AMTEST
AIR QUALITY, INC.

SUMMARY OF RESULTS - METHODS 1, 2, 3A, 4 AND 5/202
AM TEST - AIR QUALITY, INC.

FILE NAME: 2018\ASHM5SUM
CLIENT: ASH GROVE CEMENT
LOCATION: SEATTLE, WASHINGTON

	CEMENT KILN STACK			
	RUN #1	RUN #2	RUN #3	AVERAGE
LAB #:	4039	4040	4041	
DATE:	6/17/93	6/17/93	6/17/93	
START TIME:	09:07	11:25	12:54	
STOP TIME:	10:50	12:30	15:41	
SAMPLE LENGTH (minutes):	60.0	60.0	60.0	
FEED RATE (dry tons/hr):	141	140	127	
VOLUME SAMPLED (cubic feet):	40.935	47.229	48.444	45.536
VOLUME SAMPLED (dry std. cubic feet):	40.856	45.901	46.860	44.539
VOLUME SAMPLED (dry std. cubic meters):	1.157	1.300	1.327	1.261
STACK GAS MOISTURE (percent):	17.74	17.85	15.09	16.89
BAROMETRIC PRESSURE (inches of Hg):	30.15	30.15	30.21	30.17
STATIC PRESSURE (inches of H2O):	-0.27	-0.33	-0.32	-0.31
STACK PRESSURE (inches of Hg):	30.13	30.13	30.19	30.15
STACK TEMPERATURE (degrees F.):	209.6	209.8	293.1	237.5
STACK TEMPERATURE (degrees R.):	669.6	669.8	753.1	697.5
CARBON DIOXIDE (percent):	21.0	21.4	19.5	20.6
OXYGEN (percent):	7.3	7.3	8.5	7.7
CARBON MONOXIDE (ppm):	817	791	682	763
MOLECULAR WEIGHT (dry, g/g-mole):	31.65	31.72	31.46	31.61
MOLECULAR WEIGHT (wet, g/g-mole):	29.23	29.27	29.43	29.31
AVERAGE VELOCITY HEAD (inches of H2O):	0.072	0.077	0.087	0.079
PITOT TUBE Cp:	0.84	0.84	0.84	
STACK GAS VELOCITY (feet/second):	16.8	17.4	19.6	17.9
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.):	87292.6	90458.6	93542.5	90431.2
STACK GAS AIRFLOW (actual cubic feet per min.):	133638.8	138735.8	155739.4	142704.7
NOZZLE DIAMETER (inches):	0.468	0.468	0.468	
ISOKINETICS (percent):	87	94	93	
FRONT-HALF PARTICULATE MATTER EMISSION CONC. (gr/dscf):	0.003	0.003	0.001	0.002
BACK-HALF PARTICULATE MATTER EMISSION CONC. (gr/dscf):	0.014	0.010	0.017	0.014
TOTAL PARTICULATE MATTER EMISSION CONC. (gr/dscf):	0.017	0.013	0.018	0.016
PARTICULATE MATTER EMISSION CONC. @ 7% O2 (gr/dscf):	0.017	0.013	0.021	0.017
PARTICULATE MATTER EMISSION CONC. (mg/dscm):	38.7	29.8	42.0	36.8
PARTICULATE MATTER EMISSION RATE (lb/hr):	12.6	10.1	14.7	12.5
TOTAL SO4/Cl CORRECTED EMISSION CONC. (gr/dscf):	0.009	0.007	0.009	0.008
SO4/Cl CORRECTED EMISSION CONC. @ 7% O2 (gr/dscf):	0.009	0.007	0.010	0.009
SO4/Cl CORRECTED EMISSION RATE (lb/hr):	6.38	5.46	7.42	6.42

x 90431 x 60/7000 =

627395 AGCS2M000067 S4000498

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D.FAN SPEED
REH.FAN DAMPER POSITION
SPLITTER GATE% TO STG.1
SPLITTER GATE% TO STG.2
MPS, AIRLIFT BLOWER
ILN RAW MEAL FEED
LEVEL STORAGE SILO 1
EVEL STORAGE SILO 2

TEMP. PREHEATER EXIT
PREHEATER EXIT PRESSURE
TEMP. PREHEATER CALCINER
PRESS. KILN FEED HOOD
AMPS, ROTARY KILN
SPEED, ROTARY KILN
COOLER LEVEL,SEC. COOLER
PRODUCT TEMP. SEC.COOLER

Run 1

	361076.LI1	361164/5.FC1	361210.ZI1	342010.ZI1	421100.TI1	421100.TI8	431010A.II1	471100.LI1								
	361075.LI1	361202.II1	361210.ZISTI	342020A.SI1	421100.PI1	421100.PI7	431010A.SI1	471100.TI1								
H:M	%	%	t/h	%	%	%	%	%	degF	inH2O	degF	inH2O	%	rpm	%	degF
9:00	33	33	141	62	0	100	99	79	567	-13.3	1491	-0.8	64.3	1.86	54	99
9:05	32	33	141	61	0	100	99	79	564	-13.2	1491	-0.8	65.7	1.86	58	98
9:10	33	32	141	61	0	100	99	79	563	-13.3	1493	-0.8	64.8	1.86	41	98
9:15	33	33	141	61	0	100	99	79	564	-13.3	1495	-0.8	63.7	1.86	57	99
9:20	32	32	141	61	0	100	99	79	564	-13.2	1497	-0.8	63.5	1.86	42	98
9:25	32	33	141	61	0	100	99	79	564	-13.3	1500	-0.9	61.6	1.86	57	99
9:30	32	32	141	61	0	100	99	79	564	-13.4	1503	-0.8	62.0	1.86	54	93
9:35	32	33	141	61	0	100	99	79	564	-13.4	1502	-0.9	62.5	1.86	60	96
9:40	31	32	141	61	0	100	99	79	563	-13.4	1502	-0.8	60.7	1.86	39	96
9:45	31	32	141	61	0	100	99	79	564	-13.6	1502	-0.8	61.4	1.86	46	95
9:50	31	32	141	61	0	100	99	79	565	-13.3	1503	-0.7	60.5	1.86	66	94
9:55	31	32	141	61	0	100	99	80	565	-13.4	1500	-0.8	60.8	1.86	36	91
10:00	31	32	141	61	0	100	99	79	564	-13.3	1501	-0.7	59.4	1.86	59	91
10:05	31	32	141	61	0	100	99	79	564	-13.5	1503	-0.8	59.2	1.86	48	92
10:10	31	32	141	61	0	100	99	80	565	-13.3	1500	-0.8	59.2	1.86	51	93
10:15	31	32	141	61	0	100	99	79	565	-13.2	1498	-0.8	59.6	1.86	48	92
10:20	31	31	141	62	0	100	99	79	564	-13.3	1497	-0.7	59.7	1.86	47	91
10:25	30	31	140	62	0	100	99	79	565	-13.3	1499	-0.7	58.5	1.86	55	92
10:30	31	31	140	62	0	100	99	79	565	-13.2	1499	-0.7	59.9	1.86	52	92
10:35	31	31	140	61	0	100	99	79	565	-13.3	1497	-0.7	59.3	1.85	52	92
10:40	31	32	140	61	0	100	99	79	565	-13.2	1496	-0.7	60.6	1.85	56	94
10:45	31	31	140	61	0	100	99	79	567	-13.2	1499	-0.7	59.6	1.85	36	95
10:50	31	30	140	61	0	100	99	79	566	-13.3	1496	-0.7	61.1	1.85	62	94
10:55	31	31	140	61	0	100	99	79	566	-11.7	1496	-0.6	61.3	1.85	44	94
11:00	31	31	141	61	0	100	99	79	563	-13.1	1495	-0.7	60.1	1.87	51	94

17 Jun 93 4.00 - 17 Jun 93 14.08

Max	48	61	142	110	0	100	99	81	738	0.0	1503	0.0	66.3	1.87	98	109
Min	28	29	0	0	0	100	1	0	558	-13.7	1398	-0.9	0.0	0.01	11	91
Mean	35	35	135	60	0	100	96	76	571	-12.7	1492	-0.7	56.9	1.78	52	99
Accm																

16 Jun 93 4.00 - 17 Jun 93 4.00

Max	60	66	151	64	0	100	99	86	590	-13.1	1505	-0.5	60.4	1.99	98	110
Min	38	39	139	60	0	100	99	79	546	-15.3	1491	-1.2	44.9	1.85	6	92
Mean	50	51	142	61	0	100	99	81	572	-13.8	1497	-0.8	53.3	1.88	50	101
Accm																

KILN PHISTER TOTALIZER..... .....PF BIN WEIGHT
FLOW RATE CALC. PF.FEED..... .....FLOW RATE KILN PF. FEED.
FLOW RATE NAT'L GAS KILN..... .....TEMP. KILN FIRING
GAS VALVE POS REFRENCE..... .....O2 % PREHEATER GAS
KILN GAS TOTALIZER ACCU..... .....CO % PREHEATER GAS
GAS VALVE KILN BURN.POS.... ...O2 % KILN INLET GAS
RAW MEAL TO KILN FEED . CO % KILN INLET GAS
KILN BURN.EXHAUST PRESS. . NO % KILN INLET GAS

	431370.PI1	431370.ZI1	751210.ZI1	463210.FI1	463106.WI1	431010.TI1	421202.AI2	421200.AI2
	KILN-FEED	431370.FIACC	431370.FI1	463210.Q1	463140.FI1	421202.AI1	421200.AI1	421200.AI3

H:M	PSI	t/h	%		%	CFM	t/h	t	t	t/h	degF	%	%	%	%	ppm
9:00	8.3	145	51.0	334	24.2	1061	0.00	0.00	46.0	1.0	2320	3.3	0.10	1.6	0.01	1731
9:05	8.3	143	51.0	339	24.2	1060	0.00	0.00	45.9	1.0	2221	3.0	0.09	1.6	0.00	1592
9:10	8.3	142	52.0	345	24.1	1095	0.00	0.00	45.8	1.0	2254	2.9	0.09	1.6	0.00	1505
9:15	8.3	143	52.1	350	24.2	1097	0.00	0.00	45.8	1.0	2221	2.5	0.09	1.0	0.00	1423
9:20	8.3	141	52.0	356	24.2	1097	0.00	0.00	45.8	1.0	2224	2.4	0.10	1.0	0.01	1291
9:25	8.4	142	52.0	361	24.2	1096	0.00	0.00	45.8	1.0	2219	2.4	0.10	0.8	0.02	1251
9:30	8.4	141	52.6	367	24.2	1110	0.00	0.00	45.7	1.0	2248	2.1	0.17	0.6	0.05	1131
9:35	8.4	142	52.6	372	24.2	1109	0.00	0.00	45.5	1.0	2259	2.3	0.12	0.6	0.02	1142
9:40	8.4	141	52.6	378	24.2	1109	0.00	0.00	45.4	1.0	2212	2.3	0.17	0.7	0.02	1239
9:45	8.5	142	52.6	383	24.1	1109	0.00	0.00	45.3	1.0	2198	3.5	0.12	0.7	0.01	1175
9:50	8.4	141	52.6	389	24.2	1109	0.00	0.00	45.1	1.0	2269	2.2	0.14	0.7	0.03	1153
9:55	8.4	145	52.6	394	24.1	1109	0.00	0.00	45.0	1.0	2197	2.4	0.10	1.1	0.00	1278
10:00	8.4	143	52.8	400	24.1	1109	0.00	0.00	44.9	1.0	2228	2.2	0.11	0.9	0.00	1321
10:05	8.4	142	52.6	405	24.2	1122	0.00	0.00	44.6	1.0	2193	2.2	0.15	1.0	0.02	1274
10:10	8.4	141	52.6	411	24.2	1122	0.00	0.00	44.4	1.0	2204	2.3	0.11	1.2	0.01	1358
10:15	8.3	141	52.6	417	24.2	1123	0.00	0.00	44.3	1.0	2150	2.4	0.10	1.0	0.00	1389
10:20	8.3	142	52.8	422	24.1	1122	0.00	0.00	44.2	1.0	2161	2.4	0.10	1.0	0.01	1376
10:25	8.3	142	52.6	428	24.2	1123	0.00	0.00	44.1	1.0	2156	2.5	0.11	0.9	0.01	1293
10:30	8.3	147	52.6	434	24.2	1123	0.00	0.00	44.0	1.0	2199	2.4	0.10	1.1	0.00	1361
10:35	8.3	140	52.6	439	24.1	1122	0.00	0.00	43.8	1.0	2194	2.5	0.10	1.0	0.01	1316
10:40	8.3	143	52.6	445	24.2	1123	0.00	0.00	43.6	1.0	2159	2.5	0.10	1.0	0.01	1358
10:45	8.3	140	52.6	450	24.2	1122	0.00	0.00	43.4	1.0	2233	2.5	0.10	0.8	0.01	1311
10:50	8.3	141	52.6	456	24.1	1122	0.00	0.00	43.3	1.0	2167	2.6	0.10	1.1	0.01	1377
10:55	8.4	141	52.6	462	24.2	1121	0.00	0.00	43.2	1.0	2265	20.0	0.01	1.0	0.01	1464
11:00	8.3	143	52.3	467	24.2	1105	0.00	0.00	43.2	1.0	2223	19.4	0.00	1.3	0.00	1569

17 Jun 93 4.00 - 17 Jun 93 16.03

Max	8.5	152	53.5	750	30.1	1168	0.00	0.00	48.8	1.0	3000	20.7	0.48	19.7	0.56	2495
Min	0.3	0	0.1	0	0.1	0	0.00	0.00	39.5	0.0	1824	2.1	0.00	0.2	0.00	29
Mean	7.7	154	49.9	394	21.5	1037	0.00	0.00	44.3	0.6	2266	5.1	0.09	1.7	0.01	1562
Accm		1579				750277	0.01			7.6						

16 Jun 93 4.00 - 17 Jun 93 4.00

Max	8.3	161	55.1	1634	25.0	1209	0.00	0.00	48.8	1.0	2440	21.6	0.14	1.9	0.03	2220
Min	6.6	133	51.4	0	24.0	1071	0.00	0.00	15.0	0.0	1897	2.1	0.01	0.3	0.00	955
Mean	7.4	144	53.2	821	24.1	1135	0.00	0.00	37.5	0.5	2234	2.8	0.09	1.0	0.00	1625
Accm		3450				1634387	0.01			12.2						

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D.FAN SPEED
REH.FAN DAMPER POSITION
SPLITTER GATE% TO STG.1
SPLITTER GATE% TO STG.2
MPS, AIRLIFT BLOWER
KILN RAW MEAL FEED
LEVEL STORAGE SILO 1
EVEL STORAGE SILO 2

TEMP. PREHEATER EXIT
PREHEATER EXIT PRESSURE
TEMP. PREHEATER CALCINER
PRESS. KILN FEED HOOD
AMPS, ROTARY KILN
SPEED, ROTARY KILN
COOLER LEVEL,SEC. COOLER
PRODUCT TEMP. SEC.COOLER

Run 2

	361076.LI1	361164/5.FC1	361210.ZI1	342010.ZI1	421100.TI1	421100.TI8	431010A.II1	471100.LI1		
	361075.LI1	361202.II1	361210.ZIST1	342020A.SI1	421100.PI1	421100.PI7	431010A.SI1	471100.TI1		
H:M	%	%	t/h	%	%	%	%	%	degF	inH2O
11:00	31	31	141	61	0	100	99	79	563	-13.1
11:05	31	31	142	61	0	100	99	79	563	-13.2
11:10	31	31	142	61	0	100	99	79	561	-13.1
11:15	30	30	142	61	0	100	99	79	560	-13.2
11:20	30	31	141	61	0	100	99	78	560	-13.0
11:25	30	30	140	61	0	100	99	78	558	-13.1
11:30	30	30	140	61	0	100	99	78	560	-13.0
11:35	30	30	140	61	0	100	99	78	561	-13.0
11:40	29	30	141	61	0	100	99	78	562	-13.1
11:45	30	30	140	61	0	100	99	78	562	-13.1
11:50	30	29	140	61	0	100	99	78	562	-12.9
11:55	30	29	141	61	0	100	99	78	562	-13.1
12:00	28	29	141	61	0	100	99	78	561	-13.0
12:05	29	29	140	61	0	100	99	78	561	-13.0
12:10	30	29	140	61	0	100	99	78	560	-13.0
12:15	29	29	140	61	0	100	99	78	561	-13.2
12:20	30	30	140	61	0	100	99	78	562	-13.0
12:25	29	29	140	61	0	100	99	78	561	-13.1
12:30	28	30	140	60	0	100	99	78	561	-13.0
12:35	29	29	140	61	0	100	99	78	562	-13.1
12:40	29	30	140	61	0	100	99	78	562	-13.2
12:45	29	29	140	61	0	100	99	78	563	-13.0
12:50	30	29	141	61	0	100	99	78	563	-13.0
12:55	31	32	140	61	0	100	99	78	561	-12.9
13:00	36	40	140	61	0	100	99	78	561	-12.8

	degF	inH2O	degF	inH2O	%	rpm	%	degF
11:00	1495	-0.7	60.1	1.87	51	94		
11:05	1498	-0.8	59.8	1.87	52	94		
11:10	1497	-0.7	60.2	1.87	52	96		
11:15	1497	-0.8	60.7	1.87	62	95		
11:20	1498	-0.8	59.2	1.87	39	97		
11:25	1498	-0.7	60.8	1.85	67	96		
11:30	1497	-0.7	59.2	1.85	45	96		
11:35	1497	-0.7	60.1	1.85	53	100		
11:40	1497	-0.7	59.1	1.87	58	98		
11:45	1498	-0.7	58.9	1.85	32	97		
11:50	1498	-0.7	60.7	1.85	63	95		
11:55	1498	-0.8	59.5	1.86	47	95		
12:00	1497	-0.8	61.3	1.87	59	96		
12:05	1498	-0.9	59.8	1.86	53	97		
12:10	1498	-0.8	61.0	1.85	40	98		
12:15	1497	-0.8	61.6	1.85	59	100		
12:20	1497	-0.7	61.0	1.85	46	99		
12:25	1497	-0.7	60.4	1.85	60	101		
12:30	1497	-0.8	62.3	1.85	60	102		
12:35	1498	-0.8	60.8	1.85	34	98		
12:40	1497	-0.8	62.5	1.85	62	99		
12:45	1497	-0.8	62.2	1.85	43	98		
12:50	1497	-0.8	61.3	1.86	56	98		
12:55	1496	-0.8	61.3	1.85	60	99		
13:00	1497	-0.7	60.1	1.85	37	99		

17 Jun 93 4.00 - 17 Jun 93 14.09

Max	48	61	142	110	0	100	99	81	738	0.0	1503	0.0	66.3	1.87	98	109
Min	28	29	0	0	0	100	1	0	558	-13.7	1398	-0.9	0.0	0.01	11	91
Mean	35	35	135	60	0	100	96	76	571	-12.6	1492	-0.7	56.9	1.78	52	99
Accm																

16 Jun 93 4.00 - 17 Jun 93 4.00

Max	60	66	151	64	0	100	99	86	590	-13.1	1505	-0.5	60.4	1.99	98	110
Min	38	39	139	60	0	100	99	79	546	-15.3	1491	-1.2	44.9	1.85	6	92
Mean	50	51	142	61	0	100	99	81	572	-13.8	1497	-0.8	53.3	1.88	50	101
Accm																

Plant Report 10 KILN REPORT 1.2 Demand Report 17 Jun 93

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KILN PHISTER TOTALIZER..... .....PF BIN WEIGHT
FLOW RATE CALC. PF.FEED..... .....FLOW RATE KILN PF. FEED.
FLOW RATE NAT'L GAS KILN..... .....TEMP. KILN FIRING
GAS VALVE POS REFRENCE..... .....O2 % PREHEATER GAS
KILN GAS TOTALIZER ACCU..... .....CO % PREHEATER GAS
GAS VALVE KILN BURN.POS.... .....O2 % KILN INLET GAS
RAW MEAL TO KILN FEED . . . . . CO % KILN INLET GAS
KILN BURN.EXHAUST PRESS. . . . . NO % KILN INLET GAS

	431370.PI1	431370.ZI1	751210.ZI1	463210.FI1	463106.WI1	431010.TI1	421202.AI2	421200.AI2
	KILN-FEED	431370.FIACC	431370.FI1	463210.Q1	463140.FI1	421202.AI1	421200.AI1	421200.AI3
H:M	PSI	t/h	%	%	CFM	t/h	t	t	t/h	degF	%	%	%	%	ppm
11:00	8.3	143	52.3	467	24.2	1105	0.00	0.00	43.2	1.0	2223	19.4	0.00	1.3	0.00	1569
11:05	8.3	142	52.6	473	24.1	1111	0.00	0.00	43.1	1.0	2225	19.0	0.01	0.7	0.01	1433
11:10	8.3	142	52.6	478	24.2	1111	0.00	0.00	42.9	1.0	2215	3.4	0.10	1.0	0.00	1429
11:15	8.3	144	52.6	484	24.1	1111	0.00	0.00	42.7	1.0	2167	2.4	0.11	1.0	0.00	1475
11:20	8.3	143	52.6	489	24.2	1111	0.00	0.00	42.5	1.0	2156	2.3	0.11	1.0	0.02	1388
11:25	8.3	144	52.6	495	24.2	1111	0.00	0.00	42.5	1.0	2190	2.3	0.11	1.0	0.01	1497
11:30	8.3	140	52.6	501	24.2	1111	0.00	0.00	42.4	1.0	2207	2.3	0.11	1.0	0.02	1430
11:35	8.3	140	52.6	506	24.2	1110	0.00	0.00	42.3	1.0	2231	2.3	0.11	0.9	0.01	1445
11:40	8.3	144	52.6	512	24.2	1111	0.00	0.00	42.3	1.0	2224	3.5	0.10	1.0	0.01	1402
11:45	8.3	142	52.6	517	24.2	1111	0.00	0.00	42.3	1.0	2103	2.2	0.12	0.9	0.01	1369
11:50	8.3	140	52.6	523	24.2	1111	0.00	0.00	42.2	1.0	2210	2.2	0.11	1.0	0.01	1375
11:55	8.3	141	52.6	528	24.2	1111	0.00	0.00	42.0	1.0	2194	2.3	0.10	0.9	0.01	1379
12:00	8.2	142	52.6	534	24.2	1111	0.00	0.00	41.8	1.0	2175	2.5	0.11	1.0	0.00	1405
12:05	8.2	144	52.6	539	24.2	1111	0.00	0.00	41.8	1.0	2219	2.7	0.11	1.1	0.01	1458
12:10	8.2	142	52.6	545	24.2	1111	0.00	0.00	41.7	1.0	2179	2.5	0.10	0.8	0.00	1396
12:15	8.2	141	52.6	551	24.1	1111	0.00	0.00	41.7	1.0	2191	13.6	0.11	1.0	0.01	1420
12:20	8.2	142	52.6	556	24.1	1111	0.00	0.00	41.5	1.0	2167	19.2	0.02	0.9	0.01	1480
12:25	8.2	140	52.6	562	24.1	1111	0.00	0.00	41.4	1.0	2233	19.6	0.01	0.9	0.01	1436
12:30	8.2	144	52.6	567	24.1	1111	0.00	0.00	41.6	1.0	2194	19.9	0.01	0.8	0.02	1413
12:35	8.1	142	52.6	573	24.1	1111	0.00	0.00	41.4	1.0	2157	19.8	0.01	1.0	0.01	1526
12:40	8.1	142	52.6	578	24.2	1111	0.00	0.00	41.3	1.0	2184	20.0	0.01	0.9	0.00	1411
12:45	8.1	139	52.3	584	24.2	1111	0.00	0.00	41.1	1.0	2195	19.9	0.01	1.0	0.00	1478
12:50	8.0	141	52.1	589	24.1	1071	0.00	0.00	41.0	1.0	2181	20.1	0.01	1.5	0.00	1613
12:55	8.1	141	52.6	595	24.2	1098	0.00	0.00	40.9	1.0	2250	19.9	0.01	1.0	0.00	1486
13:00	8.1	136	52.6	600	24.1	1096	0.00	0.00	40.6	1.0	2259	20.1	0.01	0.9	0.00	1463

17 Jun 93 4.00 - 17 Jun 93 16.04

Max	8.5	152	53.5	751	30.1	1168	0.00	0.00	48.8	1.0	3000	20.7	0.48	19.7	0.56	2495
Min	0.3	0	0.1	0	0.1	0	0.00	0.00	39.5	0.0	1824	2.1	0.00	0.2	0.00	29
Mean	7.7	134	49.9	394	21.5	1037	0.00	0.00	44.3	0.6	2266	5.1	0.09	1.7	0.01	1562
Accm		1580				750830	0.01			7.6						

16 Jun 93 4.00 - 17 Jun 93 4.00

Max	8.3	161	55.1	1634	25.0	1209	0.00	0.00	48.8	1.0	2440	21.6	0.14	1.9	0.03	2220
Min	6.6	133	51.4	0	24.0	1071	0.00	0.00	15.0	0.0	1897	2.1	0.01	0.3	0.00	955
Mean	7.4	144	53.2	821	24.1	1135	0.00	0.00	37.5	0.5	2234	2.8	0.09	1.0	0.00	1625
Accm		3450				1634387	0.01			12.2						

Plant Report 6 KILN REPORT 1.1 Demand Report 17 Jun 93

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D.FAN SPEED.....
PREH.FAN DAMPER POSITION.....
SPLITTER GATE% TO STG.1.....
SPLITTER GATE% TO STG.2.....
AMPS, AIRLIFT BLOWER.....
KILN RAW MEAL FEED.....
LEVEL STORAGE SILO 1
LEVEL STORAGE SILO 2

.....TEMP. PREHEATER EXIT
.....PREHEATER EXIT PRESSURE
.....TEMP. PREHEATER CALCINER
.....PRESS. KILN FEED HOOD
.....AMPS, ROTARY KILN
.....SPEED, ROTARY KILN
.....COOLER LEVEL,SEC. COOLER
.....PRODUCT TEMP. SEC.COOLER

RUN 3

	361076.LI1	361164/5.FC1	361210.ZI1	342010.ZI1	421100.TI1	421100.TI8	431010A.II1	471100.LI1								
	361075.LI1	361202.II1	361210.ZIST1	342020A.SI1	421100.PI1	421100.PI7	431010A.SI1	471100.TI1								
H:M	%	%	t/h	%	%	%	%	%	degF	inH2O	degF	inH2O	%	rpm	%	degF
12:00	28	29	142	61	0	100	99	78	561	-13.0	1497	-0.8	61.3	1.87	59	96
12:05	29	29	140	61	0	100	99	78	561	-13.0	1498	-0.9	59.8	1.86	53	97
12:10	30	29	140	61	0	100	99	78	560	-13.0	1498	-0.8	61.0	1.85	40	98
12:15	29	29	140	61	0	100	99	78	561	-13.2	1497	-0.8	61.6	1.85	59	100
12:20	30	30	140	61	0	100	99	78	562	-13.0	1497	-0.7	61.0	1.85	46	99
12:25	29	29	140	61	0	100	99	78	561	-13.1	1497	-0.7	60.4	1.85	60	101
12:30	28	30	140	60	0	100	99	78	561	-13.0	1497	-0.8	62.3	1.85	60	102
12:35	29	29	140	61	0	100	99	78	562	-13.1	1498	-0.8	60.8	1.85	34	98
12:40	29	30	140	61	0	100	99	78	562	-13.2	1497	-0.8	62.5	1.85	62	99
12:45	29	29	140	61	0	100	99	78	563	-13.0	1497	-0.8	62.2	1.85	43	98
12:50	30	29	141	61	0	100	99	78	563	-13.0	1497	-0.8	61.3	1.86	56	98
12:55	31	32	140	61	0	100	99	78	561	-12.9	1496	-0.8	61.3	1.85	60	99
13:00	36	40	140	61	0	100	99	78	561	-12.8	1497	-0.7	60.1	1.85	37	99
13:05	34	53	140	61	0	100	99	78	562	-12.8	1497	-0.7	62.3	1.85	53	99
13:10	33	57	140	61	0	100	99	78	561	-12.8	1496	-0.7	61.8	1.85	51	100
13:15	39	50	140	61	0	100	99	78	562	-12.9	1496	-0.7	58.8	1.85	55	101
13:20	45	49	140	61	0	100	99	78	561	-12.8	1494	-0.7	57.6	1.85	43	101
13:25	48	49	140	61	0	100	99	78	560	-13.0	1492	-0.7	56.3	1.85	65	102
13:30	47	48	140	61	0	100	99	79	561	-13.0	1490	-0.7	55.7	1.85	63	102
13:35	46	48	0	0	0	100	1	3	619	0.0	1461	0.0	6.9	0.10	55	101
13:40	46	48	0	0	0	100	1	20	721	-0.1	1445	0.0	0.2	0.10	54	103
13:45	45	47	0	50	0	100	1	10	712	0.0	1431	0.0	0.0	0.10	55	103
13:50	45	47	0	45	0	100	8	10	643	0.0	1405	0.0	38.3	0.38	87	109
13:55	45	47	80	42	0	100	23	10	610	0.0	1404	0.0	55.3	0.38	87	109
14:00	45	47	90	50	0	100	99	10	636	0.0	1412	0.0	56.5	0.88	87	106
17 Jun 93 4.00 - 17 Jun 93 14.12																
Max	48	61	142	110	0	100	99	81	738	0.0	1503	0.0	66.3	1.87	98	109
Min	28	29	0	0	0	100	1	0	554	-13.7	1398	-0.9	0.0	0.01	11	91
Mean	35	36	135	60	0	100	96	76	571	-12.6	1492	-0.7	56.9	1.77	52	99
Accm																
16 Jun 93 4.00 - 17 Jun 93 4.00																
Max	60	66	151	64	0	100	99	86	590	-13.1	1505	-0.5	60.4	1.99	98	110
Min	38	39	139	60	0	100	99	79	546	-15.3	1491	-1.2	44.9	1.85	6	92
Mean	50	51	142	61	0	100	99	81	572	-13.8	1497	-0.8	53.3	1.88	50	101
Accm																

Plant Report 6 KILN REPORT 1.1 Demand Report 17 Jun 93

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D.FAN SPEED.....TEMP. PREHEATER EXIT
PREH.FAN DAMPER POSITION.....PREHEATER EXIT PRESSURE
SPLITTER GATE% TO STG.1.....TEMP. PREHEATER CALCINER
PLITTER GATE% TO STG.2.....PRESS. KILN FEED HOOD
AMPS, AIRLIFT BLOWER.....AMPS, ROTARY KILN
KILN RAW MEAL FEED.....SPEED, ROTARY KILN
FUEL STORAGE SILO 1 . . . . . COOLER LEVEL,SEC. COOLER
FUEL STORAGE SILO 2 . . . . . PRODUCT TEMP. SEC.COOLER

	361076.LI1	361164/5.FC1	361210.ZI1	342010.ZI1	421100.TI1	421100.TI8	431010A.II1	471100.LI1						
	361075.LI1	361202.II1	361210.ZIST1	342020A.SI1	421100.PI1	421100.PI7	431010A.SI1	471100.TI1						
H:M	%	%	t/h	%	%	%	%	%	degF	inH2O	degF	inH2O	%	rpm	%	degF
14:00	45	47	90	50	0	100	99	10	636	0.0	1412	0.0	56.5	0.88	87	106
14:05	45	47	90	51	0	100	99	47	611	-4.1	1412	-0.1	53.8	0.88	98	109
14:10	45	47	90	53	0	100	99	46	571	-4.3	1411	-0.2	53.3	0.88	98	105
14:15	45	47	90	54	0	100	99	46	534	-4.4	1411	-0.1	51.9	0.88	98	107
14:20	45	47	95	53	0	100	99	49	525	-5.0	1431	-0.3	56.0	0.93	98	107
14:25	45	47	100	55	0	100	99	51	531	-5.6	1437	-0.3	53.5	1.33	98	108
14:30	45	46	100	55	0	100	99	53	527	-6.3	1449	-0.4	53.3	1.33	98	105
14:35	44	46	100	55	0	100	99	61	531	-8.0	1462	-0.4	49.8	1.33	98	105
14:40	44	46	100	55	0	100	99	66	561	-9.2	1478	-0.5	47.0	1.33	98	104
14:45	44	46	100	55	0	100	99	72	603	-10.2	1478	-0.6	46.9	1.33	98	101
14:50	44	46	107	55	0	100	99	72	626	-10.5	1485	-0.6	44.4	1.43	98	101
14:55	44	46	107	56	0	100	99	72	630	-10.2	1492	-0.6	43.8	1.43	98	100
15:00	44	46	109	56	0	100	99	74	629	-10.6	1480	-0.6	45.4	1.45	98	98
15:05	44	46	109	56	0	100	99	74	627	-10.5	1472	-0.6	46.4	1.45	98	97
15:10	44	45	109	56	0	100	99	74	628	-10.5	1472	-0.5	46.2	1.45	98	97
15:15	44	45	109	56	0	100	99	74	630	-10.5	1470	-0.5	48.0	1.45	98	97
15:20	44	45	109	56	0	100	99	74	629	-10.4	1470	-0.6	49.1	1.45	98	100
15:25	43	46	113	56	0	100	99	74	630	-10.4	1467	-0.5	49.4	1.49	98	99
15:30	44	45	113	57	0	100	99	74	625	-10.7	1467	-0.6	51.0	1.50	98	100
15:35	44	45	113	57	0	100	99	74	620	-10.6	1473	-0.5	50.5	1.50	98	104
15:40	44	45	113	57	0	100	99	74	618	-10.6	1473	-0.5	49.3	1.50	98	108
15:45	44	45	113	56	0	100	99	75	623	-11.2	1477	-0.5	51.7	1.50	98	108
15:50	42	45	113	56	0	100	99	76	631	-11.2	1486	-0.5	49.7	1.50	39	108
15:55	42	45	112	56	0	100	99	76	633	-10.8	1482	-0.5	52.6	1.48	8	108
16:00	42	44	115	57	0	100	99	75	634	-10.8	1482	-0.5	53.6	1.54	8	107

17 Jun 93 4.00 - 17 Jun 93 16.00

Max	48	61	142	110	0	100	99	81	738	0.0	1503	0.0	66.3	1.87	98	110
Min	28	29	0	0	0	100	1	0	525	-13.7	1398	-0.9	0.0	0.01	7	91
Mean	36	37	130	59	0	100	96	75	575	-12.1	1488	-0.7	55.7	1.72	58	100
Accm																

16 Jun 93 4.00 - 17 Jun 93 4.00

Max	60	66	151	64	0	100	99	86	590	-13.1	1505	-0.5	60.4	1.99	98	110
Min	38	39	139	60	0	100	99	79	546	-15.3	1491	-1.2	44.9	1.85	6	92
Mean	50	51	142	61	0	100	99	81	572	-13.8	1497	-0.8	53.3	1.88	50	101
Accm																

Plant Report 10 KILN REPORT 1.2 Demand Report 17 Jun 93

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KILN PHISTER TOTALIZER.....
LOW RATE CALC. PF.FEED.....
LOW RATE NAT'L GAS KILN.....
GAS VALVE POS REFRENCE.....
KILN GAS TOTALIZER ACCU.....
GAS VALVE KILN BURN.POS.....
RAW MEAL TO KILN FEED
KILN BURN.EXHAUST PRESS.

.....PF BIN WEIGHT
.....FLOW RATE KILN PF. FEED.
.....TEMP. KILN FIRING
.....O2 % PREHEATER GAS
.....CO % PREHEATER GAS
.....O2 % KILN INLET GAS
CO % KILN INLET GAS
MO % KILN INLET GAS

	431370.PI1	431370.ZI1	751210.ZI1	463210.FI1	463106.WI1	431010.TI1	421202.AI2	421200.AI2							
	KILN-FEED	431370.FIACC	431370.FI1	463210.Q1	463140.FI1	421202.AI1	421200.AI1	421200.AI3							
H:M	PSI	t/h	%		%	CFM	t/h	t	t	t/h	degF	%	%	%	%	ppm
12:00	8.2	142	52.6	534	24.2	1111	0.00	0.00	41.8	1.0	2175	2.5	0.11	1.0	0.00	1405
12:05	8.2	144	52.6	539	24.2	1111	0.00	0.00	41.8	1.0	2219	2.7	0.11	1.1	0.01	1458
12:10	8.2	142	52.6	545	24.2	1111	0.00	0.00	41.7	1.0	2179	2.5	0.10	0.8	0.00	1396
12:15	8.2	141	52.6	551	24.1	1111	0.00	0.00	41.7	1.0	2191	13.6	0.11	1.0	0.01	1420
12:20	8.2	142	52.6	556	24.1	1111	0.00	0.00	41.5	1.0	2167	19.2	0.02	0.9	0.01	1480
12:25	8.2	140	52.6	562	24.1	1111	0.00	0.00	41.4	1.0	2233	19.6	0.01	0.9	0.01	1436
12:30	8.2	144	52.6	567	24.1	1111	0.00	0.00	41.6	1.0	2194	19.9	0.01	0.8	0.02	1413
12:35	8.1	142	52.6	573	24.1	1111	0.00	0.00	41.4	1.0	2137	19.8	0.01	1.0	0.01	1526
12:40	8.1	142	52.6	578	24.2	1111	0.00	0.00	41.3	1.0	2184	20.0	0.01	0.9	0.00	1411
12:45	8.1	139	52.3	584	24.2	1111	0.00	0.00	41.1	1.0	2195	19.9	0.01	1.0	0.00	1478
12:50	8.0	141	52.1	589	24.1	1071	0.00	0.00	41.0	1.0	2181	20.1	0.01	1.5	0.00	1613
12:55	8.1	141	52.6	595	24.2	1098	0.00	0.00	40.9	1.0	2230	19.9	0.01	1.0	0.00	1486
13:00	8.1	136	52.6	600	24.1	1096	0.00	0.00	40.6	1.0	2259	20.1	0.01	0.9	0.00	1463
13:05	8.2	142	52.6	606	24.1	1098	0.00	0.00	40.5	1.0	2200	20.1	0.01	1.2	0.00	1565
13:10	8.0	142	52.6	611	24.2	1097	0.00	0.00	40.4	1.0	2174	2.4	0.11	1.1	0.00	1441
13:15	8.0	145	52.6	617	24.2	1097	0.00	0.00	40.4	1.0	2145	2.6	0.11	1.2	0.00	1646
13:20	7.9	142	52.9	622	24.1	1127	0.00	0.00	40.4	1.0	2142	3.4	0.11	0.5	0.04	1449
13:25	8.0	140	53.1	628	24.1	1131	0.00	0.00	40.3	1.0	2153	2.3	0.12	0.5	0.03	1606
13:30	8.0	140	53.1	634	24.2	1131	0.00	0.00	40.3	1.0	2156	2.3	0.12	0.5	0.01	1623
13:35	1.8	1	0.1	638	0.1	0	0.00	0.00	40.3	0.0	2289	18.8	0.10	19.1	0.00	65
13:40	1.7	1	0.1	638	0.1	1	0.00	0.00	40.4	0.0	2314	20.1	0.07	19.6	0.00	29
13:45	1.8	0	0.1	638	0.1	0	0.00	0.00	40.4	0.0	2161	19.3	0.16	14.9	0.20	410
13:50	0.3	0	0.1	638	0.1	0	0.00	0.00	40.5	0.0	2257	18.8	0.07	16.0	0.01	303
13:55	6.8	0	24.6	638	0.1	157	0.00	0.00	40.6	0.0	2208	18.6	0.04	17.7	0.01	119
14:00	6.9	97	29.1	639	0.1	209	0.00	0.00	40.7	0.0	2995	9.0	0.02	4.9	0.00	2493

17 Jun 93 4.00 - 17 Jun 93 16.23

Max	8.5	152	53.5	772	30.1	1168	0.00	0.00	48.8	1.0	3000	20.7	0.48	19.7	0.56	2495
Min	0.3	0	0.1	0	0.1	0	0.00	0.00	39.4	0.0	1824	2.1	0.00	0.1	0.00	29
Mean	7.7	134	50.0	404	21.5	1039	0.00	0.00	44.2	0.6	2269	5.0	0.09	1.7	0.01	1572
Accm		1623				771730	0.01			7.8						

16 Jun 93 4.00 - 17 Jun 93 4.00

Max	8.3	161	55.1	1634	25.0	1209	0.00	0.00	48.8	1.0	2440	21.6	0.14	1.9	0.03	2220
Min	6.6	153	51.4	0	24.0	1071	0.00	0.00	15.0	0.0	1897	2.1	0.01	0.3	0.00	955
Mean	7.4	144	53.2	821	24.1	1135	0.00	0.00	37.5	0.5	2234	2.8	0.09	1.0	0.00	1625
Accm		3450				1634387	0.01			12.2						

Plant Report 10 KILN REPORT 1.2 Demand Report 17 Jun 93

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KILN PRISTER TOTALIZER.....
FLOW RATE CALC. PF.FEED.....
FLOW RATE NAT'L GAS KILN.....
GAS VALVE POS REFRENCE.....
KILN GAS TOTALIZER ACCU.....
GAS VALVE KILN BURN.POS.....
RAW MEAL TO KILN FEED
KILN BURN.EXHAUST PRESS.

.....PF BIN WEIGHT
.....FLOW RATE KILN PF. FEED.
.....TEMP. KILN FIRING
.....O2 % PREHEATER GAS
.....CO % PREHEATER GAS
.....O2 % KILN INLET GAS
CO % KILN INLET GAS
NO % KILN INLET GAS

	431370.PI1	431370.ZI1	751210.ZI1	463210.FI1	463106.WI1	431010.TI1	421202.AI2	421200.AI2
	KILN-FEED	431370.FIACC	431370.FI1	463210.Q1	463140.FI1	421202.AI1	421200.AI1	421200.AI3
H:M	PSI	t/h	%	%	CFM	t/h	t	t	t/h	degF	%	%	%	%	ppm
14:00	6.9	97	29.1	639	0.1	209	0.00	0.00	40.7	0.0	2995	9.0	0.02	4.9	0.00	2493
14:05	6.8	90	34.8	640	0.1	445	0.00	0.00	40.7	0.0	2502	12.6	0.10	9.7	0.01	1355
14:10	7.6	92	40.0	643	0.1	616	0.00	0.00	40.7	0.0	2534	8.1	0.12	4.4	0.00	2495
14:15	7.5	91	42.1	646	0.1	686	0.00	0.00	40.4	0.6	2612	4.1	0.09	0.9	0.00	2203
14:20	7.8	97	42.9	650	0.1	729	0.00	0.00	40.3	0.6	2700	4.3	0.10	1.3	0.00	2132
14:25	8.0	100	43.0	654	0.1	724	0.00	0.00	40.3	0.6	2401	5.1	0.10	1.3	0.00	2194
14:30	8.2	100	42.7	657	0.1	722	0.00	0.00	40.2	0.6	2491	4.3	0.10	1.2	0.00	2151
14:35	8.2	99	45.1	661	24.0	806	0.00	0.00	40.2	0.6	2560	2.8	0.22	0.6	0.02	1828
14:40	7.9	101	46.4	665	24.0	837	0.00	0.00	40.1	0.6	2549	3.4	0.10	1.4	0.00	1668
14:45	7.8	103	47.7	670	15.0	895	0.00	0.00	40.1	0.6	2451	3.7	0.10	2.1	0.00	1548
14:50	7.8	107	48.9	674	15.0	953	0.00	0.00	40.0	0.6	2335	3.0	0.08	0.7	0.00	997
14:55	7.7	111	48.8	679	10.0	958	0.00	0.00	40.0	0.6	1986	3.5	0.11	1.1	0.00	993
15:00	7.6	109	49.4	684	14.9	967	0.00	0.00	40.0	0.6	1873	5.5	0.10	2.4	0.00	1166
15:05	7.5	108	50.3	689	15.0	1000	0.00	0.00	39.9	0.6	2076	4.3	0.11	2.1	0.00	1466
15:10	7.5	113	50.3	694	15.0	1000	0.00	0.00	39.9	0.6	2120	4.2	0.11	2.3	0.00	1649
15:15	7.5	110	50.6	699	15.0	1013	0.00	0.00	39.8	0.6	2145	4.3	0.09	1.8	0.00	1773
15:20	7.5	111	50.6	704	15.0	1012	0.00	0.00	39.9	0.6	2212	4.1	0.10	1.9	0.00	1868
15:25	7.4	112	50.5	709	15.0	1013	0.00	0.00	39.8	0.6	2213	4.3	0.10	2.2	0.00	1974
15:30	7.4	113	50.5	714	15.0	1012	0.00	0.00	39.9	0.6	2155	4.1	0.12	2.0	0.00	2087
15:35	7.4	113	51.0	719	15.0	1033	0.00	0.00	39.9	0.6	2139	3.9	0.12	1.6	0.00	1943
15:40	7.4	116	51.3	724	23.9	1041	0.00	0.00	39.9	0.6	2280	3.7	0.10	1.5	0.00	1950
15:45	7.4	114	52.9	730	30.1	1109	0.00	0.00	39.9	0.6	2328	2.7	0.10	1.3	0.00	1946
15:50	7.4	113	52.7	735	25.0	1094	0.00	0.00	39.8	0.6	2392	2.5	0.10	1.1	0.00	2124
15:55	7.4	112	52.9	741	25.1	1107	0.00	0.00	39.7	0.6	2497	2.5	0.09	1.3	0.00	2248
16:00	7.4	118	52.9	746	25.0	1106	0.00	0.00	39.6	0.6	2449	2.4	0.09	1.2	0.00	2408

17 Jun 93 4.00 - 17 Jun 93 16.04

Max	8.5	152	53.5	751	30.1	1168	0.00	0.00	48.8	1.0	3000	20.7	0.48	19.7	0.56	2495
Min	0.3	0	0.1	0	0.1	0	0.00	0.00	39.5	0.0	1824	2.1	0.00	0.2	0.00	29
Mean	7.7	134	49.9	395	21.5	1037	0.00	0.00	44.3	0.6	2266	5.1	0.09	1.7	0.01	1563
Accm		1581				751383	0.01			7.6						

16 Jun 93 4.00 - 17 Jun 93 4.00

Max	8.3	161	55.1	1634	25.0	1209	0.00	0.00	48.8	1.0	2440	21.6	0.14	1.9	0.03	2220
Min	6.6	133	51.4	0	24.0	1071	0.00	0.00	15.0	0.0	1897	2.1	0.01	0.3	0.00	955
Mean	7.4	144	53.2	821	24.1	1135	0.00	0.00	37.5	0.5	2234	2.8	0.09	1.0	0.00	1625
Accm		3450				1634387	0.01			12.2						

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