.0	0.10	9.2	675	198	20